A Complete Bibliography of Publications in *International Journal of Science and Mathematics Education*

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Title word cross-reference

3- [PEK^{+}23]. **3-Year** [HNMGA16, BW10]. **3D** [CMK^{+}24].

4 [HL07]. **415** [HL07].

5 [MF05, VT07a, YKJ20]. **5-Year-Olds** [ACB25]. **522** [SYOL07]. **5e** [GDSD10, JH24, LHO25]. **5th** [Saf18, YnLL08]. **5th-Graders** [Saf18].

6 [SWA^{+}12].

7-Year-Old [PEK^{+}23]. **7th** [CA21, DE15].

8 [CGTQ21]. **8th** [JLCT12, NCH11].

Abacus [RXLC16]. **Abbreviated** [MB21]. **Abilities** [Ari19, BB17, DJB15, GC19, Güv09, LLP19, NPP16, PL19a, SR21, WWTC10, Yük14]. **Ability** [CMK^{+}24, DNV17, DGEP16, DB17, HP21, LL21b, LL25a, LLC^{+}16, LC23, SLK20, SKS^{+}23, AB13, CVCV11, DMNH11, KKvdW15, LM10, Ozd10]. **able** [BNH^{+}15, OHLC23]. **Aboriginal** [SVB25]. **Abstract** [YLTO21, ZYJ22]. **Academic** [ÇK25, CA21, DHTA^{+}24a, DHTA^{+}24b, GHS^{+}18, KK24a, LLW^{+}20, LM21, NOVRR22, SCB16, SS19, TLT21, WN25]. **Academies** [Saw19]. **accelerate** [VR12]. **accelerated** [EVV11]. **Acceleration** [FTWC18]. **acceptance** [GGD15b]. **Access** [LK24]. **Accommodation** [SVB25]. **accomplishment** [RB13]. **Accomplishments** [KBK^{+}22]. **Account** [EKC^{+}21]. **Accounts** [vV16]. **Accuracy** [RMR22, BZST10, LLWS13]. **Accurately** [Lin16a]. **Achievement** [BCO22, CCW16, CA21, CL20, DÇÖK23, DHTA^{+}24a, DHTA^{+}24b, FCS15, FT05, FTWC18, GDFVCM24, GHL22, HP24, HHT^{+}20, HLT18, HCH23, IA08, KK24a, KK22b, KH15, KFM^{+}17, Len06, Lin17, LLHC23, LLN^{+}21, NOVRR22, Ng10, NA24, RV17, Sch14, SLZ20, SK17, SP05, SS19, TH19, TLR21, VC23, WT18, YnLL08, YSHC23, YCH04, ZBB22, Are12, AK13, AT15, BHMO14, CK14, Che14, Cro09, Ebr12, FH13, GCS10, GN08, HCC15, HGK11, HNB11, Ing14, LHL^{+}09, MP10, PV14, Pet13, RR16, RR11, RR09, Rut11, SWA^{+}12, Tig14, VR12, WOB12, WT15, ZC15, ZL11, ZL12]. **Achievements** [PSO17]. **Achiever** [CHC16, KTC19]. **achievers** [HCC15]. **Achieving** [WL18, ARZRV16, Als12, BMN16, EK09]. **acid** [KYA13a, ÖDC09, RCT^{+}11]. **acid-base** [ÖDC09]. **Acidification** [BPMK24]. **Acids** [FT05, ODTS07, JLCT12]. **Acknowledgements** [YPT07a]. **Acquisition** [UE19, BVDV13, Kön13]. **Across** [AW24, GPC23, HLT18, KL23a, KLR23, LFM^{+}19, MRLM21, Pel25, RTC22, RBT20, SGHM15, SGHM16, SWAEKS19, VCSW20, VC23, Chi12a, Lee18, MAL^{+}11, Pon25, SB09, ZB13]. **act** [CDT^{+}11]. **Action** [AK17b, BV24, KD22, OHLC23, WAL23, WAL24, FD12, Hal12, MNE12]. **Actions** [HMHG20, HCH23, LNP^{+}18, LAN20, SMZ06, CDT^{+}11]. **Active** [MSS22, NHLS08, SJL20]. **Activities** [ABPV20, BÖL23, Büs25, CCAG22,

TSMW16, TWS+23, TDW+17, TSP16, VCSA+23, ZGZM17, BJ10, CWW11, EFL+13, EGN11, GS12, Gok12, KN13, KKvdW15, Maj14, MR14, OBF15, PMSK+12, QM14, RR16, RHM+11, TDBLY16, Top13]. **Physics-Related** [AYLW16]. **physiology** [MIJJ15]. **Piagetian** [Bab10, NDD14]. **Pictorial** [HP21, LAA+23]. **Picture** [AKD+19, LCC11b]. **Piece** [GAM+24]. **Pipeline** [ATN23, AHTN24, BG17]. **PISA** [ALT+07, HCBS18a, HCBS18b, JCC20, KC22, MKSK16, SSS18, TH19, WHSK24, YCH04, YAC10, ACY10, CBDV10, DK10, GCS10, Ho10, Kni10, KV10, LS14, LH15, MRA10, NFK10]. **PISA/LSAY** [JCC20]. **Place** [KKL20, Kuw13]. **place-based** [Kuw13]. **Placement** [RJ21]. **Plain** [Sch14]. **Plain-English** [Sch14]. **plan** [GDSD10, TT14]. **Plane** [Büs25, KAC15, Pap10]. **planetary** [LNW22]. **Planned** [DNWC18]. **Planning** [ANLL21, BSR24, DHB19, DJB15, jKMH20, SLV22, SCS+12, Tay18]. **Plans** [GYU24, LSK18, NSA25, SEW18, KB17]. **Plant** [Lin04, NPR12]. **Plants** [Wan04, Wan07]. **platform** [Liu09]. **Play** [Lin25, Tho22]. **Played** [TNHK23]. **playing** [BEF15]. **Plots** [LKC+15]. **plus** [TMVC24]. **pOH** [KYA13a]. **Point** [BC06, KG15]. **Points** [HjKKL23, Jon19, LL20, TTO25]. **Policy** [SW23, VR23, YAC10, AV06, ACY10, HP11]. **politics** [NWD11]. **Pollution** [KÇ18]. **Polygon** [BML24]. **Polynomial** [AGBC17]. **population** [LNW22]. **poser** [KK16]. **Posing** [BR23, CJ17, KD09, KÖÖ25, Lee21b, SVJ25, Can14, CVCV11]. **Positional** [YY13]. **positions** [Wel15]. **positive** [SWA+12]. **Possibilities** [TT14]. **Possible** [AO16, Koy23, MSA17, LLT09, MPB10]. **Post** [GSO+17, WM17, WRW25, MR14, NWD11, RHM+11]. **post-16** [NWD11, RHM+11]. **Post-Apartheid** [WM17]. **post-compulsory** [MR14]. **Post-induction** [WRW25]. **Post-secondary** [GSO+17]. **Poster** [NOVRR22]. **Potential** [BWB25, Gus24, JLC17, Lee21a, ME13, RGC08, Ron18, ZX20, KGA+11, TSA12, TT14]. **Pothole** [CJSjK25]. **Power** [IİED+23, LHL+09]. **Powerful** [ARdMB23]. **PowerPoint** [WSA07]. **Powers** [FG21]. **Practical** [BLS20, Kuo25, TLK17, WCC19]. **practicality** [SIS+11]. **practically** [LTT06]. **practically-based** [LTT06]. **Practice** [EB25, ES08, ELO08, HU24, HZBC24, JWR20, Kan23, KRS23, LTD+18, LCB21, MBBR08, PFCM23, SCW25, WBM21, WFK+16, YKJ20, CTT+11, FL11, Kön13, LC14a, LC14b, LYP14, MMK11, MIJJ15, Sch15]. **Practices** [AK17b, BV24, DS18, DRZ20, DA20a, DA20b, EP21, FLP23, GPCB15, HHJR21, HDvJ21, HCBS18a, HCBS18b, IAS17, KLR23, Kil18, LR20, LL05, LC23, Ma23, MSA17, MA21, MRC23, NP23, OGY24, PP08, PDÜA21, RJ21, SCG+19, SV22, ŞB25, SH24, SF22, SBN16, ZL25, Aky16, Ama16, Bag11, CCN+12, NRKR13, QM14, RB13, Šap13, SC14, SBN14, So16, TRF05]. **Practicing** [KBK+22, SAA18]. **Practitioner** [HHS+21, PH19]. **Practitioners** [ERC03]. **Pragmatic** [WCB23]. **Praxeological** [TS20]. **Praxeologies** [PR24, PBR25]. **Pre** [Ala16, ABPD16, AO16, BSLM16, BSG+23, Bay09, BV24, Bil06, Bla04, ÇAC07, CPTMSM22, CY21, CCC25, ÇBY25, CT04, DS15, DB17, DJB15, EKC+21, EB25, ELO08, GC19, Gub16,

References

Al-Abdali:2016:TCS

[AAAB16] Nasser S. Al-Abdali and Sulaiman M. Al-Balushi. Teaching for creativity by science teachers in grades 5–10. *International Journal of Science and Mathematics Education*, 14(2s):251–268, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9612-3`.

Afari:2012:EUG

[AAF12] Ernest Afari, Jill M. Aldridge, and Barry J. Fraser. Effectiveness of using games in tertiary-level mathematics classrooms. *International Journal of Science and Mathematics Education*, 10(6):1369–1392, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9340-5`.

Ambusaidi:2017:IOS

[AAF17] Abdullah Ambusaidi and Khalid Al-Farei. Investigating Omani science teachers' attitudes towards teaching science: the role of gender and teaching experiences. *International Journal of Science and Mathematics Education*, 15(1):71–88, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9684-8`.

Ayala-Altamirano:2020:MAL

[AAM20] Cristina Ayala-Altamirano and Marta Molina. Meanings attributed to letters in functional contexts by primary school students. *International Journal of Science and Mathematics Education*, 18(7):1271–1291, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10012-5. See correction [AAM24].

Ayala-Altamirano:2024:CMA

[AAM24] Cristina Ayala-Altamirano and Marta Molina. Correction to: Meanings attributed to letters in functional contexts by primary school students. *International Journal of Science and Mathematics Education*, 22(5):1167–1168, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10218-6. See [AAM20].

Al-Amoush:2014:BAC

[AAMU+14] Siham Al-Amoush, Silvija Markic, Muhammet Usak, Mehmet Erdogan, and Ingo Eilks. Beliefs about chemistry teaching and learning — a comparison of teachers' and student teachers' beliefs from Jordan, Turkey and Germany. *International Journal of Science and Mathematics Education*, 12(4):767–792, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9435-7.

Alghamdi:2013:SES

[AAS13] Amani K. Hamdan Alghamdi and Misfer Saud Al-Salouli. Saudi elementary school science teachers' beliefs: teaching science in the new millennium. *International Journal of Science and Mathematics Education*, 11(2):501–525, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9353-0.

Ayar:2015:ASA

[AAY15] Mehmet C. Ayar, Mehmet Aydeniz, and Bugrahan Yalvac. Analyzing science activities in force and motion concepts: a design of an immersion unit. *International Journal of Science and Mathematics Education*, 13(1):95–121, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9476-y.

Al-Balushi:2011:SEC

[AB11] Sulaiman M. Al-Balushi. Students' evaluation of the credibility of scientific models that represent natural entities and phenomena. *International Journal of Science and Mathematics Education*, 9(3):571–601, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9209-4.

Al-Balushi:2013:RBL

[AB13] Sulaiman M. Al-Balushi. The relationship between learners' distrust of scientific models, their spatial ability, and the vividness of their mental images. *International Journal of Science and Mathematics Education*, 11(3):707–732, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9360-1.

Aydeniz:2014:WDS

[AB14] Mehmet Aydeniz and Kader Bilican. What do scientists know about the nature of science? A case study of novice scientists' views of NOS. *International Journal of Science and Mathematics Education*, 12(5):1083–1115, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9449-1.

Ayan:2018:MSS

[AB18] Rukiye Ayan and Mine Isiksal Bostan. Middle school students' reasoning in nonlinear proportional problems in geometry. *International Journal of Science and Mathematics Education*, 16(3):503–518, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9777-z.

Al-Balushi:2023:ADW

[ABAHA23] Sulaiman M. Al-Balushi, Ibrahim S. Al-Harthy, and Rashid S. Almehrizi. Attention drifting away while test-taking: Mind-wandering in students with low- and high-performance levels in TIMSS-like science tests. *International*

Journal of Science and Mathematics Education, 21(2):395–416, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10258-6`.

Azaiza:2006:LEE

[ABG06] Ibtisam Azaiza, Varda Bar, and Igal Galili. Learning electricity in elementary school. *International Journal of Science and Mathematics Education*, 4(1):45–71, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-6826-9`.

Atwood-Blaine:2017:MGS

[ABH17] Dana Atwood-Blaine and Douglas Huffman. Mobile gaming and student interactions in a science center: the future of gaming in science education. *International Journal of Science and Mathematics Education*, 15(1s):45–65, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9801-y`.

Arnal-Bailera:2024:CVH

[ABM24] Alberto Arnal-Bailera and Víctor Manero. A characterization of Van Hiele's level 5 of geometric reasoning using the Delphi methodology. *International Journal of Science and Mathematics Education*, 22(3):537–560, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10380-z`.

Almeida:2016:SNS

[ABPD16] Rut Almeida, Alicia Bruno, and Josefa Perdomo-Díaz. Strategies of number sense in pre-service secondary mathematics teachers. *International Journal of Science and Mathematics Education*, 14(5):959–978, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9601-6`.

Andra:2020:FFM

[ABPV20] Chiara Andrà, Domenico Brunetto, Nicola Parolini, and Marco Verani. Four fundamental modes of participation in mathematics group activities. *International Journal of Science and Mathematics Education*, 18(1):123–143, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09940-5`.

Almudi:2015:AAC

[AC15] Jose Manuel Almudi and Mikel Ceberio. Analysis of arguments constructed by first-year engineering students addressing electromagnetic induction problems. *International Journal of Science and Mathematics Education*, 13(1s):215–236, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9528-y`.

Aguilar:2020:FAR

[AC20] Mario Sánchez Aguilar and Apolo Castaneda. A Foucauldian analysis of representations of mathematicians in lower secondary Mexican mathematics textbooks. *International Journal of Science and Mathematics Education*, 18(4):753–770, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09986-z`.

Anglada:2025:GAY

[ACB25] Lourdes Anglada, María C. Cañadas, and Bárbara M. Brizuela. Generalization among 5-year-olds in a functional context with programmable robot. *International Journal of Science and Mathematics Education*, 23(4):1057–1078, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10495-x`.

Anderson:2010:FCP

[ACY10] John O. Anderson, Mei-Hung Chiu, and Larry D. Yore. First cycle of Pisa (2000–2006) — international perspectives on successes and challenges: research and policy directions. *International Journal of Science and Mathematics Education*, 8(3):373–388, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9210-y`.

Alshamali:2016:SRR

[AD16] Mahmoud A. Alshamali and Wajeeh M. Daher. Scientific reasoning and its relationship with problem solving: the case of upper primary science teachers. *International Journal of Science and Mathematics Education*, 14(6):1003–1019, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9646-1`.

Arvatz:2025:SMH

[AD25] Avivit Arvatz and Yehudit Judy Dori. Science and mathematics high school students' perceptions of Self-Regulated Learning. *International Journal of Science and Mathematics Education*, 23(5):1467–1492, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10516-9`.

Ayalon:2010:MEV

[AE10] Michal Ayalon and Ruhama Even. Mathematics educators' views on the role of mathematics learning in developing deductive reasoning. *International Journal of Science and Mathematics Education*, 8(6):1131–1154, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9238-z`.

Ayalon:2015:SOE

[AE15] Michal Ayalon and Ruhama Even. Students' opportunities to engage in transformational algebraic activity in different beginning algebra topics and classes. *International Journal of Science and Mathematics Education*, 13(2s):285–307, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9498-5`.

Ayalon:2016:FSS

[AE16] Michal Ayalon and Ruhama Even. Factors shaping students' opportunities to engage in argumentative activity. *International Journal of Science and Mathematics Education*, 14(3):575–601, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9584-3`.

Abramowitz:2024:SSS

[AEKA24] Brian Abramowitz, Megan Ennes, Brittany Kester, and Pavlo Antonenko. Scientist–school STEM partnerships through outreach in the USA: a systematic review. *International Journal of Science and Mathematics Education*, 22 (8):1833–1855, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10445-7`.

Arikan:2022:DVS

[AEP22] Serkan Arikan, Emine Erktin, and Melek Pesen. Development and validation of a STEM competencies assessment framework. *International Journal of Science and Mathematics Education*, 20(1):1–24, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10132-3`.

Albarracin:2021:RCC

[AFG21] Lluís Albarracín, Irene Ferrando, and Núria Gorgorió. The role of context for characterising students' strategies when estimating large numbers of elements on a surface. *International Journal of Science and Mathematics Education*, 19 (6):1209–1227, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10107-4`.

Adu-Gyamfi:2014:PRR

[AGB14] Kwaku Adu-Gyamfi and Michael J. Bossé. Processes and reasoning in representations of linear functions. *International Journal of Science and Mathematics Education*, 12(1):167–192, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9416-x`.

Adu-Gyamfi:2017:SCB

[AGBC17] Kwaku Adu-Gyamfi, Michael J. Bossé, and Kayla Chandler. Student connections between algebraic and graphical polynomial representations in the context of a polynomial relation. *International Journal of Science and Mathematics Education*, 15(5):915–938, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9730-1`.

Anam:2024:UCT

[AGW24] Rifat Shafwatul Anam, Surya Gumilar, and Ari Widodo. The use of the Constructivist Teaching Sequence (CTS) to facilitate changes in the visual representations of fifth-grade elementary school students: A case study on teaching heat convection concepts. *International Journal of Science and Mathematics Education*, 22(1):73–99, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10358-x.

Akkus:2011:ETS

[AH11] Recai Akkus and Brian Hand. Examining teachers' struggles as they attempt to implement dialogical interaction as part of promoting mathematical reasoning within their classrooms. *International Journal of Science and Mathematics Education*, 9(4):975–998, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9266-8.

Albadi:2019:RRS

[AHO19] Nouf Mohammed Albadi, Jean Harkins, and John Mitchell O'Toole. Recent reforms in Saudi secondary science education: Teacher and student perceptions of grade 10 physics. *International Journal of Science and Mathematics Education*, 17(4):701–721, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9881-3.

Almukhambetova:2025:WMT

[AHT25] Ainur Almukhambetova and Daniel Hernández-Torrano. What matters in transition to university? Exploring STEM-gifted students university adjustment. *International Journal of Science and Mathematics Education*, 23(6):2135–2156, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10564-9.

Almukhambetova:2024:CFL

[AHTN24] Ainur Almukhambetova, Daniel Hernández-Torrano, and Alexandra Nam. Correction to: Fixing the leaky pipeline for talented women in STEM. *International Journal of Science and Mathematics Education*, 22(5):1169, June 2024.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10261-x. See [ATN23].

Areepattamannil:2013:FPS

[AK13] Shaljan Areepattamannil and Berinderjeet Kaur. Factors predicting science achievement of immigrant and non-immigrant students: a multilevel analysis. *International Journal of Science and Mathematics Education*, 11(5):1183–1207, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9369-5.

Asghari:2017:MAO

[AK17a] Amir H. Asghari and Leyla G. Khosroshahi. Making associativity operational. *International Journal of Science and Mathematics Education*, 15(8):1559–1577, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9759-1; http://link.springer.com/content/pdf/10.1007/s10763-016-9759-1.pdf.

Attorps:2017:SUA

[AK17b] Iiris Attorps and Eva Kellner. School–university action research: Impacts on teaching practices and pupil learning. *International Journal of Science and Mathematics Education*, 15(2):313–330, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9686-6.

Arican:2020:DPT

[AK20] Muhammet Arican and Okan Kuzu. Diagnosing preservice teachers' understanding of statistics and probability: Developing a test for cognitive assessment. *International Journal of Science and Mathematics Education*, 18(4):771–790, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09985-0.

AsokaDeSilva:2018:DDD

[AKA18] Anthoni Durage Asoka De Silva, Ali Khatibi, and S. M. Ferdous Azam. Do the demographic differences manifest in motivation to learn science and impact on science performance? Evidence from Sri Lanka. *International Journal of Science and Mathematics Education*, 16(1S):47–67, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9846-y.

Aksoy:2021:SGS

[AkB21] Emine Çatman Aksoy and Mine Işıksal Bostan. Seventh graders' statistical literacy: an investigation on bar and line graphs. *International Journal of Science and Mathematics Education*, 19(2):397–418, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10052-2.

Ayene:2019:HPP

[AKD+19] Mengesha Ayene, Jeanne Krick, Baylie Damitie, Ake Ingerman, and Bath Thacker. A holistic picture of physics student conceptions of energy quantization, the photon concept, and light quanta interference. *International Journal of Science and Mathematics Education*, 17(6):1049–1070, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9906-y.

Almukhambetova:2023:HBL

[AKHT23] Ainur Almukhambetova, Aliya Kuzhabekova, and Daniel Hernández-Torrano. Hidden bias, low expectations, and social stereotypes: Understanding female students' retention in math-intensive STEM fields. *International Journal of Science and Mathematics Education*, 21(2):535–557, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10256-8.

Akyuz:2016:MPT

[Aky16] Didem Akyuz. Mathematical practices in a technological setting: a design research experiment for teaching circle properties. *International Journal of Science and Mathematics Education*, 14(3):549–573, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9588-z.

Anastasakis:2022:TUP

[AL22] Marinos Anastasakis and Stephen Lerman. Tool-use profiles in undergraduate mathematics. *International Journal of Science and Mathematics Education*, 20(4):861–879, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10196-9.

Andra:2015:RMR

[ALA+15] Chiara Andrá, Paulina Lindström, Ferdinando Arzarello, Kenneth Holmqvist, Ornella Robutti, and Cristina Sabena. Reading mathematics representations: an eye-tracking study. *International Journal of Science and Mathematics Education*, 13(2s):237–259, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9484-y.

Alajmi:2016:AGS

[Ala16] Amal Hussain Alajmi. Algebraic generalization strategies used by Kuwaiti pre-service teachers. *International Journal of Science and Mathematics Education*, 14(8):1517–1534, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9657-y.

Alegria:2014:SEL

[Ale14] Adelina Alegria. Supporting English language learners in the science classroom through critical pedagogy. *International Journal of Science and Mathematics Education*, 12(1):99–121, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9399-7.

Alghamdi:2020:CES

[Alg20] Amani K. Hamdan Alghamdi. Citizenship education in science curricula: Exploring the Saudi Arabia case. *International Journal of Science and Mathematics Education*, 18(4):669–689, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09991-2.

Aristeidou:2023:CSS

[ALI23] Maria Aristeidou, Julia Lorke, and Nashwa Ismail. Citizen science: Schoolteachers' motivation, experiences, and recommendations. *International Journal of Science and Mathematics Education*, 21(7):2067–2093, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10340-z.

Alsawaie:2012:NSB

[Als12] Othman N. Alsawaie. Number sense-based strategies used by high-achieving sixth grade students who experienced reform textbooks. *International Journal of Science and Mathematics Education*, 10(5):1071–1097, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9315-y.

Anderson:2007:ULS

[ALT+07] John O. Anderson, Huann-Shyang Lin, David F. Treagust, Shelley P. Ross, and Larry D. Yore. Using large-scale assessment datasets for research in science and mathematics education: Programme for international student assessment (PISA). *International Journal of Science and Mathematics Education*, 5(4):591–614, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9090-y.

Anderson:2014:NPS

[ALT14] O. Roger Anderson, Bradley C. Love, and Meng-Jung Tsai. Neuroscience perspectives for science and mathematics learning in technology-enhanced learning environments. *International Journal of Science and Mathematics Education*, 12(3):467–474, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9540-2; http://link.springer.com/content/pdf/10.1007/s10763-014-9540-2.pdf.

Annetta:2004:ASP

[AM04] Leonard A. Annetta and Justin C. Matus. Analysis of satisfaction and perceived learning of science in different distance education delivery modes for rural elementary school teachers involved in a professional development project. *International Journal of Science and Mathematics Education*, 1(3): 311–331, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Ambrose:2014:SEB

[AM14a] Rebecca Ambrose and Marta Molina. Spanish/English bilingual students' comprehension of arithmetic story problem texts. *International Journal of Science and Mathematics Education*, 12(6):1469–1496, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9472-2`.

Ariasi:2014:CPO

[AM14b] Nicola Ariasi and Lucia Mason. From covert processes to overt outcomes of refutation text reading: the interplay of science text structure and working memory capacity through eye fixations. *International Journal of Science and Mathematics Education*, 12(3):493–523, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9494-9`.

Amador:2016:PNP

[Ama16] Julie Amador. Professional noticing practices of novice mathematics teacher educators. *International Journal of Science and Mathematics Education*, 14(1):217–241, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9570-9`.

Amador:2020:TLM

[Ama20] Julie M. Amador. Teacher leaders' mathematical noticing: Eliciting and analyzing. *International Journal of Science and Mathematics Education*, 18(2):295–313, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09956-5`.

Antink-Meyer:2016:USC

[AMBLL16] Allison Antink-Meyer, Stephen Bartos, Judith S. Lederman, and Norman G. Lederman. Using science camps to develop understandings about scientific inquiry — Taiwanese students in a U.S. summer science camp. *International Journal of Science and Mathematics Education*, 14(1s):29–53, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9576-3`.

Alsina:2021:VIE

[AMFC21] Angel Alsina, Antonio Maurandi, Elvira Ferre, and Claudia Coronata. Validating an instrument to evaluate the teaching of mathematics through processes. *International Journal of Science and Mathematics Education*, 19(3):559–577, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10064-y`.

Alhendal:2016:KST

[AMG16] Dalal Alhendal, Margaret Marshman, and Peter Grootenboer. Kuwaiti science teachers' beliefs and intentions regarding the use of inquiry-based instruction. *International Journal of Science and Mathematics Education*, 14(8):1455–1473, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9671-0`.

Adkins:2018:DAM

[AN18] Michael Adkins and Andrew Noyes. Do advanced mathematics skills predict success in biology and chemistry degrees? *International Journal of Science and Mathematics Education*, 16(3):487–502, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9794-y`.

Andrews:2003:OLB

[And03] Paul Andrews. Opportunities to learn in the Budapest mathematics classroom. *International Journal of Science and Mathematics Education*, 1(2):201–225, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Anderson:2014:PAN

[And14] O. Roger Anderson. Progress in application of the neurosciences to an understanding of human learning: the challenge of finding a middle-ground neuroeducational theory. *International Journal of Science and Mathematics Education*, 12(3):475–492, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9455-3.

Ayalon:2021:PSM

[ANLL21] Michal Ayalon, Elena Naftaliev, Esther S. Levenson, and Sigal Levy. Prospective and in-service mathematics teachers' attention to a rich mathematics task while planning its implementation in the classroom. *International Journal of Science and Mathematics Education*, 19(8):1695–1716, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10134-1.

Anonymous:2003:E

[Ano03a] Anonymous. Editorial. *International Journal of Science and Mathematics Education*, 1(1):1–3, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/content/pdf/10.1023/A%3A1026180924060.pdf.

Anonymous:2003:IAa

[Ano03b] Anonymous. Instructions for authors. *International Journal of Science and Mathematics Education*, 1(1):135–138, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Anonymous:2003:IAb

[Ano03c] Anonymous. Instructions for authors. *International Journal of Science and Mathematics Education*, 1(2):251–254, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Anonymous:2004:IAa

[Ano04a] Anonymous. Instructions for authors. *International Journal of Science and Mathematics Education*, 1(3):379–382, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Anonymous:2004:IAb

[Ano04b] Anonymous. Instructions for authors. *International Journal of Science and Mathematics Education*, 2(1):107–110, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Anonymous:2012:IJSa

[Ano12a] Anonymous. 2013 international journal for science and mathematics education. *International Journal of Science and Mathematics Education*, 10(3):759–761, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9331-6.

Anonymous:2012:IJSb

[Ano12b] Anonymous. 2013 international journal for science and mathematics education. *International Journal of Science and Mathematics Education*, 10(4):997–999, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9351-2.

Anonymous:2012:CP

[Ano12c] Anonymous. Call for papers. *International Journal of Science and Mathematics Education*, 10(6):1491–1492, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9374-8.

Anonymous:2012:ISI

[Ano12d] Anonymous. Introduction to the special issue. *International Journal of Science and Mathematics Education*, 10(3):755–757, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9330-7.

Anonymous:2013:CPI

[Ano13] Anonymous. Call for papers introduction to the special issue. *International Journal of Science and Mathematics Education*, 11(3):787–788, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9419-7.

Aydeniz:2016:AEP

[AO16] Mehmet Aydeniz and Zehra Ozdilek. Assessing and enhancing pre-service science teachers' self-efficacy to teach science through argumentation: Challenges and possible solutions. *International Journal of Science and Mathematics Education*, 14(7):1255–1273, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9649-y`.

Ayas:2010:SCP

[AÖÇ10] Alipaşa Ayas, Haluk Özmen, and Muammer Çalik. Students' conceptions of the particulate nature of matter at secondary and tertiary level. *International Journal of Science and Mathematics Education*, 8(1):165–184, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9167-x`.

Armario:2022:SPP

[AOJT22] María Armario, José María Oliva, and Natalia Jiménez-Tenorio. Spanish preservice primary school teachers' understanding of the tides phenomenon. *International Journal of Science and Mathematics Education*, 20(7):1361–1386, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10209-7`.

Afra:2009:SAC

[AOZ09] Nada Chatila Afra, Iman Osta, and Wassim Zoubeir. Students' alternative conceptions about electricity and effect of inquiry-based teaching strategies. *International Journal of Science and Mathematics Education*, 7(1):103–132, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9106-7`.

Aydeniz:2012:ASC

[APCK12] Mehmet Aydeniz, Aybuke Pabuccu, Pinar Seda Cetin, and Ebru Kaya. Argumentation and students' conceptual understanding of properties and behaviors of gases. *International Journal of Science and Mathematics Education*, 10(6):1303–1324, December 2012. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9336-1.

Akerson:2017:EUL

[APR+17] Valarie L. Akerson, Khemmawadee Pongsanon, Meredith A. Park Rogers, Ingrid Carter, and Enrique Galindo. Exploring the use of lesson study to develop elementary preservice teachers' pedagogical content knowledge for teaching nature of science. *International Journal of Science and Mathematics Education*, 15(2):293–312, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9690-x.

Alajmi:2010:EEG

[AR10] Amal Hussain Alajmi and Robert Reys. Examining eighth grade Kuwaiti students' recognition and interpretation of reasonable answers. *International Journal of Science and Mathematics Education*, 8(1):117–139, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9165-z.

Archila:2023:DPT

[ARdMB23] Pablo Antonio Archila, Silvia Restrepo, Anne-Marie Truscott de Mejía, and Natasha I. Bloch. Drama as a powerful tool to enrich socio-scientific argumentation. *International Journal of Science and Mathematics Education*, 21(5):1661–1683, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10320-3.

Areepattamannil:2012:FSG

[Are12] Shaljan Areepattamannil. First- and second–generation immigrant adolescents' multidimensional mathematics and science self-concepts and their achievement in mathematics and science. *International Journal of Science and Mathematics Education*, 10(3):695–716, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9319-7.

Arican:2018:PMH

[Ari18] Muhammet Arican. Preservice middle and high school mathematics teachers' strategies when solving proportion problems. *International Journal of Science and Mathematics Education*, 16(2):315–335, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9775-1`.

Arican:2019:PMT

[Ari19] Muhammet Arican. Preservice mathematics teachers' understanding of and abilities to differentiate proportional relationships from nonproportional relationships. *International Journal of Science and Mathematics Education*, 17(7):1423–1443, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9931-x`.

Arican:2024:CPM

[Ari24] Muhammet Arican. Correction to: Preservice middle and high school mathematics teachers' strategies when solving proportion problems. *International Journal of Science and Mathematics Education*, 22(4):937, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-018-09943-2`. See [LHY24].

Aguilar:2016:EHA

[ARZRV16] Mario Sánchez Aguilar, Alejandro Rosas, Juan Gabriel Molina Zavaleta, and Avenilde Romo-Vázquez. Exploring high-achieving students' images of mathematicians. *International Journal of Science and Mathematics Education*, 14(3):527–548, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9586-1`.

Alsina:2022:UEM

[AS22] Ángel Alsina and María Salgado. Understanding early mathematical modelling: First steps in the process of translation between real-world contexts and mathematics. *International Journal of Science and Mathematics Education*, 20(8):1719–1742, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10232-8.

Achmetli:2019:MSR

[ASR19] Kay Achmetli, Stanislaw Schukajlow, and Katrin Rakoczy. Multiple solutions for real-world problems, experience of competence and students' procedural and conceptual knowledge. *International Journal of Science and Mathematics Education*, 17(8):1605–1625, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9936-5.

Acar:2007:ECL

[AT07] Burcin Acar and Leman Tarhan. Effect of cooperative learning strategies on students' understanding of concepts in electrochemistry. *International Journal of Science and Mathematics Education*, 5(2):349–373, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9046-7.

Aslan-Tutak:2015:EOB

[AT15] Sevil Arıcıand Fatma Aslan-Tutak. The effect of origami-based instruction on spatial visualization, geometry achievement, and geometric reasoning. *International Journal of Science and Mathematics Education*, 13(1):179–200, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9487-8.

Abrams:2013:CCR

[ATG13] Eleanor Abrams, Peter Charles Taylor, and Chorng-Jee Guo. Contextualizing culturally relevant science and mathematics teaching for indigenous learning. *International Journal of Science and Mathematics Education*, 11(1):1–21, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9388-2.

Almukhambetova:2023:FLP

[ATN23] Ainur Almukhambetova, Daniel Hernandez Torrano, and Alexandra Nam. Fixing the leaky pipeline for talented women in STEM. *International Journal of Science and Mathematics Education*, 21(1):305–324, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10239-1. See correction [AHTN24].

Aydin:2015:TAD

[AU15] Utkun Aydın and Behiye Ubuz. The thinking-about-derivative test for undergraduate students: development and validation. *International Journal of Science and Mathematics Education*, 13(6):1279–1303, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9545-x.

Agudelo-Valderrama:2006:GGB

[AV06] Cecilia Agudelo-Valderrama. The growing gap between Colombian education policy, official claims and classroom realities: insights from mathematics teachers' conceptions of beginning algebra and its teaching purpose. *International Journal of Science and Mathematics Education*, 4(3):513–544, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9021-8.

Agudelo-Valderrama:2016:PCW

[AVM16] Cecilia Agudelo-Valderrama and Diana Martínez. In pursuit of a connected way of knowing: The case of one mathematics teacher. *International Journal of Science and Mathematics Education*, 14(4):719–737, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9598-x.

Allen:2016:IDI

[AVT16] Michael Allen and Frédéric Vallée-Tourangeau. Interactivity defuses the impact of mathematics anxiety in primary school children. *International Journal of Science and Mathematics Education*, 14(8):1553–1566, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9659-9.

An:2012:EMT

[AW12] Shuhua An and Zhonghe Wu. Enhancing mathematics teachers' knowledge of students' thinking from assessing and analyzing misconceptions in homework. *International Journal of Science and Mathematics Education*, 10(3):717–753, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9324-x`.

Amador:2024:RAF

[AW24] Julie M. Amador and Tracy L. Weston. A review of analytic frameworks for noticing in mathematics and science: Comparing noticing frameworks across disciplines and over time. *International Journal of Science and Mathematics Education*, 22(8):1739–1760, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10452-8`.

Ayalon:2016:PTF

[AWL16] Michal Ayalon, Anne Watson, and Steve Lerman. Progression towards functions: Students' performance on three tasks about variables from grades 7 to 12. *International Journal of Science and Mathematics Education*, 14(6):1153–1173, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9611-4`.

Alpaslan:2016:ERB

[AYLW16] Muhammet Mustafa Alpaslan, Bugrahan Yalvac, Cathleen C. Loving, and Victor Willson. Exploring the relationship between high school students' physics-related personal epistemologies and self-regulated learning in Turkey. *International Journal of Science and Mathematics Education*, 14(2):297–317, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9685-7`.

Babai:2010:PCL

[Bab10] Reuven Babai. Piagetian cognitive level and the tendency to use intuitive rules when solving comparison tasks. *International Journal of Science and Mathematics Education*, 8(2):203–221, April 2010. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9170-2.

Bagakas:2011:RTC

[Bag11] Joshua Gisemba Bagaka's. The role of teacher characteristics and practices on upper secondary school students' mathematics self-efficacy in Nyanza Province of Kenya: a multilevel analysis. *International Journal of Science and Mathematics Education*, 9(4):817–842, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9226-3.

Balta:2018:HST

[Bal18] Nuri Balta. High school teachers' understanding of blackbody radiation. *International Journal of Science and Mathematics Education*, 16(1):23–43, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9769-z.

Bilican:2021:LTC

[BAN21] Kader Bilican, Valarie Akerson, and Vanashri Nargund. Learning by teaching: a case study of co-teaching to enhance nature of science pedagogy, successes, and challenges. *International Journal of Science and Mathematics Education*, 19(5):957–976, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10094-6.

Barahmand:2017:BBF

[Bar17] Ali Barahmand. The boundary between finite and infinite states through the concept of limits of sequences. *International Journal of Science and Mathematics Education*, 15(3):569–585, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9697-3.

Boone:2011:ESP

[BAV+11] William J. Boone, Sandra K. Abell, Mark J. Volkmann, Fran Arbaugh, and John K. Lannin. Evaluating selected perceptions of science and mathematics teachers in an alternative certification program. *International Journal of Science and Mathematics Education*, 9(3):551–569, June 2011.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9205-8.

Bayraktar:2009:MTP

[Bay09] Sule Bayraktar. Misconceptions of Turkish pre-service teachers about force and motion. *International Journal of Science and Mathematics Education*, 7(2):273–291, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9120-9.

Bayazit:2013:QTN

[Bay13] Ibrahim Bayazit. Quality of the tasks in the new Turkish elementary mathematics textbooks: the case of proportional reasoning. *International Journal of Science and Mathematics Education*, 11(3):651–682, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9358-8.

Bencze:2009:STD

[BB09] J. Lawrence Bencze and G. Michael Bowen. Student-teachers' dialectically developed motivation for promoting student-led science projects. *International Journal of Science and Mathematics Education*, 7(1):133–159, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9115-6.

Berg:2017:FEE

[BB17] Craig Berg and Stacy Boote. Format effects of empirically derived multiple-choice versus free-response instruments when assessing graphing abilities. *International Journal of Science and Mathematics Education*, 15(1):19–38, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9678-6.

Brown:2019:PDT

[BB19] Rachael Eriksen Brown and Christopher A. Bogiages. Professional development through STEM integration: How early career math and science teachers respond to experiencing integrated STEM tasks. *International Journal of Science and Mathematics Education*, 17(1):111–128, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9863-x`.

Babai:2006:IIP

[BBST06] Reuven Babai, Tali Brecher, Ruth Stavy, and Dina Tirosh. Intuitive interference in probabilistic reasoning. *International Journal of Science and Mathematics Education*, 4 (4):627–639, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9031-1`.

Berti:2017:TGC

[BBT17] Anna Emilia Berti, Valentina Barbetta, and Laura Toneatti. Third-graders' conceptions about the origin of species before and after instruction: an exploratory study. *International Journal of Science and Mathematics Education*, 15(2):215–232, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9679-5`.

Boublil:2024:DIE

[BBT24] Shachar Boublil, David Blair, and David F. Treagust. Design and implementation of an Einsteinian energy learning module. *International Journal of Science and Mathematics Education*, 22(1):49–72, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10348-5`.

Brunton:2005:ETE

[BC05] Margaret Brunton and Richard K. Coll. Enhancing technology education by forming links with industry: A New Zealand case study. *International Journal of Science and Mathematics Education*, 3(1):141–166, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-1516-1`; `http://link.springer.com/content/pdf/10.1007/s10763-004-1516-1.pdf`.

Baldino:2006:IDH

[BC06] Roberto Ribeiro Baldino and Tânia Cristina B. Cabral. Inclusion and diversity from Hegelylacan point of view: Do we desire our desire for change? *International Journal of Science and Mathematics Education*, 4(1):19–43, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9004-9.

Biddlecomb:2011:LSD

[BC11] Barry Biddlecomb and Martha Carr. A longitudinal study of the development of mathematics strategies and underlying counting schemes. *International Journal of Science and Mathematics Education*, 9(1):1–24, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9202-y.

Buntting:2006:SVC

[BCC06] Cathy Buntting, Richard Kevin Coll, and Alison Campbell. Student views of concept mapping use in introductory tertiary biology classes. *International Journal of Science and Mathematics Education*, 4(4):641–668, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9014-7.

Brendefur:2022:EMP

[BCO22] Jonathan Brendefur, Joe Champion, and Richard D. Osguthorpe. The effects of mathematics professional development on elementary student achievement. *International Journal of Science and Mathematics Education*, 20(6):1079–1097, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10184-z.

Borko:2021:LLA

[BCV21] Hilda Borko, Janet Carlson, and Anthony Muro Villa. Learning to lead: an approach to mathematics teacher leader development. *International Journal of Science and Mathematics Education*, 19(S1):121–143, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL https://link.springer.com/article/10.1007/s10763-021-10157-2.

Bayindir:2025:FEW

[BDK25] Nermin Bayindir, Ayse T. Dede, and Kadir Kocaman. A framework to examine the ways mathematics teachers participate in and support collective argumentation. *International Journal of Science and Mathematics Education*, 23(5):1369–1399, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10522-x.

Bingolbali:2021:KSD

[BDM21] Erhan Bingolbali, Gokhan Demir, and John D. Monaghan. Knowledge of sets: a didactic phenomenon. *International Journal of Science and Mathematics Education*, 19(6):1187–1208, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10106-5.

Baptista:2016:POL

[BdSSC16] Geilsa Costa Santos Baptista, Rodrigo da Silva Santos, and William W. Cobern. Perspectives on the origins of life in science textbooks from a Christian publisher: Implications for teaching science. *International Journal of Science and Mathematics Education*, 14(2s):309–326, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9641-6.

Belova:2016:GTV

[BE16] Nadja Belova and Ingo Eilks. German teachers' views on promoting scientific media literacy using advertising in the science classroom. *International Journal of Science and Mathematics Education*, 14(7):1233–1254, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9650-5.

Balta:2017:CDT

[BE17] Nuri Balta and Ali Eryılmaz. Counterintuitive dynamics test. *International Journal of Science and Mathematics Education*, 15(3):411–431, March 2017. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9694-6.

Beaudine:2022:MRI

[Bea22] Gregory Beaudine. Mathematical reading: Investigating the reading comprehension strategies implemented by middle school students. *International Journal of Science and Mathematics Education*, 20(S1):187–213, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10287-1.

Belova:2015:ERP

[BEF15] Nadja Belova, Ingo Eilks, and Timo Feierabend. The evaluation of role-playing in the context of teaching climate change. *International Journal of Science and Mathematics Education*, 13(1s):165–190, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9477-x.

Berger:2019:RMT

[Ber19] Margot Berger. Reading mathematics text: a study of two empirical readings. *International Journal of Science and Mathematics Education*, 17(2):385–404, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9867-6.

Beswick:2011:EPC

[Bes11a] Kim Beswick. Erratum to: Putting context in context: an examination of the evidence for the benefits of 'contextualised' tasks. *International Journal of Science and Mathematics Education*, 9(6):1485–1486, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9323-y; http://link.springer.com/content/pdf/10.1007/s10763-011-9323-y.pdf. See [Bes11b].

Beswick:2011:PCC

[Bes11b] Kim Beswick. Putting context in context: an examination of the evidence for the benefits of 'contextualised' tasks.

International Journal of Science and Mathematics Education, 9(2):367–390, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9270-z. See erratum [Bes11a].

Babai:2012:PIC

[BES12] Reuven Babai, Rachel Rosanne Eidelman, and Ruth Stavy. Preactivation of inhibitory control mechanisms hinders intuitive reasoning. *International Journal of Science and Mathematics Education*, 10(4):763–775, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9287-y.

Bofferding:2019:MLD

[BF19] Laura Bofferding and Sherri Farmer. Most and least: Differences in integer comparisons based on temperature comparison language. *International Journal of Science and Mathematics Education*, 17(3):545–563, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9880-4.

Buchele:2023:CSM

[BF23] Stefan Büchele and Frank Feudel. Changes in students' mathematical competencies at the beginning of higher education within the last decade at a German university. *International Journal of Science and Mathematics Education*, 21(8):2325–2347, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10350-x.

Badillo:2015:ARY

[BFE15] Edelmira Badillo, Vicenç Font, and Mequè Edo. Analyzing the responses of 7–8 year olds when solving partitioning problems. *International Journal of Science and Mathematics Education*, 13(4):811–836, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9495-8.

Baranovich:2019:PSM

[BFH19] Diana-Lea Baranovich, Pei-Chin Fong, and Fonny Hutagalung. Parental scaffolding in mathematics homework among Malaysian private preschoolers: a case study. *International Journal of Science and Mathematics Education*, 17(1):173–196, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9850-2.

Bergeron:2017:ESP

[BG17] Liz Bergeron and Melissa Gordon. Establishing a STEM pipeline: Trends in male and female enrollment and performance in higher level secondary STEM courses. *International Journal of Science and Mathematics Education*, 15(3):433–450, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9693-7.

Burgos:2022:AEA

[BG22] Maria Burgos and Juan D. Godino. Assessing the epistemic analysis competence of prospective primary school teachers on proportionality tasks. *International Journal of Science and Mathematics Education*, 20(2):367–389, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10143-0.

Bofferding:2023:UIW

[BHA+23] Laura Bofferding, Ana-Maria Haiduc, Mahtob Aqazade, Lizhen Chen, and Sezai Kocabas. Using incorrect worked examples to investigate the consistency of first and third graders' measurement conceptions. *International Journal of Science and Mathematics Education*, 21(6):1913–1934, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10334-x.

Blomeke:2015:TCD

[BHD+15] Sigrid Blömeke, Jessica Hoth, Martina Döhrmann, Andreas Busse, Gabriele Kaiser, and Johannes König. Teacher change during induction: Development of beginning primary teachers' knowledge, beliefs and performance. *International Journal of Science and Mathematics Education*, 13(2):287–308, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9619-4.

Budiman:2014:ECC

[BHMO14] Zainol Badli Budiman, Lilia Halim, Subahan Mohd Meerah, and Kamisah Osman. The effects of cognitive conflict management on cognitive development and science achievement. *International Journal of Science and Mathematics Education*, 12(5):1169–1195, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9460-6.

Blomeke:2013:ISI

[BHS13] Sigrid Blömeke, Feng-Jui Hsieh, and William H. Schmidt. Introduction to this special issue. *International Journal of Science and Mathematics Education*, 11(4):789–793, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9432-x; http://link.springer.com/content/pdf/10.1007/s10763-013-9432-x.pdf.

Bahi:2015:THA

[BHS15] Saïd Bahi, Devin Higgins, and Patrick Staley. A time hazard analysis of student persistence: a us university undergraduate mathematics major experience. *International Journal of Science and Mathematics Education*, 13(5):1139–1160, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9538-9.

Battisti:2010:UIR

[BHSC10] Bryce Thomas Battisti, Nikki Hanegan, Richard Sudweeks, and Rex Cates. Using item response theory to conduct a distracter analysis on conceptual inventory of natural selection. *International Journal of Science and Mathematics Education*, 8(5):845–868, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9189-4.

Bitzenbauer:2024:ERB

[BHV+24] Philipp Bitzenbauer, Sebastian Höfler, Joaquin M. Veith, Bianca Winkler, Tim Zenger, and Christoph Kulgemeyer.

Exploring the relationship between surface features and explaining quality of YouTube explanatory videos. *International Journal of Science and Mathematics Education*, 22(1): 25–48, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10351-w.

Biza:2020:GSF

[BHWM20] Irene Biza, Dave Hewitt, Anne Watson, and John Mason. Generalization strategies in finding the n-th term rule for simple quadratic sequences. *International Journal of Science and Mathematics Education*, 18(6):1105–1126, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10009-0; http://link.springer.com/content/pdf/10.1007/s10763-019-10009-0.pdf.

Bilgin:2006:PPS

[Bil06] Ibrahim Bilgin. Promoting pre-service elementary students' understanding of chemical equilibrium through discussions in small groups. *International Journal of Science and Mathematics Education*, 4(3):467–484, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9015-6.

Bindis:2020:LSO

[Bin20] Michael Bindis. "I love science": Opinions of secondary school females toward science and science careers. *International Journal of Science and Mathematics Education*, 18 (8):1655–1671, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10036-x.

BouJaoude:2010:IPM

[BJ10] Saouma B. BouJaoude and Murad E. Jurdak. Integrating physics and math through microcomputer-based laboratories (MBL): effects on discourse type, quality, and mathematization. *International Journal of Science and Mathematics Education*, 8(6):1019–1047, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9219-2.

Basyal:2023:CDM

[BJT23] Deepak Basyal, Dustin L. Jones, and Mohan Thapa. Cognitive demand of mathematics tasks in Nepali middle school mathematics textbooks. *International Journal of Science and Mathematics Education*, 21(3):863–879, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10269-3`.

Blomeke:2013:WSE

[BK13a] Sigrid Blömeke and Patricia Klein. When is a school environment perceived as supportive by beginning mathematics teachers? Effects of leadership, trust, autonomy and appraisal on teaching quality. *International Journal of Science and Mathematics Education*, 11(4):1029–1048, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9424-x`.

Buchholtz:2013:IMT

[BK13b] Nils Buchholtz and Gabriele Kaiser. Improving mathematics teacher education in Germany: empirical results from a longitudinal evaluation of innovative programs. *International Journal of Science and Mathematics Education*, 11(4):949–977, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9427-7`.

Blomeke:2015:PSI

[BKC15] Sigrid Blömeke, Gabriele Kaiser, and David Clarke. Preface for the special issue on "Video-Based research on teacher expertise". *International Journal of Science and Mathematics Education*, 13(2):257–266, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9629-2; http://link.springer.com/content/pdf/10.1007/s10763-015-9629-2.pdf`.

Bastian:2024:LBE

[BKMK24] Anton Bastian, Gabriele Kaiser, Dennis Meyer, and Johannes König. The link between expertise, the cognitive demands of teacher noticing and, experience in teaching mathematics in secondary schools. *International Journal of Sci-*

ence and Mathematics Education, 22(2):257–282, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10374-x.

Bleicher:2009:EVR

[BL09] Robert E. Bleicher and Joan S. Lindgren. Erratum: Variable relationships among different science learners in elementary science-methods courses. *International Journal of Science and Mathematics Education*, 7(4):849, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9161-3; http://link.springer.com/content/pdf/10.1007/s10763-009-9161-3.pdf. See [Ble09].

Bosser:2021:TCD

[BL21] Ulrika Bossér and Mats Lindahl. Teachers' coordination of dialogic and authoritative discourses promoting specific goals in socioscientific issue–based teaching. *International Journal of Science and Mathematics Education*, 19(3):461–482, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10061-1; http://link.springer.com/content/pdf/10.1007/s10763-020-10061-1.pdf.

Black:2004:STE

[Bla04] Kathie Black. Science in the trenches: An exploration of four pre-service teachers' first attempts at teaching science in the classroom. *International Journal of Science and Mathematics Education*, 2(1):25–44, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Bleicher:2009:VRA

[Ble09] Robert E. Bleicher. Variable relationships among different science learners in elementary science-methods courses. *International Journal of Science and Mathematics Education*, 7(2):293–313, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9121-8. See erratum [BL09].

Babalola:2020:RAS

[BLS20] Femi E. Babalola, Robert J. Lambourne, and Stephen J. Swithenby. The real aims that shape the teaching of practical physics in Sub-Saharan Africa. *International Journal of Science and Mathematics Education*, 18(2):259–278, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09962-7; http://link.springer.com/content/pdf/10.1007/s10763-019-09962-7.pdf`.

Benjamin:2017:DVS

[BMD+17] Thomas E. Benjamin, Bryant Marks, Melissa K. Demetrikopoulos, Jordan Rose, Ethen Pollard, Alicia Thomas, and Lycurgus L. Muldrow. Development and validation of scientific literacy scale for college preparedness in STEM with freshmen from diverse institutions. *International Journal of Science and Mathematics Education*, 15(4):607–623, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9710-x`.

Bernabeu:2024:PCL

[BML24] Melania Bernabeu, Mar Moreno, and Salvador Llinares. Polygon class learning opportunities: Interplay between teacher's moves, Children's geometrical thinking, and geometrical task. *International Journal of Science and Mathematics Education*, 22(6):1381–1403, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10425-3`.

Blonder:2016:LAT

[BMN16] Ron Blonder and Rachel Mamlok-Naaman. Learning about teaching the extracurricular topic of nanotechnology as a vehicle for achieving a sustainable change in science education. *International Journal of Science and Mathematics Education*, 14(3):345–372, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9579-0`.

Bryant:2015:IBA

[BNH+15] Peter Bryant, Terezinha Nunes, Judith Hillier, Claire Gilroy, and Rossana Barros. The importance of being able to deal with variables in learning science. *International Journal of Science and Mathematics Education*, 13(1s):145–163, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9469-x.

Biber:2023:TNS

[BÖL23] Belma Türker Biber, İffet Elif Yetkin Özdemir, and Richard Lesh. Teacher noticing of students' thinking in the context of mathematical modeling activities related to statistics. *International Journal of Science and Mathematics Education*, 21(6):1797–1818, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10328-9.

Beerenwinkel:2011:CCT

[BPG11] Anne Beerenwinkel, Ilka Parchmann, and Cornelia Gräsel. Conceptual change texts in chemistry teaching: a study on the particle model of matter. *International Journal of Science and Mathematics Education*, 9(5):1235–1259, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9257-9.

Boubonari:2024:CGP

[BPMK24] Theodora Boubonari, Despoina-Niovi Papazoglou, Athanasios Mogias, and Theodoros Kevrekidis. Challenging Greek primary students' knowledge of ocean acidification using the carbon cycle context. *International Journal of Science and Mathematics Education*, 22(6):1265–1288, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10431-5.

Baumanns:2024:PRP

[BPPD+24] Lukas Baumanns, Demetra Pitta-Pantazi, Eleni Demosthenous, Achim J. Lilienthal, Constantinos Christou, and Maike Schindler. Pattern-recognition processes of first-grade students: An explorative eye-tracking study. *International*

Journal of Science and Mathematics Education, 22(8):1663–1682, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10441-x`.

Baumanns:2023:IMB

[BR23] Lukas Baumanns and Benjamin Rott. Identifying metacognitive behavior in problem-posing processes. *International Journal of Science and Mathematics Education*, 21(5):1381–1406, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10297-z`.

Bragg:2012:TEM

[Bra12] Leicha A. Bragg. Testing the effectiveness of mathematical games as a pedagogical tool for children's learning. *International Journal of Science and Mathematics Education*, 10 (6):1445–1467, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9349-9`.

Banes:2020:RPW

[BRA+20] Leslie C. Banes, Rachel M. Restani, Rebecca C. Ambrose, Heather A. Martin, and Robert Bayley. Relating performance on written assessments to features of mathematics discussion. *International Journal of Science and Mathematics Education*, 18(7):1375–1398, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10029-w`.

Blonder:2015:QBS

[BRMNH15] Ron Blonder, Shelley Rap, Rachel Mamlok-Naaman, and Avi Hofstein. Questioning behavior of students in the inquiry chemistry laboratory: differences between sectors and genders in the Israeli context. *International Journal of Science and Mathematics Education*, 13(4):705–732, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9580-7`.

Brown:2022:UWT

[Bro22] Rachael Eriksen Brown. Using written teaching replays to learn what early career secondary mathematics teachers notice. *International Journal of Science and Mathematics Education*, 20(8):1635–1657, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10220-y.

Bogdanovic:2022:RBE

[BRR+22] Ivana Z. Bogdanović, Dušica D. Rodić, Tamara N. Rončević, Jelena D. Stanisavljević, and Zekri A. M. Zouhor. The relationship between elementary students' physics performance and metacognition regarding using modified know–want-learn strategy. *International Journal of Science and Mathematics Education*, 20(8):1907–1926, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10231-9.

Bronkhorst:2020:LRF

[BRSG20] Hugo Bronkhorst, Gerrit Roorda, Cor Suhre, and Martin Goedhart. Logical reasoning in formal and everyday reasoning tasks. *International Journal of Science and Mathematics Education*, 18(8):1673–1694, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10039-8; http://link.springer.com/content/pdf/10.1007/s10763-019-10039-8.pdf.

Broman:2015:USS

[BS15] Karolina Broman and Shirley Simon. Upper secondary school students' choice and their ideas on how to improve chemistry education. *International Journal of Science and Mathematics Education*, 13(6):1255–1278, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9550-0.

Bandang:2014:ACL

[BSA+14] M. Adlim Bandang, Soewarno S, Hasbi Ali, Armia Ibrahim, Hasmunir Umar, Khairil Ismail, Usman A. Gani, Ishak Hasan, and Burhanuddin Yasin. Assessing chemistry-learning competencies of students in isolated rural senior high schools by using the national examination: a case study of Simeulue Island, Indonesia. *International Journal of Science and Mathematics Education*, 12(4):817–839, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9440-x`.

Blomeke:2013:ASW

[BSD13] Sigrid Blömeke, Ute Suhl, and Martina Döhrmann. Assessing strengths and weaknesses of teacher knowledge in Asia, Eastern Europe, and Western countries: differential item functioning in TEDS-M. *International Journal of Science and Mathematics Education*, 11(4):795–817, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9413-0`.

Basheer:2023:EPS

[BSG+23] Ahmad Basheer, Ayshi Sindiani, Ozcan Gulacar, Ingo Eilks, and Muhamad Hugerat. Exploring pre- and in-service science teachers' green chemistry and sustainability awareness and their attitudes towards environmental education in Israel. *International Journal of Science and Mathematics Education*, 21(5):1639–1659, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10318-x`.

Baruch:2016:PSV

[BSLM16] Yael Kesner Baruch, Ornit Spektor-Levy, and Nira Mashal. Pre-schoolers' verbal and behavioral responses as indicators of attitudes and scientific curiosity. *International Journal of Science and Mathematics Education*, 14(1):125–148, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9573-6`.

Buma:2024:EDQ

[BSR24] Anastasia Malong Buma, Doras Sibanda, and Marissa Rollnick. Exploring the development of the quality of topic specific pedagogical content knowledge in planning: the case of grade 8 natural sciences teachers. *International Journal of Science and Mathematics Education*, 22(2):399–418, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10355-0`.

Bravo-Torija:2018:DIL

[BTJA18] Beatriz Bravo-Torija and María-Pilar Jiménez-Aleixandre. Developing an initial learning progression for the use of evidence in decision-making contexts. *International Journal of Science and Mathematics Education*, 16(4):619–638, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9803-9`.

Baram-Tsabari:2011:QGG

[BTY11] Ayelet Baram-Tsabari and Anat Yarden. Quantifying the gender gap in science interests. *International Journal of Science and Mathematics Education*, 9(3):523–550, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9194-7`.

Bursal:2010:TPE

[Bur10] Murat Bursal. Turkish preservice elementary teachers' self-efficacy beliefs regarding mathematics and science teaching. *International Journal of Science and Mathematics Education*, 8(4):649–666, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9179-6`.

Buscher:2025:DSC

[Büs25] Carina Büscher. Differences in students' computational thinking activities when designing an algorithm for drawing plane figures. *International Journal of Science and Mathematics Education*, 23(2):365–386, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10465-3`.

Berisha:2024:IIS

[BV24] Fatlume Berisha and Eda Vula. Introduction of integrated STEM education to pre-service teachers through collaborative action research practices. *International Journal of Science and Mathematics Education*, 22(5):1127–1150, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10417-3`.

Burny:2013:CSA

[BVDV13] Elise Burny, Martin Valcke, Annemie Desoete, and Johannes E. Hans Van Luit. Curriculum sequencing and the acquisition of clock-reading skills among Chinese and Flemish children. *International Journal of Science and Mathematics Education*, 11(3):761–785, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9362-z`.

Berlin:2010:PMS

[BW10] Donna F. Berlin and Arthur L. White. Preservice mathematics and science teachers in an integrated teacher preparation program for grades 7–12: a 3-year study of attitudes and perceptions related to integration. *International Journal of Science and Mathematics Education*, 8(1):97–115, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9164-0`.

Beumann:2025:IFG

[BWB25] Sarah Beumann, Dirk Weber, and Ralf Benölken. Identifying and fostering giftedness in students with disabilities — potential barriers in identification and support from a mathematics educational perspective. *International Journal of Science and Mathematics Education*, 23(6):2027–2059, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-025-10587-2`.

Belland:2019:ECR

[BWK+19] Brian R. Belland, D. Mark Weiss, Nam Ju Kim, Jacob Piland, and Jiangyue Gu. An examination of credit recovery students' use of computer-based scaffolding in a problem-based, scientific inquiry unit. *International Journal of Science and Mathematics Education*, 17(2):273–293, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9872-9`.

Bottomley:2024:GSC

[BWM+24] Ewan Bottomley, Vivienne Wild, Paula J. Miles, Kenneth I. Mavor, and Antje Kohnle. Gender and the social cure in undergraduate physics students: Physics identity, self-efficacy, belonging, and wellbeing. *International Journal of Science and Mathematics Education*, 22(4):721–735, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10406-6`.

Brown:2020:MTU

[BWO20] Rachael Eriksen Brown, Travis Weiland, and Chandra Hawley Orrill. Mathematics teachers' use of knowledge resources when identifying proportional reasoning situations. *International Journal of Science and Mathematics Education*, 18 (6):1085–1104, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10006-3`.

Babai:2010:EIA

[BZST10] Reuven Babai, Hanna Zilber, Ruth Stavy, and Dina Tirosh. The effect of intervention on accuracy of students' responses and reaction times to geometry problems. *International Journal of Science and Mathematics Education*, 8(1):185–201, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9169-8`.

Cataloglu:2014:ECS

[CA14] Erdat Cataloglu and Salih Ates. The effects of cognitive styles on naïve impetus theory application degrees of pre-service science teachers. *International Journal of Science and Mathematics Education*, 12(4):699–719, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9430-z`.

Caymaz:2021:ECK

[CA21] Belkiz Caymaz and Abdullah Aydin. The effect of common knowledge construction model-based instruction on 7th grade students' academic achievement and their views about the nature of science in the electrical energy unit at schools of different socio-economic levels. *International Journal of Science and Mathematics Education*, 19(2):233–265, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10054-0`.

Carter:2024:UNE

[CA24] Ingrid S. Carter and Valarie L. Akerson. Using notebooks to explicitly distinguish multiple perspectives in the elementary science methods course. *International Journal of Science and Mathematics Education*, 22(6):1215–1238, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10430-6.

Coll:2006:IFY

[CABR06] Richard Kevin Coll, Sadaquat Ali, John Bonato, and David Rohindra. Investigating first-year chemistry learning difficulties in the South Pacific: A case study from Fiji. *International Journal of Science and Mathematics Education*, 4 (3):365–390, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9007-6.

Calik:2007:EPS

[ÇAC07] Muammer Çalik, Alipaşa Ayas, and Richard Kevin Coll. Enhancing pre-service elementary teachers' conceptual understanding of solution chemistry with conceptual change text. *International Journal of Science and Mathematics Education*, 5(1):1–28, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9016-5.

Calik:2009:IEA

[ÇAC09] Muammer Çalik, Alipaşa Ayas, and Richard K. Coll. Investigating the effectiveness of an analogy activity in improving students' conceptual change for solution chemistry concepts. *International Journal of Science and Mathematics Education*, 7(4):651–676, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9136-9.

Cankoy:2014:IPP

[Can14] Osman Cankoy. Interlocked problem posing and children's problem posing performance in free structured situations. *International Journal of Science and Mathematics Education*, 12(1):219–238, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9433-9.

Cepni:2024:EIM

[CAY+24] Salih Cepni, Mirac Aydin, Kubra Ada Yildiz, Salih Birisci, Cem Ozkan, and Cemal Yalabuk. Examining the impact of modified P3 task taxonomy-enriched educational robotics PD program on teachers' STEM content knowledge. *International Journal of Science and Mathematics Education*, 22 (S1):81–110, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10475-1`.

Can:2016:SCL

[CB16] Hatice Belge Can and Yezdan Boz. Structuring cooperative learning for motivation and conceptual change in the concepts of mixtures. *International Journal of Science and Mathematics Education*, 14(4):635–657, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9602-5`.

Coertjens:2010:DSM

[CBDV10] Liesje Coertjens, Jelle Boeve-de Pauw, Sven De Maeyer, and Peter Van Petegem. Do schools make a difference in their students' environmental attitudes and awareness? Evidence from Pisa 2006. *International Journal of Science and Mathematics Education*, 8(3):497–522, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9200-0`.

Clough:2009:PES

[CBO09] Michael P. Clough, Craig A. Berg, and Joanne K. Olson. Promoting effective science teacher education and science teaching: a framework for teacher decision-making. *International Journal of Science and Mathematics Education*, 7(4):821–847, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-008-9146-7`.

Coskun:2021:SPT

[CBR21] Sumeyra Dogan Coskun, Mine Isiksal Bostan, and Tim Rowland. An in-service primary teacher's responses to unexpected moments in the mathematics classroom. *International*

Journal of Science and Mathematics Education*, 19(1):193–213, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10050-4.

Cole:2012:AMM

[CBT+12] Renee Cole, Nicole Becker, Marcy Towns, George Sweeney, Megan Wawro, and Chris Rasmussen. Adapting a methodology from mathematics education research to chemistry education research: documenting collective activity. *International Journal of Science and Mathematics Education*, 10 (1):193–211, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9284-1.

Cibik:2025:ECC

[ÇBY25] Naz Fulya Çibik and Burçak Boz-Yaman. The effect of a cross-curricular course on pre-service teachers' sustainable development attitudes and mathematical modeling self-efficacy beliefs. *International Journal of Science and Mathematics Education*, 23(4):1033–1056, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10497-9.

Chang:2005:DAA

[CC05] Shu-Nu Chang and Mei-Hung Chiu. The development of authentic assessments to investigate ninth graders' scientific literacy: In the case of scientific cognition concerning the concepts of chemistry and physics. *International Journal of Science and Mathematics Education*, 3(1):117–140, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-5239-0; http://link.springer.com/content/pdf/10.1007/s10763-004-5239-0.pdf.

Chen:2014:STS

[CC14] Junjun Chen and Bronwen Cowie. Scientists talking to students through videos. *International Journal of Science and Mathematics Education*, 12(2):445–465, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9415-y.

Chen:2016:CSE

[CC16] Cheng-Huan Chen and Chiung-Hui Chiu. Collaboration scripts for enhancing metacognitive self-regulation and mathematics literacy. *International Journal of Science and Mathematics Education*, 14(2):263–280, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9681-y.

Chien:2018:DLO

[CC18] Yu-Hung Chien and Po-Ying Chu. The different learning outcomes of high school and college students on a 3D-printing STEAM engineering design curriculum. *International Journal of Science and Mathematics Education*, 16(6):1047–1064, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9832-4.

Carreno:2022:IPA

[CCAG22] María José Carreño, Juan C. Castro-Alonso, and María José Gallardo. Interest in physics after experimental activities with a mobile application: Gender differences. *International Journal of Science and Mathematics Education*, 20(8):1841–1857, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10228-4.

Cheng:2025:AME

[CCC25] Ya-Wen Cheng, Cheng-Huan Chen, and Nian-Shing Chen. Adopting maker education: a comparative analysis of intentions between in-service and pre-service STEM teachers. *International Journal of Science and Mathematics Education*, 23(6):1855–1881, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10547-w.

Chalmers:2017:IBI

[CCCN17] Christina Chalmers, Merilyn (Lyn) Carter, Tom Cooper, and Rod Nason. Implementing "Big ideas" to advance the teaching and learning of science, technology, engineering, and mathematics (STEM). *International Journal of Science and Mathematics Education*, 15(1s):25–43, May 2017.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9799-1`.

Chang:2011:DCS

[CCG+11] Huey-Por Chang, Chin-Chang Chen, Gwo-Jen Guo, Yeong-Jin Cheng, Chen-Yung Lin, and Tsung-Hau Jen. The development of a competence scale for learning science: inquiry and communication. *International Journal of Science and Mathematics Education*, 9(5):1213–1233, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9256-x`; `http://link.springer.com/content/pdf/10.1007/s10763-010-9256-x.pdf`.

Chen:2022:HSR

[CCL22] Shih-Yeh Chen, Cyong-Huei Chen, and Shiang-Yao Liu. History of science reading materials as everyday homework to improve middle school students' epistemological beliefs about science. *International Journal of Science and Mathematics Education*, 20(S1):69–92, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10285-3`.

Chen:2012:EGM

[CCN+12] Chang-Hua Chen, Michele D. Crockett, Takayuki Namikawa, Johndamaseni Zilimu, and Sun Hee Lee. Eighth grade mathematics teachers' formative assessment practices in SES-different classrooms: a Taiwan study. *International Journal of Science and Mathematics Education*, 10(3):553–579, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9299-7`.

Chang:2016:CMR

[CCT16] Briana L. Chang, Jennifer G. Cromley, and Nhi Tran. Coordinating multiple representations in a reform calculus textbook. *International Journal of Science and Mathematics Education*, 14(8):1475–1497, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9652-3`.

Callingham:2016:ESA

[CCW16] Rosemary Callingham, Colin Carmichael, and Jane M. Watson. Explaining student achievement: the influence of teachers' pedagogical content knowledge in statistics. *International Journal of Science and Mathematics Education*, 14 (7):1339–1357, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9653-2.

Cheng:2015:LES

[CCWL15] Ming-Chang Cheng, Pei-I Chou, Ya-Ting Wang, and Chih-Ho Lin. Learning effects of a science textbook designed with adapted cognitive process principles on grade 5 students. *International Journal of Science and Mathematics Education*, 13(3):467–488, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9471-3.

Can:2023:ATB

[CD23] Derya Can and Burcu Durmaz. An analysis of teachers' beliefs about the integration of children's literature into the mathematics education. *International Journal of Science and Mathematics Education*, 21(2):489–512, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10255-9.

Canu:2016:SUE

[CdHD16] Michaël Canu, Cécile de Hosson, and Mauricio Duque. Students' understanding of equilibrium and stability: the case of dynamic systems. *International Journal of Science and Mathematics Education*, 14(1):101–123, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9565-6.

Chhokar:2011:ISS

[CDT+11] Kiran Chhokar, Shweta Dua, Neil Taylor, Edward Boyes, and Martin Stanisstreet. Indian secondary students' views about global warming: beliefs about the usefulness of actions and willingness to act. *International Journal of Science and Mathematics Education*, 9(5):1167–1188, October

2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9254-z.

Chinnappan:2012:KUC

[CEB12] Mohan Chinnappan, Madduma B. Ekanayake, and Christine Brown. Knowledge use in the construction of geometry proof by Sri Lankan students. *International Journal of Science and Mathematics Education*, 10(4):865–887, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9298-8.

Ceglie:2021:SFS

[Ceg21] Robert Ceglie. Science faculty's support for underrepresented students: Building science capital. *International Journal of Science and Mathematics Education*, 19(4):661–679, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10090-w.

Cooper:2022:RGS

[CFC22] Rebecca Cooper, Angela Fitzgerald, and Jared Carpendale. A reading group for science educators: an approach for developing personal and collective pedagogical content knowledge in science education. *International Journal of Science and Mathematics Education*, 20(S1):117–139, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10260-y.

Copur-Gencturk:2022:TKF

[CG22] Yasemin Copur-Gencturk. Teachers' knowledge of fraction magnitude. *International Journal of Science and Mathematics Education*, 20(5):1021–1036, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10173-2.

Copur-Gencturk:2023:CLT

[CGBD23] Yasemin Copur-Gencturk, Clare Baek, and Tenzin Doleck. A closer look at teachers' proportional reasoning. *International Journal of Science and Mathematics Education*, 21(1):113–129, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10249-7.

Cabello-Garrido:2018:DHN

[CGERBL18] Aurelio Cabello-Garrido, Enrique España-Ramos, and Ángel Blanco-López. Developing a human nutrition learning progression. *International Journal of Science and Mathematics Education*, 16(7):1269–1289, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9838-y.

Copur-Gencturk:2022:TAF

[CGÖ22] Yasemin Copur-Gencturk and İbrahim Burak Ölmez. Teachers' attention to and flexibility with referent units. *International Journal of Science and Mathematics Education*, 20 (6):1123–1139, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10186-x.

Canadas:2013:SPM

[CGR13] María C. Cañadas, Pedro Gómez, and Luis Rico. Structure of primary mathematics teacher education programs in Spain. *International Journal of Science and Mathematics Education*, 11(4):879–894, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9422-z.

Christenson:2017:SLT

[CGR17] Nina Christenson, Niklas Gericke, and Shu-Nu Chang Rundgren. Science and language teachers' assessment of upper secondary students' socioscientific argumentation. *International Journal of Science and Mathematics Education*, 15(8):1403–1422, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9746-6.

Copur-Gencturk:2021:KTO

[CGTQ21] Yasemin Copur-Gencturk, Ian Thacker, and David Quinn. K–8 teachers' overall and gender-specific beliefs about mathematical aptitude. *International Journal of Science and Mathematics Education*, 19(6):1251–1269, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-020-10104-7.

Choi:2020:SCC

[CH20] Aeran Choi and Brian Hand. Students' construct and critique of claims and evidence through online asynchronous discussion combined with in-class discussion. *International Journal of Science and Mathematics Education*, 18(6):1023–1040, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10005-4.

Chang:2010:CSE

[Cha10] Yu-Liang (Aldy) Chang. A case study of elementary beginning mathematics teachers' efficacy development. *International Journal of Science and Mathematics Education*, 8(2):271–297, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9173-z.

Chen:2016:EMS

[CHC16] Sufen Chen, Chih-Chi Huang, and Te-Lien Chou. The effect of metacognitive scaffolds on low achievers' laboratory learning. *International Journal of Science and Mathematics Education*, 14(2):281–296, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9691-9.

Cheung:2008:FCT

[Che08] Derek Cheung. Facilitating chemistry teachers to implement inquiry-based laboratory work. *International Journal of Science and Mathematics Education*, 6(1):107–130, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9102-y.

Cheng:2011:FSC

[Che11] May May Hung Cheng. Form and structure of Chinese characters and children's understanding of science. *International Journal of Science and Mathematics Education*, 9(3):731–749, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9247-y.

Cheek:2012:SUL

[Che12] Kim A. Cheek. Students' understanding of large numbers as a key factor in their understanding of geologic time. *International Journal of Science and Mathematics Education*, 10 (5):1047–1069, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9312-1`.

Chen:2014:UTD

[Che14] Qian Chen. Using TIMSS 2007 data to build mathematics achievement model of fourth graders in Hong Kong and Singapore. *International Journal of Science and Mathematics Education*, 12(6):1519–1545, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9505-x`.

Chin:2004:MER

[Chi04] Chi-Chin Chin. Museum experience — a resource for science teacher education. *International Journal of Science and Mathematics Education*, 2(1):63–90, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Chiu:2009:ATC

[Chi09] Mei-Shiu Chiu. Approaches to the teaching of creative and non-creative mathematical problems. *International Journal of Science and Mathematics Education*, 7(1):55–79, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9112-9`.

Chiu:2012:DPP

[Chi12a] Mei-Shiu Chiu. Differential psychological processes underlying the skill-development model and self-enhancement model across mathematics and science in 28 countries. *International Journal of Science and Mathematics Education*, 10(3):611–642, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9309-9`.

Chiu:2012:IAT

[Chi12b] Mei-Shiu Chiu. Identification and assessment of Taiwanese children's conceptions of learning mathematics. *International*

Journal of Science and Mathematics Education, 10(1):163–191, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9283-2`.

Chou:2021:RGI

[Cho21] Pei-I Chou. The representation of global issues in Taiwanese elementary school science textbooks. *International Journal of Science and Mathematics Education*, 19(4):727–745, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10083-9`.

Crippen:2023:UES

[CIBP23] Kent J. Crippen, Lorelie Imperial, Charlotte A. Bolch, and Corey A. Payne. Undergraduate engineering students' subjective task value beliefs for modeling problems in chemistry. *International Journal of Science and Mathematics Education*, 21(4):1103–1125, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10305-2`.

Chiu:2023:USD

[CIZ+23] Thomas K. F. Chiu, Murod Ismailov, Xinyan Zhou, Qi Xia, Cheuk Kwan Au, and Ching Sing Chai. Using self-determination theory to explain how community-based learning fosters student interest and identity in integrated STEM education. *International Journal of Science and Mathematics Education*, 21(S1):109–130, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10382-x`.

Cai:2017:APP

[CJ17] Jinfa Cai and Chunlian Jiang. An analysis of problem-posing tasks in Chinese and US elementary mathematics textbooks. *International Journal of Science and Mathematics Education*, 15(8):1521–1540, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9758-2`.

Cowie:2011:RES

[CJOC11] Bronwen Cowie, Alister Jones, and Kathrin Otrel-Cass. Re-engaging students in science: issues of assessment, funds of knowledge and sites for learning. *International Journal of Science and Mathematics Education*, 9(2):347–366, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9229-0.

Carlisle:2025:IPD

[CJSjK25] William Reid Carlisle, Hyunyi Jung, Kayla Sutcliffe, and Hee jeong Kim. Insights into pothole damage: Exploring culturally responsive mathematical modeling. *International Journal of Science and Mathematics Education*, 23(4):1013–1032, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10492-0.

Cepni:2006:TSC

[ÇK06] Salih Çepni and Esra Keleş. Turkish students' conceptions about the simple electric circuits. *International Journal of Science and Mathematics Education*, 4(2):269–291, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9001-z.

Cheema:2014:IDC

[CK14] Jehanzeb R. Cheema and Anastasia Kitsantas. Influences of disciplinary classroom climate on high school student self-efficacy and mathematics achievement: a look at gender and racial–ethnic differences. *International Journal of Science and Mathematics Education*, 12(5):1261–1279, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9454-4.

Cevikbas:2022:SEF

[CK22] Mustafa Cevikbas and Gabriele Kaiser. Student engagement in a flipped secondary mathematics classroom. *International Journal of Science and Mathematics Education*, 20(7):1455–1480, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10213-x.

Calik:2025:EIT

[ÇK25] Muammer Çalik and Sevil Kurt. The effect of interventions teaching chemical kinetics on students' academic performance: a meta-analysis study. *International Journal of Science and Mathematics Education*, 23(6):1519–1544, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10523-w`.

Choi:2015:SDI

[CKH15] Aeran Choi, Vanessa Klein, and Susan Hershberger. Success, difficulty, and instructional strategy to enact an argument-based inquiry approach: experiences of elementary teachers. *International Journal of Science and Mathematics Education*, 13(5):991–1011, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9525-1`.

Chen:2010:ICC

[CL10] Xi Chen and Yeping Li. Instructional coherence in Chinese mathematics classroom — a case study of lessons on fraction division. *International Journal of Science and Mathematics Education*, 8(4):711–735, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9182-y`.

Chen:2020:CCS

[CL20] Szu-Yu Chen and Su-Wei Lin. A cross-cultural study of mathematical achievement: from the perspectives of one's motivation and problem-solving style. *International Journal of Science and Mathematics Education*, 18(6):1149–1167, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10011-6`.

Chang:2010:ACA

[CLY10] Jen-Min Chang, Huei Lee, and Chiung-Fen Yen. Alternative conceptions about burning held by Atayal indigene students in Taiwan. *International Journal of Science and Mathematics Education*, 8(5):911–935, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-009-9192-9.

Christopoulos:2024:IVG

[CMK+24] Athanasios Christopoulos, Stylianos Mystakidis, Justyna Kurczaba, Mikko-Jussi Laakso, and Chrysostomos Stylios. Is immersion in 3D virtual games associated with mathematical ability improvement in game-based learning? *International Journal of Science and Mathematics Education*, 22(7):1479–1499, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10440-4.

Canlas:2023:VNS

[CMM23] Ian Phil Canlas and Joyce Molino-Magtolis. Views on the nature of science, beliefs, trust in the government, and COVID-19 pandemic preventive behavior among undergraduate students. *International Journal of Science and Mathematics Education*, 21(7):2143–2172, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10343-w.

Cortina:2015:WLH

[CMME15] Kai S. Cortina, Kevin F. Miller, Ryan McKenzie, and Alanna Epstein. Where low and high inference data converge: validation of class assessment of mathematics instruction using mobile eye tracking with expert and novice teachers. *International Journal of Science and Mathematics Education*, 13(2):389–403, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9610-5.

Chu:2019:TFD

[CMP19] Hye-Eun Chu, Sonya N. Martin, and Jennifer Park. A theoretical framework for developing an intercultural STEAM program for Australian and Korean students to enhance science teaching and learning. *International Journal of Science and Mathematics Education*, 17(7):1251–1266, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9922-y.

Cebesoy:2018:GLI

[CO18] Umran Betul Cebesoy and Ceren Oztekin. Genetics literacy: Insights from science teachers' knowledge, attitude, and teaching perceptions. *International Journal of Science and Mathematics Education*, 16(7):1247–1268, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9840-4`.

Can:2020:EFG

[CÖ20] Derya Can and İ Elif Yetkin Özdemir. An examination of fourth-grade elementary school students' number sense in context-based and non-context-based problems. *International Journal of Science and Mathematics Education*, 18 (7):1333–1354, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10022-3`.

Cusi:2022:DCD

[CO22] Annalisa Cusi and Shai Olsher. Design of classroom discussions and the role of the expert in fostering an effective and aware use of examples as a means of argumentation. *International Journal of Science and Mathematics Education*, 20 (7):1573–1593, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10201-1`.

Cormas:2017:PTR

[Cor17] Peter C. Cormas. Preservice teachers' reconciliation of an epistemological issue in an integrated mathematics/science methods course. *International Journal of Science and Mathematics Education*, 15(8):1463–1483, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9755-5`.

Corcoran:2018:PTR

[Cor18] Roisin P. Corcoran. Preparing teachers' to raise students' mathematics learning. *International Journal of Science and Mathematics Education*, 16(6):1169–1185, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9819-1`.

Chick:2012:TSL

[CP12] Helen L. Chick and Robyn Pierce. Teaching for statistical literacy: utilising affordances in real-world data. *International Journal of Science and Mathematics Education*, 10(2):339–362, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9303-2.

Celik:2017:GCI

[ÇP17] Harun Çelik and Hüseyin Miraç Pektaş. Graphic comprehension and interpretation skills of preservice teachers with different learning approaches in a technology-aided learning environment. *International Journal of Science and Mathematics Education*, 15(1):1–17, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9667-9.

Cheung:2024:DVR

[CPF24] Kason Ka Ching Cheung, Jack K. H. Pun, and Xuehua Fu. Development and validation of a Reading in Science Holistic Assessment (RISHA): a Rasch measurement study. *International Journal of Science and Mathematics Education*, 22(7):1537–1561, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10434-2.

Champion:2011:CAS

[CPMSW11] Joe Champion, Frieda Parker, Bernadette Mendoza-Spencer, and Ann Wheeler. College algebra students' attitudes toward mathematics in their careers. *International Journal of Science and Mathematics Education*, 9(5):1093–1110, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9246-z.

Callejo:2022:ULM

[CPTMSM22] M. Luz Callejo, Patricia Pérez-Tyteca, Mar Moreno, and Gloria Sánchez-Matamoros. The use of a length and measurement HLT by pre-service kindergarten teachers' to notice children's mathematical thinking. *International Journal of Science and Mathematics Education*, 20(3):597–617, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-021-10163-4.

Capobianco:2022:FPE

[CRC22] Brenda M. Capobianco, Jeffrey Radloff, and Jenna Clingerman. Facilitating preservice elementary science teachers' shift from learner to teacher of engineering design-based science teaching. *International Journal of Science and Mathematics Education*, 20(4):747–767, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10193-y.

Cross:2009:COM

[Cro09] Dionne I. Cross. Creating optimal mathematics learning environments: combining argumentation and writing to enhance achievement. *International Journal of Science and Mathematics Education*, 7(5):905–930, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9144-9.

Chen:2009:ALE

[CRR09] Jung Chih Chen, Barbara J. Reys, and Robert E. Reys. Analysis of the learning expectations related to grade 1–8 measurement in some countries. *International Journal of Science and Mathematics Education*, 7(5):1013–1031, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9148-5.

Chen:2015:ESI

[CS15] Chun-Ting Chen and Hsiao-Ching She. The effectiveness of scientific inquiry with/without integration of scientific reasoning. *International Journal of Science and Mathematics Education*, 13(1):1–20, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9508-7.

Ceglie:2016:CSP

[CS16] Robert John Ceglie and John Settlage. College student persistence in scientific disciplines: Cultural and social capital as contributing factors. *International Journal of Science and Mathematics Education*, 14(1s):169–186, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9592-3.

Chabalengula:2012:DSU

[CSM12] Vivien Mweene Chabalengula, Martie Sanders, and Frackson Mumba. Diagnosing students' understanding of energy and its related concepts in biological context. *International Journal of Science and Mathematics Education*, 10(2):241–266, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9291-2.

Corrigan:2004:ESE

[CT04] Gerry Corrigan and Neil Taylor. An exploratory study of the effect a self-regulated learning environment has on preservice primary teachers' perceptions of teaching science and technology. *International Journal of Science and Mathematics Education*, 2(1):45–62, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Caussarieu:2017:WWV

[CT17] Aude Caussarieu and Andrée Tiberghien. When and why are the values of physical quantities expressed with uncertainties? A case study of a physics undergraduate laboratory course. *International Journal of Science and Mathematics Education*, 15(6):997–1015, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9734-x.

Chang:2018:ITS

[CT18] Hsin-Yi Chang and Shi-Fang Tzeng. Investigating Taiwanese students' visualization competence of matter at the particulate level. *International Journal of Science and Mathematics Education*, 16(7):1207–1226, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9834-2.

Calik:2014:CAS

[ÇTC14] Muammer Çalik, Burçin Turan, and Richard Kevin Coll. A cross-age study of elementary student teachers' scientific habits of mind concerning socioscientific issues. *International Journal of Science and Mathematics Education*, 12(6):1315–1340, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9458-0`.

Calderon-Tena:2016:MLD

[CTC16] Carlos O. Calderón-Tena and Linda C. Caterino. Mathematics learning development: the role of long-term retrieval. *International Journal of Science and Mathematics Education*, 14(7):1377–1385, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9655-0`.

Chavez:2015:TYH

[CTGS15] Óscar Chávez, James E. Tarr, Douglas A. Grouws, and Victor M. Soria. Third-year high school mathematics curriculum: effects of content organization and curriculum implementation. *International Journal of Science and Mathematics Education*, 13(1s):97–120, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9443-7`.

Cakmakci:2011:PII

[CTT+11] Gultekin Cakmakci, Ozge Tosun, Sebnem Turgut, Sefika Orenler, Kubra Sengul, and Gokce Top. Promoting an inclusive image of scientists among students: towards research evidence-based practice. *International Journal of Science and Mathematics Education*, 9(3):627–655, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9217-4`.

Chen:2011:ICT

[CVCV11] Limin Chen, Wim Van Dooren, Qi Chen, and Lieven Verschaffel. An investigation on Chinese teachers' realistic problem posing and problem solving ability and beliefs. *International Journal of Science and Mathematics Education*, 9

(4):919–948, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9259-7.

Cai:2006:UCT

[CW06] Jinfa Cai and Tao Wang. U.S. and Chinese teachers' conceptions and constructions of representations: A case of teaching ratio concept. *International Journal of Science and Mathematics Education*, 4(1):145–186, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9006-7.

Chen:2019:BGG

[CWLH19] Hsiang-Ting Chen, Hsin-Hui Wang, Ying-Yan Lu, and Zuway-R Hong. Bridging the gender gap of children's engagement in learning science and argumentation through a modified argument-driven inquiry. *International Journal of Science and Mathematics Education*, 17(4):635–655, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9896-9.

Changeiywo:2011:ISM

[CWW11] Johnson M. Changeiywo, P. W. Wambugu, and S. W. Wachanga. Investigations of students' motivation towards learning secondary school physics through mastery learning approach. *International Journal of Science and Mathematics Education*, 9(6):1333–1350, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9262-z.

Chen:2023:EHS

[CWZ23] Sitong Chen, Bing Wei, and Hongfeng Zhang. Exploring high school students' disciplinary science identities and their differences. *International Journal of Science and Mathematics Education*, 21(2):377–394, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10257-7.

Chan:2025:RWW

[CXM25] Kennedy Kam Ho Chan, Lihua Xu, and Carmel Mesiti. Rethinking the who, what, and how of teacher professional development: a framework emerging from the special issue on technology-enabled professional development for science, mathematics, and STEM teachers. *International Journal of Science and Mathematics Education*, 23(6):1947–1957, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-025-10584-5`.

Chen:2014:PRB

[CY14] Yi-Chun Chen and Fang-Ying Yang. Probing the relationship between process of spatial problems solving and science learning: an eye tracking approach. *International Journal of Science and Mathematics Education*, 12(3):579–603, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9504-y`.

Chan:2021:UVB

[CY21] Kennedy Kam Ho Chan and King Woon Yau. Using video-based interviews to investigate pre-service secondary science teachers' situation-specific skills for informal formative assessment. *International Journal of Science and Mathematics Education*, 19(2):289–311, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10056-y`.

Campbell:2023:EMT

[CY23] Tye G. Campbell and Sheunghyun Yeo. Exploring in–the-moment teaching moves that support sociomathematical and general social norms in dialogic instruction. *International Journal of Science and Mathematics Education*, 21(1):1–23, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10234-6`.

Chung:2016:ESC

[CYK+16] Yoonsook Chung, Jungsook Yoo, Sung-Won Kim, Hyunju Lee, and Dana L. Zeidler. Enhancing students' communication skills in the science classroom through socioscientific issues. *International Journal of Science and Mathematics Education*, 14(1):1–27, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9557-6.

Chen:2023:DCS

[CYLL23] Ssu-Kuang Chen, Ya-Ting Carolyn Yang, ChiuPin Lin, and Sunny S. J. Lin. Dispositions of 21st-century skills in STEM programs and their changes over time. *International Journal of Science and Mathematics Education*, 21(4):1363–1380, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10288-0.

Chin:2016:ASC

[CYT16] Chi-Chin Chin, Wei-Cheng Yang, and Hsiao-Lin Tuan. Argumentation in a socioscientific context and its influence on fundamental and derived science literacies. *International Journal of Science and Mathematics Education*, 14(4):603–617, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9606-1.

Dogruer:2020:CMP

[DA20a] Sule Sahin Dogruer and Didem Akyuz. Correction to: Mathematical Practices of Eighth Graders about 3D Shapes in an Argumentation, Technology, and Design–Based Classroom Environment. *International Journal of Science and Mathematics Education*, 18(8):1507, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10055-z; http://link.springer.com/content/pdf/10.1007/s10763-020-10055-z.pdf. See [DA20b].

Dogruer:2020:MPE

[DA20b] Sule Sahin Dogruer and Didem Akyuz. Mathematical practices of eighth graders about 3D shapes in an argumentation, technology, and design–based classroom environment. *International Journal of Science and Mathematics Education*, 18(8):1485–1505, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10028-x. See correction [DA20a].

Dahl:2017:FYN

[Dah17] Bettina Dahl. First-year non–STEM majors' use of definitions to solve calculus tasks: Benefits of using concept image over concept definition? *International Journal of Science and Mathematics Education*, 15(7):1303–1322, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9751-9.

DeWitt:2019:YOS

[DAM19] Jennifer DeWitt, Louise Archer, and Julie Moote. 15/16-year-old students' reasons for choosing and not choosing physics at a level. *International Journal of Science and Mathematics Education*, 17(6):1071–1087, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9900-4; http://link.springer.com/content/pdf/10.1007/s10763-018-9900-4.pdf.

DeWitt:2011:HAL

[DAO+11] Jennifer DeWitt, Louise Archer, Jonathan Osborne, Justin Dillon, Beatrice Willis, and Billy Wong. High aspirations but low progression: the science aspirations–careers paradox amongst minority ethnic students. *International Journal of Science and Mathematics Education*, 9(2):243–271, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9245-0.

Dass:2005:UNS

[Das05] Pradeep M. Dass. Understanding the nature of scientific enterprise (NOSE) through a discourse with its history: The influence of an undergraduate 'history of science' course. *International Journal of Science and Mathematics Education*, 3(1):87–115, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-3225-1; http://link.springer.com/content/pdf/10.1007/s10763-004-3225-1.pdf.

Demiray:2017:IPS

[DB17] Esra Demiray and Mine Işıksal Bostan. An investigation of pre-service middle school mathematics teachers' ability to conduct valid proofs, methods used, and reasons for invalid arguments. *International Journal of Science and Mathematics Education*, 15(1):109–130, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9664-z.

Davis:2015:WDU

[DBS15] Ernest Kofi Davis, Alan J. Bishop, and Wee Tiong Seah. "We don't understand English that is why we prefer English": primary school students' preference for the language of instruction in mathematics. *International Journal of Science and Mathematics Education*, 13(3):583–604, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9490-0.

DeLoof:2022:ESI

[DBV22] Haydée De Loof, Jelle Boeve-de Pauw, and Peter Van Petegem. Engaging students with integrated STEM education: a happy marriage or a failed engagement? *International Journal of Science and Mathematics Education*, 20(7):1291–1313, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10159-0.

Dalgety:2006:EFY

[DC06] Jacinta Dalgety and Richard K. Coll. Exploring first-year science students' chemistry self-efficacy. *International Journal of Science and Mathematics Education*, 4(1):97–116, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-1080-3.

Dahsah:2008:TGS

[DC08] Chanyah Dahsah and Richard Kevin Coll. Thai grade 10 and 11 students' understanding of stoichiometry and related concepts. *International Journal of Science and Mathematics Education*, 6(3):573–600, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-007-9072-0.

Dankenbring:2016:EES

[DC16] Chelsey Dankenbring and Brenda M. Capobianco. Examining elementary school students' mental models of Sun–Earth relationships as a result of engaging in engineering design. *International Journal of Science and Mathematics Education*, 14(5):825–845, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9626-5.

Dorji:2025:EBB

[DCCT25] Karma Dorji, Tashi Choden, Pem Choden, and Pema Tshering. Exploring Bhutanese biology teachers' perceptions of scientific models. *International Journal of Science and Mathematics Education*, 23(3):773–801, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10485-z.

Duncan:2016:ILP

[DCFC16] Ravit Golan Duncan, Moraima Castro-Faix, and Jinnie Choi. Informing a learning progression in genetics: which should be taught first, Mendelian inheritance or the central dogma of molecular biology? *International Journal of Science and Mathematics Education*, 14(3):445–472, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9568-3.

Deprem:2023:EAB

[DÇÖK23] Sabahat Tuğçe Tucel Deprem, Jale Çakıroğlu, Ceren Öztekin, and Sevgi Kıngır. Effectiveness of argument-based inquiry approach on grade 8 students' science content achievement, metacognition, and epistemological beliefs. *International Journal of Science and Mathematics Education*, 21(4):1057–1079, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10299-x.

Deslis:2023:DAM

[DD23] Dimitrios Deslis and Despoina Desli. Does this answer make sense? Primary school students and adults judge the reasonableness of computational results in context–based and context–free mathematical tasks. *International Journal of Science and Mathematics Education*, 21(1):71–91, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10250-0.

Doorman:2012:TUD

[DDG+12] Michiel Doorman, Paul Drijvers, Koeno Gravemeijer, Peter Boon, and Helen Reed. Tool use and the development of the function concept: from repeated calculations to functional thinking. *International Journal of Science and Mathematics Education*, 10(6):1243–1267, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9329-0; http://link.springer.com/content/pdf/10.1007/s10763-012-9329-0.pdf.

Dolev:2015:JEI

[DE15] Sarit Dolev and Ruhama Even. Justifications and explanations in Israeli 7th grade math textbooks. *International Journal of Science and Mathematics Education*, 13(2s):309–327, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9488-7.

Dede:2011:MEV

[Ded11] Yüksel Dede. Mathematics education values questionnaire for Turkish preservice mathematics teachers: design, validation, and results. *International Journal of Science and Mathematics Education*, 9(3):603–626, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9213-8.

Dede:2015:CPS

[Ded15] Yüksel Dede. Comparing primary and secondary mathematics teachers' preferences regarding values about mathematics teaching in Turkey and Germany. *International Journal of*

Science and Mathematics Education, 13(1):227–255, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9483-z`.

Darragh:2022:LLP

[DF22] Lisa Darragh and Nike Franke. Lessons from lockdown: Parent perspectives on home-learning mathematics during COVID-19 lockdown. *International Journal of Science and Mathematics Education*, 20(7):1521–1542, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10222-w`.

Nhalevilo:2013:RHI

[dFAN13] Emilia Z. de F. Afonso Nhalevilo. Rethinking the history of inclusion of iks in school curricula: endeavoring to legitimate the subject. *International Journal of Science and Mathematics Education*, 11(1):23–42, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9382-8`.

Dawson:2006:ICT

[DFR06] Vaille Dawson, Patricia Forster, and Doug Reid. Information communication technology (ICT) integration in a science education unit for preservice science teachers; students' perceptions of their ICT skills, knowledge and pedagogy. *International Journal of Science and Mathematics Education*, 4(2):345–363, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9003-x`.

DiMartino:2019:MCS

[DG19] Pietro Di Martino and Francesca Gregorio. The mathematical crisis in secondary-tertiary transition. *International Journal of Science and Mathematics Education*, 17(4):825–843, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9894-y`.

Deliyianni:2016:RFP

[DGEP16] Eleni Deliyianni, Athanasios Gagatsis, Iliada Elia, and Areti Panaoura. Representational flexibility and problem-solving ability in fraction and decimal number addition: A structural model. *International Journal of Science and Mathematics Education*, 14(2s):397–417, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9625-6.

Dhindsa:2018:ADP

[DH18] Harkirat S. Dhindsa and Siti-Zahrani Binti Haji Md Salleh. Affective domain progression in single-sex and coeducational schools. *International Journal of Science and Mathematics Education*, 16(5):891–908, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9692-8.

Davidson:2019:SET

[DHB19] Aylie Davidson, Sandra Herbert, and Leicha A. Bragg. Supporting elementary teachers' planning and assessing of mathematical reasoning. *International Journal of Science and Mathematics Education*, 17(6):1151–1171, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9904-0.

Dhindsa:2008:CDL

[Dhi08] Harkirat S. Dhindsa. Cultural dimensions of the learning environment in brunei. *International Journal of Science and Mathematics Education*, 6(2):251–267, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9077-8.

Dogan:2024:CMS

[DHTA+24a] Ozgur Kivilcan Dogan, Cigdem Han-Tosunoglu, Nevin Arslan, Mustafa Cakir, and Serhat Irez. Correction to: Middle school graduates' understandings of scientific inquiry and its relation to academic achievement. *International Journal of Science and Mathematics Education*, 22(7):1639, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10397-4. See [DHTA+24b].

Dogan:2024:MSG

[DHTA+24b] Ozgur Kivilcan Dogan, Cigdem Han-Tosunoglu, Nevin Arslan, Mustafa Cakir, and Serhat Irez. Middle school graduates' understandings of scientific inquiry and its relation to academic achievement. *International Journal of Science and Mathematics Education*, 22(1):143–166, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10365-y. See correction [DHTA+24a].

Demiray:2022:TGA

[DIBS22] Esra Demiray, Mine Işiksal-Bostan, and Elif Saygi. Types of global argumentation structures in conjecture-generation activities regarding geometry. *International Journal of Science and Mathematics Education*, 20(4):839–860, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10172-3.

Ding:2014:LLT

[Din14] Lin Ding. Long live traditional textbook problems!? — Constraints on faculty use of research-based problems in introductory courses. *International Journal of Science and Mathematics Education*, 12(1):123–144, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9400-5.

Ding:2018:PTS

[Din18] Lin Ding. Progression trend of scientific reasoning from elementary school to university: a large-scale cross-grade survey among Chinese students. *International Journal of Science and Mathematics Education*, 16(8):1479–1498, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9844-0.

Delgado-Iglesias:2024:ECP

[DIRTBP24] Jaime Delgado-Iglesias, Roberto Reinoso-Tapia, and Javier Bobo-Pinilla. Estimating the competence of preservice primary teachers to use inquiry and their willingness to apply it in the classroom. *International Journal of Science and Mathematics Education*, 22(3):469–490, March 2024.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10377-8`.

Dunekacke:2015:EMC

[DJB15] Simone Dunekacke, Lars Jenßen, and Sigrid Blömeke. Effects of mathematics content knowledge on pre-school teachers' performance: a video-based assessment of perception and planning abilities in informal learning situations. *International Journal of Science and Mathematics Education*, 13(2): 267–286, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9596-z`.

Duchhardt:2017:AUM

[DJE17] Christoph Duchhardt, Anne-Katrin Jordan, and Timo Ehmke. Adults' use of mathematics and its influence on mathematical competence. *International Journal of Science and Mathematics Education*, 15(1):155–174, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9670-1`.

Ding:2021:LCM

[DJZ21] Lin Ding, Zehao Jia, and Ping Zhang. From learning capacitance to making capacitors: the missing critical sense-making. *International Journal of Science and Mathematics Education*, 19(7):1357–1373, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10112-7`.

Dolin:2010:RCP

[DK10] Jens Dolin and Lars Brian Krogh. The relevance and consequences of Pisa science in a Danish context. *International Journal of Science and Mathematics Education*, 8(3):565–592, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9207-6`.

Delice:2015:IRF

[DK15] Ali Delice and Mahmut Kertil. Investigating the representational fluency of pre-service mathematics teachers in a modelling process. *International Journal of Science and Mathematics Education*, 13(3):631–656, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9466-0.

Delen:2018:SSE

[DK18] Ibrahim Delen and Joseph Krajcik. Synergy and students' explanations: Exploring the role of generic and content-specific scaffolds. *International Journal of Science and Mathematics Education*, 16(1):1–21, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9767-1.

Dreher:2016:WUM

[DKL16] Anika Dreher, Sebastian Kuntze, and Stephen Lerman. Why use multiple representations in the mathematics classroom? Views of English and German preservice teachers. *International Journal of Science and Mathematics Education*, 14(2s):363–382, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9633-6.

Diezmann:2012:LTS

[DL12] Carmel M. Diezmann and Tom Lowrie. Learning to think spatially: what do students 'see' in numeracy test items? *International Journal of Science and Mathematics Education*, 10(6):1469–1490, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9350-3.

Downton:2022:ISG

[DL22] Ann Downton and Sharyn Livy. Insights into students' geometric reasoning relating to prisms. *International Journal of Science and Mathematics Education*, 20(7):1543–1571, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10219-5.

Dubovi:2018:SSB

[DLD18] Ilana Dubovi, Sharona T. Levy, and Efrat Dagan. Situated simulation-based learning environment to improve proportional reasoning in nursing students. *International Journal of Science and Mathematics Education*, 16(8):1521–1539, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9842-2.

Dkeidek:2011:ECH

[DMNH11] Iyad Dkeidek, Rachel Mamlok-Naaman, and Avi Hofstein. Effect of culture on high-school students' question–asking ability resulting from an inquiry–oriented chemistry laboratory. *International Journal of Science and Mathematics Education*, 9(6):1305–1331, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9261-0.

DeBock:2017:SAC

[DNV17] Dirk De Bock, Deborah Neyens, and Wim Van Dooren. Students' ability to connect function properties to different types of elementary functions: An empirical study on the role of external representations. *International Journal of Science and Mathematics Education*, 15(5):939–955, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9724-z.

Dolma:2018:IAB

[DNWC18] Phuntsho Dolma, David Nutchey, James J. Watters, and Vinesh Chandra. Investigating the alignment of Bhutanese mathematics teachers' planned approaches within the context of a reformed curriculum. *International Journal of Science and Mathematics Education*, 16(3):581–602, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9791-1.

Dundar:2023:HSS

[DO23] Ruveyda Karaman Dundar and Samuel Otten. High school students' use of diagrams in geometry proofs. *International Journal of Science and Mathematics Education*, 21(3):737–759, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10286-2.

Dogan:2012:ECP

[Dog12] Hamide Dogan. Emotion, confidence, perception and expectation case of mathematics. *International Journal of Science and Mathematics Education*, 10(1):49–69, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9277-0`.

Dogbey:2016:UVS

[Dog16] James Dogbey. Using variables in school mathematics: Do school mathematics curricula provide support for teachers? *International Journal of Science and Mathematics Education*, 14(6):1175–1196, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9643-4`.

Dogan:2021:MDR

[Dog21] Ozgur Kivilcan Dogan. Methodological? Or dialectical?: Reflections of scientific inquiry in biology textbooks. *International Journal of Science and Mathematics Education*, 19(8):1563–1585, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10120-7`.

Dana-Picard:2007:MCP

[DP07] Thierry Dana-Picard. Motivating constraints of a pedagogy-embedded computer algebra system. *International Journal of Science and Mathematics Education*, 5(2):217–235, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9052-9`.

Dana-Picard:2008:EPS

[DPK08] Thierry Dana-Picard and Ivy Kidron. Exploring the phase space of a system of differential equations: different mathematical registers. *International Journal of Science and Mathematics Education*, 6(4):695–717, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9099-2`.

Dionne:2012:SSM

[DRT+12] Liliane Dionne, Giuliano Reis, Louis Trudel, Gabriel Guillet, Leonard Kleine, and Corina Hancianu. Students' sources of motivation for participating in science fairs: an exploratory study within the Canada-Wide Science Fair 2008. *International Journal of Science and Mathematics Education*, 10(3): 669–693, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9318-8`.

Delgado-Rebolledo:2020:RBK

[DRZ20] Rosa Delgado-Rebolledo and Diana Zakaryan. Relationships between the knowledge of practices in mathematics and the pedagogical content knowledge of a mathematics lecturer. *International Journal of Science and Mathematics Education*, 18(3):567–587, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09977-0`.

Daher:2015:PST

[DS15] Wajeeh M. Daher and Juhaina Awawdeh Shahbari. Preservice teachers' modelling processes through engagement with model eliciting activities with a technological tool. *International Journal of Science and Mathematics Education*, 13(1s):25–46, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9464-2`.

Daher:2018:DPC

[DS18] Wajeeh Daher and Abdel-Gani Saifi. Democratic practices in a constructivist science classroom. *International Journal of Science and Mathematics Education*, 16(2):221–236, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9772-4`.

Dudu:2017:FSS

[Dud17] Washington Takawira Dudu. Facilitating small-scale implementation of inquiry-based teaching: Encounters and experiences of experimento multipliers in one South African province. *International Journal of Science and Mathematics Education*, 15(4):625–642, April 2017. CODEN ???? ISSN

1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9708-4.

DeBock:2015:SUP

[DVV15] Dirk De Bock, Wim Van Dooren, and Lieven Verschaffel. Students' understanding of proportional, inverse proportional, and affine functions: two studies on the role of external representations. *International Journal of Science and Mathematics Education*, 13(1s):47–69, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9475-z.

Diezmann:2015:KBS

[DW15] Carmel M. Diezmann and James J. Watters. The knowledge base of subject matter experts in teaching: a case study of a professional scientist as a beginning teacher. *International Journal of Science and Mathematics Education*, 13(6):1517–1537, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9561-x.

Ding:2016:DHE

[DWM16] Lin Ding, Xin Wei, and Katherine Mollohan. Does higher education improve student scientific reasoning skills? *International Journal of Science and Mathematics Education*, 14(4):619–634, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9597-y.

Eilam:2019:COS

[EA19] Billie Eilam and Uri Alon. Children's object structure perspective-taking: Training and assessment. *International Journal of Science and Mathematics Education*, 17(8):1541–1562, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9934-7.

Edsand:2020:IEE

[EB20] Hans-Erik Edsand and Tobias Broich. The impact of environmental education on environmental and renewable energy technology awareness: Empirical evidence from Colombia. *International Journal of Science and Mathematics Education*, 18(4):611–634, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09988-x; http://link.springer.com/content/pdf/10.1007/s10763-019-09988-x.pdf`.

Ergene:2025:NPS

[EB25] Busra Caylan Ergene and Mine Isiksal Bostan. Nurturing pre-service teachers' professional noticing skills through pedagogies of practice. *International Journal of Science and Mathematics Education*, 23(5):1309–1339, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10519-6`.

Ebrahim:2012:ECL

[Ebr12] Ali Ebrahim. The effect of cooperative learning strategies on elementary students' science achievement and social skills in Kuwait. *International Journal of Science and Mathematics Education*, 10(2):293–314, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9293-0`.

Estapa:2023:PTI

[ED23] Anne Estapa and Jeni Davis. Prospective teachers' instructional decisions and pedagogical moves when responding to student thinking in elementary mathematics and science lessons. *International Journal of Science and Mathematics Education*, 21(5):1703–1724, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10304-3`.

El-Deghaidy:2015:STT

[EDMA15] Heba El-Deghaidy, Nasser Mansour, and Saeed Alshamrani. Science teachers' typology of CPD activities: a socioconstructivist perspective. *International Journal of Science and Mathematics Education*, 13(6):1539–1566, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9560-y`.

Edmondston:2010:SPC

[EDS10] Joanne Edmondston, Vaille Dawson, and Renato Schibeci. Are students prepared to communicate? A case study of an Australian degree course in biotechnology. *International Journal of Science and Mathematics Education*, 8(6):1091–1108, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9234-3`.

Eisenmann:2011:ETA

[EE11] Tammy Eisenmann and Ruhama Even. Enacted types of algebraic activity in different classes taught by the same teacher. *International Journal of Science and Mathematics Education*, 9(4):867–891, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9241-4`.

Enghag:2013:UDD

[EFL+13] Margareta Enghag, Jonas Forsman, Cedric Linder, Allan MacKinnon, and Ellen Moons. Using a disciplinary discourse lens to explore how representations afford meaning making in a typical wave physics course. *International Journal of Science and Mathematics Education*, 11(3):625–650, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9357-9`.

Eymur:2017:CCL

[EG17] Gülüzar Eymur and Ömer Geban. The collaboration of cooperative learning and conceptual change: Enhancing the students' understanding of chemical bonding concepts. *International Journal of Science and Mathematics Education*, 15(5):853–871, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9716-z`.

Enghag:2009:TPD

[EGJ09] Margareta Enghag, Peter Gustafsson, and Gunnar Jonsson. Talking physics during small-group work with context-rich problems analysed from an ownership perspective. *International Journal of Science and Mathematics Education*, 7(3):455–472, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9125-z.

Engstrom:2011:CTS

[EGN11] Susanne Engström, Peter Gustafsson, and Hans Niedderer. Content for teaching sustainable energy systems in physics at upper secondary school. *International Journal of Science and Mathematics Education*, 9(6):1281–1304, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9260-1.

Elia:2009:GAA

[EGP+09] Iliada Elia, Athanasios Gagatsis, Areti Panaoura, Theodosis Zachariades, and Fotini Zoulinaki. Geometric and algebraic approaches in the concept of "limit" and the impact of the "didactic contract". *International Journal of Science and Mathematics Education*, 7(4):765–790, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9149-z.

Erickson:2018:WTC

[EH18] Ander Erickson and Patricio Herbst. Will teachers create opportunities for discussion when teaching proof in a geometry classroom? *International Journal of Science and Mathematics Education*, 16(1):167–181, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9764-4.

Ehrenfeld:2019:IIC

[EHM19] Nadav Ehrenfeld and Einat Heyd-Metzuyanim. Intellective identities in the construction of a hybrid discourse: the case of an ultra-orthodox Jewish mathematics classroom. *International Journal of Science and Mathematics Education*, 17(4):739–757, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9885-z.

Even:2009:ATM

[EK09] Ruhama Even and Tova Kvatinsky. Approaches to teaching mathematics in lower-achieving classes. *International*

Journal of Science and Mathematics Education, 7(5):957–985, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9141-z.

Eshach:2018:UPE

[EK18] Haim Eshach and Ida Kukliansky. University physics and engineering students' use of intuitive rules, experience, and experimental errors and uncertainties. *International Journal of Science and Mathematics Education*, 16(5):817–834, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9817-3.

English:2019:SIS

[EK19] Lyn D. English and Donna King. STEM integration in sixth grade: Desligning and constructing paper bridges. *International Journal of Science and Mathematics Education*, 17(5): 863–884, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9912-0.

Erkek:2019:PMS

[EkB19] Özlem Erkek and Mine Işıksal Bostan. Prospective middle school mathematics teachers' global argumentation structures. *International Journal of Science and Mathematics Education*, 17(3):613–633, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9884-0.

Erduran:2021:PNS

[EKC+21] Sibel Erduran, Ebru Kaya, Aysegul Cilekrenkli, Selin Akgun, and Busra Aksoz. Perceptions of nature of science emerging in group discussions: a comparative account of pre-service teachers from Turkey and England. *International Journal of Science and Mathematics Education*, 19(7):1375–1396, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10110-9.

ElTurkey:2024:FDC

[EKCT+24] Houssein El Turkey, Gulden Karakok, Emily Cilli-Turner, V. Rani Satyam, Miloš Savić, and Gail Tang. A framework to design creativity-fostering mathematical tasks. *International Journal of Science and Mathematics Education*, 22(8):1761–1782, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10449-3`.

ElMouhayar:2021:IQC

[El 21] Rabih El Mouhayar. Investigating quality of class talk in grade 7: the case of pattern generalization. *International Journal of Science and Mathematics Education*, 19(5):1015–1036, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10092-8`.

ElMouhayar:2022:RLP

[El 22] Rabih El Mouhayar. The role of languages in the process of objectification in pattern generalization in a multilingual mathematics classroom. *International Journal of Science and Mathematics Education*, 20(5):999–1020, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10174-1`.

ElMouhayar:2023:UTD

[El 23] Rabih El Mouhayar. The use of triadic dialogue and translanguaging to teach conventions and properties during trouble-spots in multilingual algebra classrooms. *International Journal of Science and Mathematics Education*, 21(6):1819–1840, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10326-x`.

Ezaki:2024:TKF

[ELCG24] John Ezaki, Jingxian Li, and Yasemin Copur-Gencturk. Teachers' knowledge of fractions, ratios, and proportional relationships: the relationship between two theoretically connected content areas. *International Journal of Science and Mathematics Education*, 22(2):235–255, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10372-z`.

Everett:2008:PSE

[ELO08] Susan A. Everett, Gail R. Luera, and Charlotte A. Otto. Pre-service elementary teachers bridge the gap between research and practice. *International Journal of Science and Mathematics Education*, 6(1):1–17, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9063-6.

Erman:2020:AMI

[ELRW20] Erman Erman, Liliasari Liliasari, Maelita Ramdani, and Nur Wakhidah. Addressing macroscopic issues: Helping student form associations between biochemistry and sports and aiding their scientific literacy. *International Journal of Science and Mathematics Education*, 18(5):831–853, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09990-3.

Ekawati:2015:DIM

[ELY15] Rooselyna Ekawati, Fou-Lai Lin, and Kai-Lin Yang. Developing an instrument for measuring teachers' mathematics content knowledge on ratio and proportion: a case of Indonesian primary teachers. *International Journal of Science and Mathematics Education*, 13(1s):1–24, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9532-2.

Emereole:2009:LTC

[Eme09] Hezekiah Ukegbu Emereole. Learners' and teachers' conceptual knowledge of science processes: the case of Botswanao. *International Journal of Science and Mathematics Education*, 7(5):1033–1056, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9137-8.

Enghag:2008:TDS

[EN08] Margareta Enghag and Hans Niedderer. Two dimensions of student ownership of learning during small-group work in physics. *International Journal of Science and Mathematics Education*, 6(4):629–653, December 2008. CO-

DEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9075-x`.

English:2017:AEM

[Eng17] Lyn D. English. Advancing elementary and middle school STEM education. *International Journal of Science and Mathematics Education*, 15(1s):5–24, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9802-x`.

English:2023:MMS

[Eng23] Lyn English. Multidisciplinary modelling in a sixth-grade tsunami investigation. *International Journal of Science and Mathematics Education*, 21(S1):41–65, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10303-4`.

Enzingmuller:2021:CGB

[EP21] Carolin Enzingmüller and Helmut Prechtl. Constructing graphs in biology class: Secondary biology teachers' beliefs, motivation, and self-reported practices. *International Journal of Science and Mathematics Education*, 19(1):1–19, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09975-2`.

Elia:2007:RBS

[EPEG07] Iliada Elia, Areti Panaoura, Anastasia Eracleous, and Athanasios Gagatsis. Relations between secondary pupils' conceptions about functions and problem solving in different representations. *International Journal of Science and Mathematics Education*, 5(3):533–556, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9054-7`.

Even:2003:WPP

[ERC03] Ruhama Even, Naomi Robinson, and Miriam Carmeli. The work of providers of professional development for teachers of mathematics: Two case studies of experienced practitioners.

International Journal of Science and Mathematics Education, 1(2):227–249, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Erdem:2017:EMC

[Erd17a] Emrullah Erdem. Erratum to: Mental computation: Evidence from fifth graders. *International Journal of Science and Mathematics Education*, 15(6):1175, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9742-x; http://link.springer.com/content/pdf/10.1007/s10763-016-9742-x.pdf`. See [Erd17b].

Erdem:2017:MCE

[Erd17b] Emrullah Erdem. Mental computation: Evidence from fifth graders. *International Journal of Science and Mathematics Education*, 15(6):1157–1174, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9722-1`. See erratum [Erd17a].

Elias:2020:EMR

[ERdDS20] Henrique Rizek Elias, Alessandro Jacques Ribeiro, and Angela Marta Pereira das Dores Savioli. Epistemological matrix of rational number: a look at the different meanings of rational numbers. *International Journal of Science and Mathematics Education*, 18(2):357–376, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09965-4`.

Edwards:2004:RAS

[ES04] Lolet Edwards and Kola Soyibo. Relationships among selected Jamaican ninth-graders' variables and knowledge of matter. *International Journal of Science and Mathematics Education*, 1(3):259–281, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Escudero:2008:MTP

[ES08] Isabel Escudero and Victoria Sánchez. A mathematics teachers' perspective and its relationship to practice. *International Journal of Science and Mathematics Education*, 6(1):

87–106, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9101-z.

Emepue:2009:CAF

[ES09] Nicholas Emepue and Kola Soyibo. Correlations among five demographic variables and the performance of selected Jamaican 11th-graders on some numerical problems on energy. *International Journal of Science and Mathematics Education*, 7(2):339–361, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9123-6.

Emden:2016:ASE

[ES16] Markus Emden and Elke Sumfleth. Assessing students' experimentation processes in guided inquiry. *International Journal of Science and Mathematics Education*, 14(1):29–54, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9564-7.

Even:2024:PJI

[ES24] Ruhama Even and Boaz Silverman. Paths of justification in Israeli 7^{th} grade mathematics textbooks. *International Journal of Science and Mathematics Education*, 22(3):609–631, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10387-6.

Emilov:2016:CNS

[ETG16] Iliya Emilov and Adriana Tafrova-Grigorova. A cross-national study of the learning environment in chemistry classes at Albanian, Kosovar, Romanian and Turkish secondary schools. *International Journal of Science and Mathematics Education*, 14(1s):107–123, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9591-4.

Ebersbach:2011:KAM

[EVV11] Mirjam Ebersbach, Wim Van Dooren, and Lieven Verschaffel. Knowledge on accelerated motion as measured by implicit and explicit tasks in 5 to 16 year olds. *International*

Journal of Science and Mathematics Education, 9(1):25–46, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9208-5`.

Erumit:2023:DUP

[EY23] Banu Avsar Erumit and Tugba Yuksel. Developing and using physical dynamic models on socioscientific issues to present nature of science ideas. *International Journal of Science and Mathematics Education*, 21(4):1031–1056, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10296-0`.

Fang:2021:TSI

[Fan21] Su-Chi Fang. Towards scientific inquiry in secondary Earth science classrooms: Opportunities and realities. *International Journal of Science and Mathematics Education*, 19(4):771–792, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10086-6`.

Frade:2006:TED

[FB06] Cristina Frade and Oto Borges. The tacit-explicit dimension of the learning of mathematics: An investigation report**. *International Journal of Science and Mathematics Education*, 4(2):293–317, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9008-5`.

Fazio:2019:CUN

[FB19] Claudio Fazio and Onofrio R. Battaglia. Conceptual understanding of Newtonian mechanics through cluster analysis of FCI student answers. *International Journal of Science and Mathematics Education*, 17(8):1497–1517, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09944-1`.

Fadlelmula:2015:DSM

[FCS15] Fatma Kayan Fadlelmula, Erdinc Cakiroglu, and Semra Sungur. Developing a structural model on the relationship among motivational beliefs, self-regulated learning strategies, and achievement in mathematics. *International Journal of Science and Mathematics Education*, 13(6):1355–1375, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9499-4`.

Forbes:2012:OIA

[FD12] Cory T. Forbes and Elizabeth A. Davis. Operationalizing identity in action: a comparative study of direct versus probabilistic measures of curricular role identity for inquiry-based science teaching. *International Journal of Science and Mathematics Education*, 10(2):267–292, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9292-1`.

Ferrara:2014:HMW

[Fer14] Francesca Ferrara. How multimodality works in mathematical activity: young children graphing motion. *International Journal of Science and Mathematics Education*, 12(4):917–939, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9438-4`.

Fang:2023:ETC

[FF23] Su-Chi Fang and Szu-Chun Fan. Exploring teachers' conceptions and implementations of STEM integration at the junior secondary level in Taiwan: an interview study. *International Journal of Science and Mathematics Education*, 21(7):2095–2121, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10335-w`.

Fazio:2014:MDL

[FG14] Xavier Fazio and Tiffany L. Gallagher. Morphological development levels of science content vocabulary: implications for science-based texts in elementary classrooms. *International Journal of Science and Mathematics Education*, 12(6):1407–1423, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9470-4`.

Ferretti:2021:PPD

[FG21] Federica Ferretti and Chiara Giberti. The properties of powers: Didactic contract and gender gap. *International Journal of Science and Mathematics Education*, 19(8):1717–1735, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10130-5`; `http://link.springer.com/content/pdf/10.1007/s10763-020-10130-5.pdf`.

Fazio:2022:EAC

[FGD22] Xavier Fazio, Tiffany L. Gallagher, and Collen DeKlerk. Exploring adolescents' critical reading of socioscientific topics using multimodal texts. *International Journal of Science and Mathematics Education*, 20(S1):93–116, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10280-8`.

Francisco:2012:SWR

[FH12] John M. Francisco and Markus Hähkiöniemi. Students' ways of reasoning about nonlinear functions in guess-my-rule games. *International Journal of Science and Mathematics Education*, 10(5):1001–1021, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9310-3`.

Forgasz:2013:FIH

[FH13] Helen J. Forgasz and Janelle C. Hill. Factors implicated in high mathematics achievement. *International Journal of Science and Mathematics Education*, 11(2):481–499, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9348-x`.

Fang:2019:CSD

[FHL19] Su-Chi Fang, Ying-Shao Hsu, and Shu-Sheng Lin. Conceptualizing socioscientific decision making from a review of research in science education. *International Journal of Science and Mathematics Education*, 17(3):427–448, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-018-9890-2.

Fung:2018:ESL

[FHmL18] Dennis Fung, Venus Hung, and Wai mei Lui. Enhancing science learning through the introduction of effective group work in Hong Kong secondary classrooms. *International Journal of Science and Mathematics Education*, 16(7):1291–1314, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9839-x.

Foster:2019:MTP

[FI19] Colin Foster and Matthew Inglis. Mathematics teacher professional journals: What topics appear and how has this changed over time? *International Journal of Science and Mathematics Education*, 17(8):1627–1648, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9937-4; http://link.springer.com/content/pdf/10.1007/s10763-018-9937-4.pdf.

Friege:2006:TQK

[FL06] Gunnar Friege and Gunter Lind. Types and qualities of knowledge and their relations to problem solving in physics. *International Journal of Science and Mathematics Education*, 4(3):437–465, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9013-8.

Fies:2011:BWM

[FL11] Carmen Fies and Juliet Langman. Bridging worlds: measuring learners' discursive practice in a PARTSIM supported biology lesson. *International Journal of Science and Mathematics Education*, 9(6):1415–1438, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9271-y.

Fung:2023:ECM

[FL23] Dennis Fung and Tim Liang. The effectiveness of collaborative mind mapping in Hong Kong primary science classrooms. *International Journal of Science and Mathematics Education*, 21(3):899–922, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10279-1.

Fortus:2023:SFF

[FLP23] David Fortus, Jing Lin, and Shira Passentin. Shifting from face-to-face instruction to distance learning of science in China and Israel during COVID-19: Students' motivation and teachers' motivational practices. *International Journal of Science and Mathematics Education*, 21(7):2173–2183, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10344-9.

Franco-Mariscal:2016:UIC

[FMOMG16] Antonio-Joaquín Franco-Mariscal, José María Oliva-Martínez, and M. L. Almoraima Gil. Understanding the idea of chemical elements and their periodic classification in Spanish students aged 16–18 years. *International Journal of Science and Mathematics Education*, 14(5):885–906, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9614-1.

Freiman:2025:ENS

[FMR25] Viktor Freiman, Dragana Martinovic, and Maryna Rafalska. Exploring the nexus of STEM and giftedness: Insights, emerging questions, and future directions. *International Journal of Science and Mathematics Education*, 23(6):1959–1979, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10620-4.

Forsler:2024:CPC

[FNW24] Annika Forsler, Pernilla Nilsson, and Susanne Walan. Collective pedagogical content knowledge for teaching sustainable development. *International Journal of Science and Mathematics Education*, 22(6):1197–1214, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10421-7.

Foster:2015:EUS

[Fos15] Colin Foster. Exploiting unexpected situations in the mathematics classroom. *International Journal of Science and Mathematics Education*, 13(5):1065–1088, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9515-3; http://link.springer.com/content/pdf/10.1007/s10763-014-9515-3.pdf.

Foster:2022:ICA

[Fos22] Colin Foster. Implementing confidence assessment in low-stakes, formative mathematics assessments. *International Journal of Science and Mathematics Education*, 20(7):1411–1429, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10207-9.

Fredriksen:2021:ERM

[Fre21] Helge Fredriksen. Exploring realistic mathematics education in a flipped classroom context at the tertiary level. *International Journal of Science and Mathematics Education*, 19 (2):377–396, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10053-1; http://link.springer.com/content/pdf/10.1007/s10763-020-10053-1.pdf. See correction [Fre24].

Fredriksen:2024:CER

[Fre24] Helge Fredriksen. Correction to: Exploring realistic mathematics education in a flipped classroom context at the tertiary level. *International Journal of Science and Mathematics Education*, 22(4):943, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10065-x. See [Fre21].

Feng:2005:UAM

[FT05] Sung-Lin Feng and Hsiao-Lin Tuan. Using ARCS model to promote 11th graders' motivation and achievement in learning about acids and bases. *International Journal of Science and Mathematics Education*, 3(3):463–484, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-004-6828-7.

Finau:2018:EMC

[FTWC18] Teukava Finau, David F. Treagust, Mihye Won, and A. L. Chandrasegaran. Effects of a mathematics cognitive acceleration program on student achievement and motivation. *International Journal of Science and Mathematics Education*, 16(1):183–202, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9763-5.

Fulmer:2015:VPL

[Ful15] Gavin W. Fulmer. Validating proposed learning progressions on force and motion using the force concept inventory: findings from Singapore secondary schools. *International Journal of Science and Mathematics Education*, 13(6):1235–1254, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9553-x.

Fung:2021:TST

[Fun21] Dennis Fung. Teaching science through home and second languages as the medium of instruction: a comparative analysis of junior secondary science classrooms in Hong Kong. *International Journal of Science and Mathematics Education*, 19 (8):1609–1634, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10127-0.

Fan:2021:FIE

[FYL21] Szu-Chun Fan, Kuang-Chao Yu, and Kuen-Yi Lin. A framework for implementing an engineering-focused STEM curriculum. *International Journal of Science and Mathematics Education*, 19(8):1523–1541, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10129-y.

Guisasola:2009:DER

[GACZ09] Jenaro Guisasola, Jose Manuel Almudi, Mikel Ceberio, and Jose Luis Zubimendi. Designing and evaluating research-based instructional sequences for introducing magnetic fields.

International Journal of Science and Mathematics Education, 7(4):699–722, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9138-7.

Gal:2022:NAL

[Gal22] Hagar Gal. Nurturing autonomous learners: from small-step teaching to generic questions. *International Journal of Science and Mathematics Education*, 20(6):1247–1267, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10203-z.

Grimalt-Alvaro:2025:HDS

[GÁLST25] Carme Grimalt-Álvaro, Víctor López-Simó, and Èlia Tena. How do secondary-school teachers design STEM teaching–learning sequences? A mixed methods study for identifying design profiles. *International Journal of Science and Mathematics Education*, 23(1):235–260, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10457-3.

Godec:2024:MPP

[GAM+24] Spela Godec, Louise Archer, Julie Moote, Emma Watson, Jennifer DeWitt, Morag Henderson, and Becky Francis. A missing piece of the puzzle? Exploring whether science capital and STEM identity are associated with STEM study at University. *International Journal of Science and Mathematics Education*, 22(7):1615–1636, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10438-y.

Gridos:2022:GFA

[GAMDV22] Panagiotis Gridos, Evgenios Avgerinos, Joanna Mamona-Downs, and Roza Vlachou. Geometrical figure apprehension, construction of auxiliary lines, and multiple solutions in problem solving: Aspects of mathematical creativity in school geometry. *International Journal of Science and Mathematics Education*, 20(3):619–636, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10155-4. See correction [GAMDV24].

Gridos:2024:CGF

[GAMDV24] Panagiotis Gridos, Evgenios Avgerinos, Joanna Mamona-Downs, and Roza Vlachou. Correction to: Geometrical figure apprehension, construction of auxiliary lines, and multiple solutions in problem solving: Aspects of mathematical creativity in school geometry. *International Journal of Science and Mathematics Education*, 22(5):1171, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10210-0. See [GAMDV22].

Gao:2020:SMS

[Gao20] Jie Gao. Sources of mathematics self-efficacy in Chinese students: a mixed-method study with Q-sorting procedure. *International Journal of Science and Mathematics Education*, 18(4):713–732, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09984-1; http://link.springer.com/content/pdf/10.1007/s10763-019-09984-1.pdf.

Gardee:2022:RBT

[GB22] Aarifah Gardee and Karin Brodie. Relationships between teachers' interactions with learner errors and learners' mathematical identities. *International Journal of Science and Mathematics Education*, 20(1):193–214, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10142-1.

Glassmeyer:2024:CES

[GBA24] David Glassmeyer, Aaron Brakoniecki, and Julie M. Amador. Comparing elementary and secondary teachers' robust understanding of proportional reasoning. *International Journal of Science and Mathematics Education*, 22(7):1435–1455, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10437-z.

Gasteiger:2021:BCE

[GBC21] Hedwig Gasteiger, Esther Brunner, and Ching-Shu Chen. Basic conditions of early mathematics education — a comparison between Germany, Taiwan and Switzerland. *International Journal of Science and Mathematics Education*, 19 (1):111–127, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10044-x. See correction [GBC24].

Gasteiger:2024:CBC

[GBC24] Hedwig Gasteiger, Esther Brunner, and Ching-Shu Chen. Correction to: Basic conditions of early mathematics education — a comparison between Germany, Taiwan and Switzerland. *International Journal of Science and Mathematics Education*, 22(4):939–941, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10058-w. See [GBC21].

Garcia-Carmona:2019:PSP

[GC19] Antonio García-Carmona. Pre-service primary science teachers' abilities for solving a measurement problem through inquiry. *International Journal of Science and Mathematics Education*, 17(1):1–21, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9858-7.

Garcia-Carmona:2021:UAS

[GC21] Antonio García-Carmona. The use of analogies in science communication: Effectiveness of an activity in initial primary science teacher education. *International Journal of Science and Mathematics Education*, 19(8):1543–1561, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10125-2.

Garcia-Carmona:2018:PPT

[GCCCG18] Antonio García-Carmona, Ana M. Criado, and Marta Cruz-Guzmán. Prospective primary teachers' prior experiences, conceptions, and pedagogical valuations of experimental activities in science education. *International Journal of Science and Mathematics Education*, 16(2):237–253, February

2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9773-3.

Gomez-Chacon:2015:SGW

[GCK15] Inés Ma Gómez-Chacón and Alain Kuzniak. Spaces for geometric work: figural, instrumental, and discursive geneses of reasoning in a technological environment. *International Journal of Science and Mathematics Education*, 13(1):201–226, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9462-4.

Gilleece:2010:EMS

[GCS10] Lorraine Gilleece, Jude Cosgrove, and Nick Sofroniou. Equity in mathematics and science outcomes: characteristics associated with high and low achievement on Pisa 2006 in Ireland. *International Journal of Science and Mathematics Education*, 8(3):475–496, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9199-2.

Gomez:2019:MSB

[GD19] David Maximiliano Gómez and Pablo Dartnell. Middle schoolers' biases and strategies in a fraction comparison task. *International Journal of Science and Mathematics Education*, 17(6):1233–1250, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9913-z.

Gonzalez-DeHass:2024:USM

[GDFVCM24] Alyssa R. Gonzalez-DeHass, Joseph M. Furner, María D. Vásquez-Colina, and John D. Morris. Undergraduate students' math anxiety: the role of mindset, achievement goals, and parents. *International Journal of Science and Mathematics Education*, 22(5):1037–1056, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10416-4.

Goldston:2010:PAL

[GDSD10] M. Jenice Goldston, Jeanelle Bland Day, Cheryl Sundberg, and John Dantzler. Psychometric analysis of a 5e learning cycle lesson plan assessment instrument. *International Journal of Science and Mathematics Education*, 8(4):633–648, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9178-7.

Giamellaro:2025:ACI

[GES25] Michael Giamellaro, Benjamin Ewing, and Deborah Siegel. Affordances and constraints to implementing project-based STEM: a case study of systemic school change. *International Journal of Science and Mathematics Education*, 23(3):849–869, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10487-x.

Getahun:2023:SRA

[Get23] Dawit Asrat Getahun. Scientific reasoning among teachers and teacher trainees: the case in Ethiopian schools and teacher training colleges. *International Journal of Science and Mathematics Education*, 21(8):2261–2277, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10347-6.

Gomezescobar:2018:NSI

[GFCG18] Ariadna Gómezescobar, Raquel Fernández-Cézar, and Silvia Guerrero. Numbers and space intervals in length measurements in the Spanish context: Proposals for the transition to measuring with the ruler. *International Journal of Science and Mathematics Education*, 16(7):1375–1386, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9835-1.

Gonzalez-Forte:2023:IWT

[GFFVV23] Juan Manuel González-Forte, Ceneida Fernández, Jo Van Hoof, and Wim Van Dooren. Incorrect ways of thinking about the size of fractions. *International Journal of Science and Mathematics Education*, 21(7):2005–2025, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10338-7.

Goodchild:2009:ESM

[GG09] Simon Goodchild and Barbro Grevholm. An exploratory study of mathematics test results: What is the gender effect? *International Journal of Science and Mathematics Education*, 7(1):161–182, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9114-7`.

Giacomone:2023:SAD

[GGBW23] Belén Giacomone, Juan D. Godino, Teresa F. Blanco, and Miguel R. Wilhelmi. Onto-semiotic analysis of diagrammatic reasoning. *International Journal of Science and Mathematics Education*, 21(5):1495–1520, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10316-z`.

Geiger:2015:RDT

[GGD15a] Vince Geiger, Merrilyn Goos, and Shelley Dole. The role of digital technologies in numeracy teaching and learning. *International Journal of Science and Mathematics Education*, 13(5):1115–1137, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9530-4`.

Glaze:2015:ESU

[GGD15b] Amanda L. Glaze, M. Jenice Goldston, and John Dantzler. Evolution in the Southeastern USA: factors influencing acceptance and rejection in pre-service science teachers. *International Journal of Science and Mathematics Education*, 13 (6):1189–1209, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9541-1`.

Giallousi:2010:DVU

[GGSP10] Maria Giallousi, Vassilios Gialamas, Nicolas Spyrellis, and Evangelia A. Pavlatou. Development, validation, and use of a Greek-language questionnaire for assessing learning environments in grade 10 chemistry classes. *International Journal of Science and Mathematics Education*, 8(4):761–782, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9184-9`.

Guo:2022:CGO

[GHL22] Meng Guo, Xiang Hu, and Frederick K. S. Leung. Culture, goal orientations, and mathematics achievement among Chinese students. *International Journal of Science and Mathematics Education*, 20(6):1225–1245, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10202-0.

Gunel:2007:WLS

[GHP07] Murat Gunel, Brian Hand, and Vaughan Prain. Writing for learning in science: A secondary analysis of six studies. *International Journal of Science and Mathematics Education*, 5(4):615–637, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9082-y.

Garza:2018:SCI

[GHS+18] Tiberio Garza, Margarita Huerta, Tracy G. Spies, Rafael Lara-Alecio, Beverly J. Irby, and Fuhui Tong. Science classroom interactions and academic language use with English learners. *International Journal of Science and Mathematics Education*, 16(8):1499–1519, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9855-x.

Gilbert:2004:MMR

[Gil04] John K. Gilbert. Models and modelling: Routes to more authentic science education. *International Journal of Science and Mathematics Education*, 2(2):115–130, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-3186-4.

Guzey:2021:PTS

[GJ21] S. Selcen Guzey and Ji Yoon Jung. Productive thinking and science learning in design teams. *International Journal of Science and Mathematics Education*, 19(2):215–232, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10057-x.

Garcia:2011:CTD

[GLSM11] Mercedes García, Salvador Llinares, and Gloria Sánchez-Matamoros. Characterizing thematized derivative schema by the underlying emergent structures. *International Journal of Science and Mathematics Education*, 9(5):1023–1045, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9227-2.

Gal:2009:LSL

[GLY09] Hagar Gal, Fou-Lai Lin, and Jia-Ming Ying. Listen to the silence: the left-behind phenomenon as seen through classroom videos and teachers' reflections. *International Journal of Science and Mathematics Education*, 7(2):405–429, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9139-6.

Gertz:2025:LGE

[GMH25] Emilie Gertz, Lene Møller Madsen, and Henriette Tolstrup Holmegaard. "It's not like I go *Oh That's Really Exciting*" — a qualitative study of upper secondary school students' identity negotiations in physics. *International Journal of Science and Mathematics Education*, 23(3):713–736, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10483-1.

Githua:2008:EAO

[GN08] Bernard N. Githua and Rachel Angela Nyabwa. Effects of advance organiser strategy during instruction on secondary school students' mathematics achievement in Kenya's Nakuru District. *International Journal of Science and Mathematics Education*, 6(3):439–457, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9037-8.

Gok:2012:IPI

[Gok12] Tolga Gok. The impact of peer instruction on college students' beliefs about physics and conceptual understanding of electricity and magnetism. *International Journal of Science and Mathematics Education*, 10(2):417–436, April

2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9316-x`.

Gok:2015:ISP

[Gok15] Tolga Gok. An investigation of students' performance after peer instruction with stepwise problem-solving strategies. *International Journal of Science and Mathematics Education*, 13(3):561–582, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9546-9`.

Guerrero-Ortiz:2018:FTB

[GOMLS18] Carolina Guerrero-Ortiz, Jaime Mena-Lorca, and Astrid Morales-Soto. Fostering transit between real world and mathematical world: Some phases on the modelling cycle. *International Journal of Science and Mathematics Education*, 16(8):1605–1628, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9856-9`.

Govender:2017:PSP

[Gov17] Nadaraj Govender. Physical sciences preservice teachers' religious and scientific views regarding the origin of the universe and life. *International Journal of Science and Mathematics Education*, 15(2):273–292, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9695-5`.

Gantt:2023:EPC

[GPC23] Allison L. Gantt, Teo Paoletti, and Julien Corven. Exploring the prevalence of covariational reasoning across mathematics and science using TIMSS 2011 assessment items. *International Journal of Science and Mathematics Education*, 21 (8):2349–2373, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10353-2`.

Gotwals:2015:UVE

[GPCB15] Amelia Wenk Gotwals, Joanne Philhower, Dante Cisterna, and Steven Bennett. Using video to examine formative assessment practices as measures of expertise for mathematics and science teachers. *International Journal of Science and Mathematics Education*, 13(2):405–423, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9623-8`.

Gueudet:2018:TCP

[GPR+18] Ghislaine Gueudet, Birgit Pepin, Angela Restrepo, Hussein Sabra, and Luc Trouche. E-textbooks and connectivity: Proposing an analytical framework. *International Journal of Science and Mathematics Education*, 16(3):539–558, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9782-2`.

Geisler:2021:WMW

[GR21] Sebastian Geisler and Katrin Rolka. "That wasn't the math I wanted to do!"— students' beliefs during the transition from school to University mathematics. *International Journal of Science and Mathematics Education*, 19(3):599–618, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10072-y`; `http://link.springer.com/content/pdf/10.1007/s10763-020-10072-y.pdf`.

Guzey:2019:LSC

[GRWHP19] S. Selcen Guzey, Elizabeth A. Ring-Whalen, Michael Harwell, and Yadira Peralta. Life STEM: A case study of life science learning through engineering design. *International Journal of Science and Mathematics Education*, 17(1):23–42, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9860-0`.

Georgiou:2012:USU

[GS12] Helen Georgiou and Manjula Devi Sharma. University students' understanding of thermal physics in everyday contexts. *International Journal of Science and Mathematics Education*, 10(5):1119–1142, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9320-1`.

Grootenboer:2013:RIS

[GS13] Peter Grootenboer and Peter Sullivan. Remote indigenous students' understandings of measurement. *International Journal of Science and Mathematics Education*, 11(1):169–189, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9383-7`.

Gandara:2016:UGG

[GS16] Fernanda Gándara and Monica Silva. Understanding the gender gap in science and engineering: Evidence from the Chilean College Admissions Tests. *International Journal of Science and Mathematics Education*, 14(6):1079–1092, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9637-2`.

Geng:2024:EKS

[GS24] Xingyu Geng and Yu-Sheng Su. Enhancing K–12 students' STEM learning through the integration of the metaverse into online and blended environments: a meta-analysis. *International Journal of Science and Mathematics Education*, 22(S1):111–143, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10484-0`.

Gilbert:2025:EDP

[GSC25] Andrew Gilbert, Jennifer Suh, and Fahima Choudhry. Exploring the development of preservice teachers' visions of equity through science and mathematics integration. *International Journal of Science and Mathematics Education*, 23(2):489–514, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10467-1`.

Gravemeijer:2017:WME

[GSJ+17] Koeno Gravemeijer, Michelle Stephan, Cyril Julie, Fou-Lai Lin, and Minoru Ohtani. What mathematics education may prepare students for the society of the future? *International Journal of Science and Mathematics Education*, 15(1s):105–123, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://`

link.springer.com/article/10.1007/s10763-017-9814-6; http://link.springer.com/content/pdf/10.1007/s10763-017-9814-6.pdf.

Gougis:2017:PSS

[GSO+17] Rebekka Darner Gougis, Janet F. Stomberg, Alicia T. O'Hare, Catherine M. O'Reilly, Nicholas E. Bader, Thomas Meixner, and Cayelan C. Carey. Post-secondary science students' explanations of randomness and variation and implications for science learning. *International Journal of Science and Mathematics Education*, 15(6):1039–1056, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9737-7.

Gardner:2019:IIS

[GT19] Margery Gardner and John W. Tillotson. Interpreting integrated STEM: Sustaining pedagogical innovation within a public middle school context. *International Journal of Science and Mathematics Education*, 17(7):1283–1300, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9927-6.

Guberman:2016:DAT

[Gub16] Raisa Guberman. Development of arithmetical thinking: Evaluation of subject matter knowledge of pre-service teachers in order to design the appropriate course. *International Journal of Science and Mathematics Education*, 14(4):739–755, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9600-7.

Gustafsson:2024:PMW

[Gus24] Patrik Gustafsson. Productive mathematical whole-class discussions: a mixed-method approach exploring the potential of multiple-choice tasks supported by a classroom response system. *International Journal of Science and Mathematics Education*, 22(4):861–884, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10402-w.

Guven:2009:FRP

[Güv09] Yıldız Güven. The factors related to preschool children and their mothers on children's intuitional mathematics abilities. *International Journal of Science and Mathematics Education*, 7(3):533–549, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9131-1.

Grabau:2024:SSS

[GV24] Larry J. Grabau and Jan Van Damme. School stratification and science climate in early secondary education in Ireland and Flanders: Associations with students' science dispositions and science literacy. *International Journal of Science and Mathematics Education*, 22(7):1563–1587, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10439-x.

Ge:2019:DWN

[GY19] Yun-Ping Ge and Hsiuting Yang. Do we need arrows in representing an energy pyramid? *International Journal of Science and Mathematics Education*, 17(7):1301–1316, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9929-4.

Girit-Yildiz:2024:IHP

[GYU24] Dilek Girit-Yildiz and Fadime Ulusoy. Investigating how prospective mathematics teachers prepare history integrated lesson plans with assessing historical elements in mathematics textbooks. *International Journal of Science and Mathematics Education*, 22(2):307–331, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10375-w.

Glen:2021:LFT

[GZ21] Leslie Glen and Rina Zazkis. On linear functions and their graphs: Refining the Cartesian connection. *International Journal of Science and Mathematics Education*, 19(7):1485–1504, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10113-6.

Hakkarainen:2007:DCC

[HA07] Olavi Hakkarainen and Maija Ahtee. The durability of conceptual change in learning the concept of weight in the case of a pulley in balance. *International Journal of Science and Mathematics Education*, 5(3):461–482, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9048-5`.

Haser:2024:CWM

[HAÇ24a] Çiğdem Haser, Okan Arslan, and Kübra Çelikdemir. Correction to: Who is a mathematics teacher and what does a mathematics teacher do? *International Journal of Science and Mathematics Education*, 22(7):1641, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10399-2`. See [HAÇ24b].

Haser:2024:WMT

[HAÇ24b] Çiğdem Haser, Okan Arslan, and Kübra Çelikdemir. Who is a mathematics teacher and what does a mathematics teacher do? *International Journal of Science and Mathematics Education*, 22(2):283–305, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10378-7`. See correction [HAÇ24a].

Halai:2012:DUI

[Hal12] Nelofer Halai. Developing understanding of innovative strategies of teaching science through action research: a qualitative meta-synthesis from Pakistan. *International Journal of Science and Mathematics Education*, 10(2):387–415, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9313-0`.

Howard:2024:ISP

[HASR24] Melinda Howard, Alexander Alexiades, Corbin Schuster, and Robyn Raya. Indigenous student perceptions on cultural relevance, career development, and relationships in a culturally relevant undergraduate STEM program. *International Journal of Science and Mathematics Education*, 22(1):1–23, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10360-3.

Hartig:2022:CRC

[HBF+22] Hendrik Härtig, Sascha Bernholt, Nicole Fraser, Jennifer G. Cromley, and Jan Retelsdorf. Comparing reading comprehension of narrative and expository texts based on the direct and inferential mediation model. *International Journal of Science and Mathematics Education*, 20(S1):17–41, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10302-5.

Han:2019:ESM

[HbK19] Moonhyun Han and Heui baik Kim. Elementary students' modeling using analogy models to reveal the hidden mechanism of the human respiratory system. *International Journal of Science and Mathematics Education*, 17(5):923–942, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9895-x.

Hanuscin:2025:DEC

[HBMM25] Deborah Hanuscin, Emily Borda, Josie Melton, and Jamie N. Mikeska. Designing educative curriculum materials for teacher educators: Supporting preservice elementary teachers' content knowledge for teaching about matter and its interactions. *International Journal of Science and Mathematics Education*, 23(1):193–213, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10453-7.

Hoffler:2017:SVS

[HBP17] Tim Niclas Höffler, Victoria Bonin, and Ilka Parchmann. Science vs. sports: Motivation and self-concepts of participants in different school competitions. *International Journal of Science and Mathematics Education*, 15(5):817–836, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9717-y; http://link.springer.com/content/pdf/10.1007/s10763-016-9717-y.pdf.

Hagay:2013:CAC

[HBTP13] Galit Hagay, Ayelet Baram-Tsabari, and Ran Peleg. The co-authored curriculum: high–school teachers' reasons for including students' extra–curricular interests in their teaching. *International Journal of Science and Mathematics Education*, 11(2):407–431, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9343-2.

Herman:2016:TLN

[HC16a] Benjamin C. Herman and Michael P. Clough. Teachers' longitudinal NOS understanding after having completed a science teacher education program. *International Journal of Science and Mathematics Education*, 14(1s):207–227, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9594-1.

Huang:2016:GDE

[HC16b] Po-Sheng Huang and Hsueh-Chih Chen. Gender differences in eye movements in solving text-and-diagram science problems. *International Journal of Science and Mathematics Education*, 14(2s):327–346, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9644-3.

Ha:2023:SSU

[HC23] Heesoo Ha and Yunhee Choi. Supporting students' use of ecological concepts in field-based modeling of ecological phenomena. *International Journal of Science and Mathematics Education*, 21(8):2215–2235, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10354-1. See correction [HC24].

Ha:2024:CSS

[HC24] Heesoo Ha and Yunhee Choi. Correction to: Supporting students' use of ecological concepts in field-based modeling of ecological phenomena. *International Journal of Science and Mathematics Education*, 22(6):1407, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10395-6`. See [HC23].

He:2025:EEB

[HC25] Shengqing He and Chen Chen. The effects of equiprobability bias and representativeness heuristics on the performance in probability comparison and calculation tasks among middle school students in China. *International Journal of Science and Mathematics Education*, 23(1):143–168, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10464-4`.

Hwang:2018:CDT

[HCBS18a] Jihyun Hwang, Kyong Mi Choi, Yejun Bae, and Dong Hoon Shin. Correction to: Do Teachers' Instructional Practices Moderate Equity in Mathematical and Scientific Literacy?: An Investigation of the PISA 2012 and 2015. *International Journal of Science and Mathematics Education*, 16(8):1629–1631, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9918-7; http://link.springer.com/content/pdf/10.1007/s10763-018-9918-7.pdf`. See [HCBS18b].

Hwang:2018:DTI

[HCBS18b] Jihyun Hwang, Kyong Mi Choi, Yejun Bae, and Dong Hoon Shin. Do teachers' instructional practices moderate equity in mathematical and scientific literacy?: an investigation of the PISA 2012 and 2015. *International Journal of Science and Mathematics Education*, 16(1S):25–45, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9909-8`. See correction [HCBS18a].

Hofstein:2003:DLA

[HCBZ03] Avi Hofstein, Miriam Carmi, and Ruth Ben-Zvi. The development of leadership among chemistry teachers in Israel. *International Journal of Science and Mathematics Education*, 1(1):39–65, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Han:2015:HST

[HCC15] Sunyoung Han, Robert Capraro, and Mary Margaret Capraro. How science, technology, engineering, and mathematics (stem) project-based learning (pbl) affects high, middle, and low achievers differently: the impact of student factors on achievement. *International Journal of Science and Mathematics Education*, 13(5):1089–1113, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9526-0`.

Hung:2024:DEC

[HCC24] Hui-Chun Hung, Min-Yu Chuang, and Cheng-Huan Chen. Development and evaluation of collaboration scripts for long-distance VR team collaboration and co-creation in elementary STEM learning. *International Journal of Science and Mathematics Education*, 22(S1):59–80, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10470-6`.

Huang:2016:RAS

[HCH16] Neng-Tang Norman Huang, Li-Jia Chiu, and Jon-Chao Hong. Relationship among students' problem-solving attitude, perceived value, behavioral attitude, and intention to participate in a science and technology contest. *International Journal of Science and Mathematics Education*, 14(8):1419–1435, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9665-y`.

Hwang:2023:EAM

[HCH23] Jihyun Hwang, Kyong Mi Choi, and Brian Hand. Epistemic actions and mathematics achievement. *International Journal of Science and Mathematics Education*, 21(3):787–809, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10278-2`.

Ng:2018:HSS

[hCN18] Chi hung Clarence Ng. High school students' motivation to learn mathematics: The role of multiple goals. *International*

Journal of Science and Mathematics Education, 16(2):357–375, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9780-4.

Hanuscin:2021:SPD

[HDR21] Deborah Hanuscin, Deborah Donovan, and Roxane Ronca. Supporting the professional development of science teacher educators through shadowing. *International Journal of Science and Mathematics Education*, 19(S1):145–165, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10154-5.

Huang:2021:IBL

[HDvJ21] Luhuan Huang, Michiel Doorman, and Wouter van Joolingen. Inquiry-based learning practices in lower-secondary mathematics education reported by students from China and The Netherlands. *International Journal of Science and Mathematics Education*, 19(7):1505–1521, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10122-5; http://link.springer.com/content/pdf/10.1007/s10763-020-10122-5.pdf.

Hatisaru:2017:MKT

[HE17] Vesife Hatisaru and Ayhan Kursat Erbas. Mathematical knowledge for teaching the function concept and student learning outcomes. *International Journal of Science and Mathematics Education*, 15(4):703–722, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9707-5.

Hofstein:2011:SIT

[HEB11] Avi Hofstein, Ingo Eilks, and Rodger Bybee. Societal issues and their importance for contemporary science education – a pedagogical justification and the state–of-the-art in Israel, Germany, and the USA. *International Journal of Science and Mathematics Education*, 9(6):1459–1483, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9273-9.

Hewson:2004:RSL

[Hew04] Peter W. Hewson. Resources for science learning: Tools, tasks, and environment. *International Journal of Science and Mathematics Education*, 2(2):201–225, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-4057-8.

Hodgen:2024:LAS

[HFBM24] Jeremy Hodgen, Colin Foster, Margaret Brown, and David Martin. Low-attaining secondary school mathematics students' perspectives on recommended teaching strategies. *International Journal of Science and Mathematics Education*, 22(6):1325–1343, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10420-8.

Herman:2017:FPR

[HFVH17] Benjamin C. Herman, Allan Feldman, and Vanessa Vernaza-Hernandez. Florida and Puerto Rico secondary science teachers' knowledge and teaching of climate change science. *International Journal of Science and Mathematics Education*, 15(3):451–471, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9706-6.

Hu:2014:CSI

[HFWY14] Bi Ying Hu, Sarah Quebec Fuentes, Chun Yan Wang, and Feiwei Ye. A case study of the implementation of Chinese kindergarten mathematics curriculum. *International Journal of Science and Mathematics Education*, 12(1):193–217, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9429-5.

Hemmings:2011:PMA

[HGK11] Brian Hemmings, Peter Grootenboer, and Russell Kay. Predicting mathematics achievement: the influence of prior achievement and attitudes. *International Journal of Science and Mathematics Education*, 9(3):691–705, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9224-5.

Holmes:2018:IAS

[HGSL18] Kathryn Holmes, Jennifer Gore, Max Smith, and Adam Lloyd. An integrated analysis of school students' aspirations for STEM careers: Which student and school factors are most predictive? *International Journal of Science and Mathematics Education*, 16(4):655–675, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9793-z`.

Hsu:2025:SYL

[HH25] Sheng-Kuei Hsu and Yuling Hsu. Supporting Young learners in learning geometric area concepts through static versus dynamic representation and imagination strategies. *International Journal of Science and Mathematics Education*, 23(2):441–459, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10481-3`.

Hackemann:2022:CRE

[HHH22] Timo Hackemann, Lena Heine, and Dietmar Höttecke. Challenging to read, easy to comprehend? Effects of linguistic demands on secondary students' text comprehension in physics. *International Journal of Science and Mathematics Education*, 20(S1):43–68, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10306-1`.

Hoth:2023:ESS

[HHH+23] Jessica Hoth, Aiso Heinze, Hsin-Mei E. Huang, Dana Farina Weiher, Inga Niedermeyer, and Silke Ruwisch. Elementary school students' length estimation skills — analyzing a multidimensional construct in a cross-country study. *International Journal of Science and Mathematics Education*, 21(6):1841–1864, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10323-0`.

Hansson:2021:CEM

[HHJR21] Lena Hansson, Örjan Hansson, Kristina Juter, and Andreas Redfors. Curriculum emphases, mathematics and teaching practices: Swedish upper-secondary physics teachers' views.

International Journal of Science and Mathematics Education, 19(3):499–515, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10078-6; http://link.springer.com/content/pdf/10.1007/s10763-020-10078-6.pdf.

Hong:2021:USS

[HHS+21] Jon-Chao Hong, Ming-Yueh Hwang, Elson Szeto, Kai-Hsin Tai, and Chi-Ruei Tsai. Undergraduate science students' scientist–practitioner gap: the role of epistemic curiosity and cognitive flexibility. *International Journal of Science and Mathematics Education*, 19(5):899–913, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10096-4.

Huang:2024:BRI

[HHS24] Xingfeng Huang, Rongjin Huang, and Charlotte Krog Skott. Bring a research-informed product into classrooms through lesson study from the perspective of boundary crossing. *International Journal of Science and Mathematics Education*, 22(3):679–701, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10371-0.

Hong:2020:ESD

[HHT+20] Jon-Chao Hong, Ming-Yueh Hwang, Chi-Ruei Tsai, Kai-Hsin Tai, and Yu-Feng Wu. The effect of social dilemma on flow experience: Prosociality relevant to collective efficacy and goal achievement motivation. *International Journal of Science and Mathematics Education*, 18(2):239–258, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09958-3.

Hong:2021:EOF

[HHT21] Jon-Chao Hong, Ming-Yueh Hwang, and Chi-Ruei Tsai. The effect of object-free and object-related intelligences on hands-on making self-efficacy and attitude toward quality improvement. *International Journal of Science and Mathematics Education*, 19(4):863–879, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL https://link.springer.com/article/10.1007/s10763-020-10093-7.

Hilton:2018:EPS

[Hil18] Annette Hilton. Engaging primary school students in mathematics: Can iPads make a difference? *International Journal of Science and Mathematics Education*, 16(1):145–165, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9771-5.

Huerta:2016:RBL

[HILAT16] Margarita Huerta, Beverly J. Irby, Rafael Lara-Alecio, and Fuhui Tong. Relationship between language and concept science notebook scores of English language learners and/or economically disadvantaged students. *International Journal of Science and Mathematics Education*, 14(2s):269–285, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9640-7.

Hsu:2016:EIS

[HIS+16] Ying-Shao Hsu, Paola Iannone, Hsiao-Ching She, Allyson F. Hadwin, and Larry D. Yore. Epilogue for the ijsme special issue: metacognition for science and mathematics learning in technology-infused learning environments. *International Journal of Science and Mathematics Education*, 14(2):335–344, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9726-x; http://link.springer.com/content/pdf/10.1007/s10763-016-9726-x.pdf.

Hsu:2016:PIS

[HISH16] Ying-Shao Hsu, Paola Iannone, Hsiao-Ching She, and Allyson Hadwin. Preface for the ijsme special issue: metacognition for science and mathematics learning in technology-infused learning environments. *International Journal of Science and Mathematics Education*, 14(2):243–248, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9727-9; http://link.springer.com/content/pdf/10.1007/s10763-016-9727-9.pdf.

Han:2023:ECM

[HjKKL23] Chaereen Han, Hee jeong Kim, Oh Nam Kwon, and Woong Lim. Exploring changes of mathematics teachers' noticing in a video club: Identifying turning points. *International Journal of Science and Mathematics Education*, 21(3):835–861, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10251-z`.

Hong:2010:SKU

[HK10] Miyoung Hong and Nam-Hwa Kang. South Korean and the US secondary school science teachers' conceptions of creativity and teaching for creativity. *International Journal of Science and Mathematics Education*, 8(5):821–843, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9188-5`.

Ha:2021:FOO

[HK21] Heesoo Ha and Heui-Baik Kim. Framing oneself and one another as collaborative contributors in small group argumentation in a science classroom. *International Journal of Science and Mathematics Education*, 19(3):517–537, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10071-z`.

Heshmati:2018:OCI

[HKS18] Saeideh Heshmati, Nicole Kersting, and Taliesin Sutton. Opportunities and challenges of implementing instructional games in mathematics classrooms: Examining the quality of teacher–student interactions during the cover-up and un-cover games. *International Journal of Science and Mathematics Education*, 16(4):777–796, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9789-8`.

Harrell:2022:EPT

[HKSL22] Pamela Esprívalo Harrell, Benjamin Kirby, Kartheyan Subramaniam, and Chris Long. Are elementary preservice teachers floating or sinking in their understanding of buoyancy? *International Journal of Science and Mathe-*

matics Education, 20(2):299–320, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-021-10160-7`.

Huffman:2004:ISS

[HL04] Douglas Huffman and Francis Lawrenz. The impact of a state systemic initiative on U.S. science teachers and students. *International Journal of Science and Mathematics Education*, 1 (3):357–377, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Huang:2007:EHH

[HL07] Hui-Ju Huang and Y. Kirk Lin. Erratum: Huang., H.-J. (2006). Listening to the language of constructing science knowledge. *International Journal of Science and Mathematics Education*, **4**, 391–415. *International Journal of Science and Mathematics Education*, 5(4):769, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9080-0; http://link.springer.com/content/pdf/10.1007/s10763-007-9080-0.pdf`. See [Hua06].

Huang:2013:UAT

[HL13] Chih-Hsien Huang and Fou-Lai Lin. Using activity theory to model the Taiwan Atayal students' classroom mathematical activity. *International Journal of Science and Mathematics Education*, 11(1):213–236, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9381-9`.

Huang:2025:CET

[HLK25] Wendy Huang, Chee-Kit Looi, and Misong Kim. A clash of epistemic tools: computer programming and paper-and-pencil in secondary school mathematics problem solving. *International Journal of Science and Mathematics Education*, 23(5):1259–1282, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10512-z`.

Havia:2023:PST

[HLKK23] Johanna Havia, Sonja Lutovac, Tiina Komulainen, and Raimo Kaasila. Preservice subject teachers' lack of interest in their minor subject: Is it a problem? *International Journal of Science and Mathematics Education*, 21(3):923–941, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10277-3.

Hu:2018:ICS

[HLT18] Xiang Hu, Frederick K. S. Leung, and Yuan Teng. The influence of culture on students' mathematics achievement across 51 countries. *International Journal of Science and Mathematics Education*, 16(1S):7–24, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9899-6.

Ho:2022:IAH

[HLT22] Hsin Ning Jessie Ho, Jyh-Chong Liang, and Chin-Chung Tsai. The interrelationship among high school students' conceptions of learning science, self-regulated learning science, and science learning self-efficacy. *International Journal of Science and Mathematics Education*, 20(5):943–962, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10205-x.

Hatzikiriakou:2009:TDR

[HM09] Kostas Hatzikiriakou and Panayiota Metallidou. Teaching deductive reasoning to pre-service teachers: Promises and constraints. *International Journal of Science and Mathematics Education*, 7(1):81–101, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9113-8.

Hunter:2022:UCR

[HM22] Jodie Hunter and Jodie Miller. Using a culturally responsive approach to develop early algebraic reasoning with young diverse learners. *International Journal of Science and Mathematics Education*, 20(1):111–131, January 2022.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10135-0.

Hughes:2019:EVU

[HMC19] Elizabeth M. Hughes, Andrew M. Markelz, and Lauren E. Cozad. Evaluating various undergraduate perspectives of elementary-level mathematical writing. *International Journal of Science and Mathematics Education*, 17(5):1031–1048, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9903-1.

Heyd-Metzuyanim:2020:VAI

[HMHG20] Einat Heyd-Metzuyanim and Rachel Hess-Green. Valued actions and identities of giftedness in a mathematical camp. *International Journal of Science and Mathematics Education*, 18(7):1311–1331, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10013-4.

Huan:2022:DVC

[HMM22] Chin Huan, Chew Cheng Meng, and Thien Lei Mee. Development and validation of a cognitive diagnostic assessment with ordered multiple-choice items for addition of time. *International Journal of Science and Mathematics Education*, 20(4):817–837, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10170-5.

Hrin:2016:ESS

[HMS16] Tamara N. Hrin, Dušica D. Milenković, and Mirjana D. Segedinac. The effect of systemic synthesis questions [SSynQs] on students' performance and meaningful learning in secondary organic chemistry teaching. *International Journal of Science and Mathematics Education*, 14(5):805–824, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9620-y.

Hand:2007:UWL

[HmYB07] Brian Hand, Olivia Eun mi Yang, and Crystal Bruxvoort. Using writing-to-learn science strategies to improve year

11 students' understandings of stoichiometry. *International Journal of Science and Mathematics Education*, 5(1):125–143, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9028-1`.

Haroun:2016:GDT

[HNAA16] Ramzi F. Haroun, Dicky Ng, Faisal A. Abdelfattah, and Misfer S. AlSalouli. Gender difference in teachers' mathematical knowledge for teaching in the context of single-sex classrooms. *International Journal of Science and Mathematics Education*, 14(2s):383–396, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9631-8`.

Howe:2011:RNP

[HNB11] Christine Howe, Terezinha Nunes, and Peter Bryant. Rational number and proportional reasoning: using intensive quantities to promote achievement in mathematics and science. *International Journal of Science and Mathematics Education*, 9(2):391–417, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9249-9`.

Hand:2016:ATL

[HNMGA16] Brian Hand, Lori A. Norton-Meier, Murat Gunel, and Recai Akkus. Aligning teaching to learning: A 3-year study examining the embedding of language and argumentation into elementary science classrooms. *International Journal of Science and Mathematics Education*, 14(5):847–863, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9622-9`.

Ho:2010:FIS

[Ho10] Esther Sui Chu Ho. Family influences on science learning among Hong Kong adolescents: what we learned from Pisa. *International Journal of Science and Mathematics Education*, 8(3):409–428, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9198-3`.

Hobbs:2013:TFB

[Hob13] Linda Hobbs. Teaching ‘out-of-field’ as a boundary-crossing event: factors shaping teacher identity. *International Journal of Science and Mathematics Education*, 11(2):271–297, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9333-4`.

Hong:2023:EOL

[Hon23] Dae S. Hong. Examining opportunities to learn limit in widely used calculus textbooks. *International Journal of Science and Mathematics Education*, 21(3):881–898, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10273-7`.

Higgins:2011:IOM

[HP11] Joanna Higgins and Ro Parsons. Improving outcomes in mathematics in New Zealand: a dynamic approach to the policy process. *International Journal of Science and Mathematics Education*, 9(2):503–522, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9275-2`.

Habiddin:2021:ESA

[HP21] Habiddin Habiddin and Elizabeth Mary Page. Examining students’ ability to solve algorithmic and pictorial style questions in chemical kinetics. *International Journal of Science and Mathematics Education*, 19(1):65–85, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10037-w`.

Hamnell-Pamment:2024:RSL

[HP24] Ylva Hamnell-Pamment. The role of scientific language use and achievement level in student sensemaking. *International Journal of Science and Mathematics Education*, 22(4):737–763, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10405-7`.

Hsin:2016:DVT

[HpCH+16] Ming-Chin Hsin, Sung pei Chien, Yin-Shao Hsu, Chen-Yung Lin, and Larry D. Yore. Development and validation of a Taiwanese communication progression in science education. *International Journal of Science and Mathematics Education*, 14(1s):125–143, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9589-y.

Holbrook:2009:ECF

[HPP09] Allyson Holbrook, Lisa Panozza, and Elena Prieto. Engineering in children's fiction- not a good story? *International Journal of Science and Mathematics Education*, 7(4):723–740, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9129-8.

Hokayem:2014:EFG

[HS14] Hayat Hokayem and Christina Schwarz. Engaging fifth graders in scientific modeling to learn about evaporation and condensation. *International Journal of Science and Mathematics Education*, 12(1):49–72, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9395-3.

Hillier:2025:IUS

[HSC25] Cathlene Hillier, Diandra Singh, and Tye Campbell. The influence of a university–school partnership on pre-service teachers' perceived preparedness and views on teaching and learning S.T.E.M. *International Journal of Science and Mathematics Education*, 23(1):261–283, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10460-8.

Hu:2022:ATI

[HSH22] Qintong Hu, Ji-Won Son, and Lynn Hodge. Algebra teachers' interpretation and responses to student errors in solving quadratic equations. *International Journal of Science and Mathematics Education*, 20(3):637–657, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-021-10166-1.

Hsieh:2013:SCM

[Hsi13] Feng-Jui Hsieh. Strengthening the conceptualization of mathematics pedagogical content knowledge for international studies: a Taiwanese perspective. *International Journal of Science and Mathematics Education*, 11(4):923–947, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9425-9.

Hillermann:2024:ESR

[HSK24] Emma Hillermann, Miloš Savić, and Rama Kothapalli. The effect of STEM research experiences on fields of interest and career paths. *International Journal of Science and Mathematics Education*, 22(5):1107–1126, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10409-3.

Halim:2006:MST

[HSMO06] Lilia Halim, Mohd Ali Samsudin, T. Subahan M. Meerah, and Kamisah Osman. Measuring science teachers' stress level triggered by multiple stressful conditions. *International Journal of Science and Mathematics Education*, 4(4):727–739, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9020-9.

Hsu:2019:HSS

[Hsu19] Pei-Ling Hsu. High school students' and scientists' experiential descriptions of cogenerative dialogs. *International Journal of Science and Mathematics Education*, 17(4):657–677, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9877-4.

Handa:2013:TTS

[HT13] Vicente C. Handa and Deborah J. Tippins. Tensions in the third space: locating relevancy in preservice science teacher preparation. *International Journal of Science and Mathematics Education*, 11(1):237–265, February

2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9364-x.

Hallman-Thrasher:2019:SDK

[HTCS19] Allyson Hallman-Thrasher, Jeff Connor, and Derek Sturgill. Strong discipline knowledge cuts both ways for novice mathematics and science teachers. *International Journal of Science and Mathematics Education*, 17(2):253–272, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9871-x.

Ho:2014:PKO

[HTWT14] Hsin Ning Jessie Ho, Meng-Jung Tsai, Ching-Yeh Wang, and Chin-Chung Tsai. Prior knowledge and online inquiry-based science reading: evidence from eye tracking. *International Journal of Science and Mathematics Education*, 12(3):525–554, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9489-6.

Han:2024:ESE

[HU24] Moonhyun Han and Janghee Uhm. Enhancing students' emotional, epistemic, and conceptual aspects in scientific practice through computational modeling on a food web. *International Journal of Science and Mathematics Education*, 22(S1):145–165, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10509-8.

Huang:2006:LLC

[Hua06] Hui-Ju Huang. Listening to the language of constructing science knowledge. *International Journal of Science and Mathematics Education*, 4(3):391–415, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9010-y. See erratum [HL07].

Huang:2017:CIA

[Hua17] Hsin-Mei E. Huang. Curriculum interventions for area measurement instruction to enhance children's conceptual understanding. *International Journal of Science and Math-*

ematics Education, 15(7):1323–1341, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9745-7.

Hung:2014:WYL

[Hun14] Yueh-Nu Hung. "What are you looking at?" An eye movement exploration in science text reading. *International Journal of Science and Mathematics Education*, 12(2):241–260, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9406-z.

Hsieh:2013:TSF

[HWW13] Feng-Jui Hsieh, Khoon Yoong Wong, and Ting-Ying Wang. Are Taiwanese and Singaporean future teachers similar in their mathematics-related teaching competencies? *International Journal of Science and Mathematics Education*, 11 (4):819–846, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9418-8.

Han:2025:AAB

[HX25] Caiqin Han and Jiawen Xiang. Alignment analysis between China College entrance examination physics test and curriculum standard based on E-SEC model. *International Journal of Science and Mathematics Education*, 23(1):215–234, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10468-0.

Huang:2005:CSC

[HY05] Hsin-Ping Huang and Larry D. Yore. A comparative study of Canadian and Taiwanese grade 5 children's environmental behaviors, attitudes, concerns, emotional dispositions, and knowledge. *International Journal of Science and Mathematics Education*, 1(4):419–448, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-1098-6.

Hsu:2007:PII

[HY07] Pei-Ling Hsu and Wen-Gin Yang. Print and image integration of science texts and reading comprehension: A systemic functional linguistics perspective. *International Journal of Science and Mathematics Education*, 5(4):639–659, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9091-x`.

Hsu:2016:CAE

[HYC+16] Ying-Shao Hsu, Miao-Hsuan Yen, Wen-Hua Chang, Chia-Yu Wang, and Sufen Chen. Content analysis of 1998–2012 empirical studies in science reading using a self-regulated learning lens. *International Journal of Science and Mathematics Education*, 14(1s):1–27, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9574-5`.

Hsu:2023:ETM

[HYL23] Hui-Yu Hsu, Chen-Yu Yao, and BingYang Lu. Examination of Taiwanese mathematics teacher questioning. *International Journal of Science and Mathematics Education*, 21(5):1473–1493, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10313-2`.

Hernandez-Zavaleta:2024:CSP

[HZBC24] Jesús E. Hernández-Zavaleta, Armando Paulino Preciado Babb, and Ricardo Cantoral. Comparison as a social practice in the analysis of chaotic phenomena: the case of the double pendulum. *International Journal of Science and Mathematics Education*, 22(1):101–120, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10363-0`.

He:2022:DVI

[HZL22] Peng He, Changlong Zheng, and Tingting Li. Development and validation of an instrument for measuring Chinese chemistry teachers' perceived self-efficacy towards chemistry core competencies. *International Journal of Science and Mathematics Education*, 20(7):1337–1359, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10216-8`.

Ismail:2008:DMA

[IA08] Noor Azina Ismail and Halimah Awang. Differentials in mathematics achievement among eighth-grade students in Malaysia. *International Journal of Science and Mathematics Education*, 6(3):559–571, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9109-4.

Ibrahim:2017:TRS

[IAS17] Ahmed Ibrahim, Mark W. Aulls, and Bruce M. Shore. Teachers' roles, students' personalities, inquiry learning outcomes, and practices of science and engineering: The development and validation of the McGill attainment value for inquiry engagement survey in STEM disciplines. *International Journal of Science and Mathematics Education*, 15(7):1195–1215, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9733-y.

Ivars:2020:LTS

[IFL20] Pedro Ivars, Ceneida Fernández, and Salvador Llinares. A learning trajectory as a scaffold for pre-service teachers' noticing of students' mathematical understanding. *International Journal of Science and Mathematics Education*, 18(3): 529–548, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09973-4.

Irmak:2023:DAT

[IİED+23] Meltem Irmak, Hüseyin İnaltun, Jale Ercan-Dursun, Hilal Yaniş-Kelleci, and Nejla Yürük. Development and application of a three-tier diagnostic test to assess pre-service science teachers' understanding on work-power and energy concepts. *International Journal of Science and Mathematics Education*, 21(1):159–185, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10242-6.

Im:2014:ATS

[IK14] Sungmin Im and Ok-Ja Kim. An approach to teach science to students with limited language proficiency: in the case of students with hearing impairment. *International Journal of Science and Mathematics Education*, 12(6):1393–1406, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9465-1.

Irish:2018:CCS

[IK18] Tobias Irish and Nam-Hwa Kang. Connecting classroom science with everyday life: Teachers' attempts and students' insights. *International Journal of Science and Mathematics Education*, 16(7):1227–1245, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9836-0.

Ing:2014:GDI

[Ing14] Marsha Ing. Gender differences in the influence of early perceived parental support on student mathematics and science achievement and stem career attainment. *International Journal of Science and Mathematics Education*, 12(5):1221–1239, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9447-3.

Iannone:2024:NEA

[IV24] Paola Iannone and Naďa Vondrová. The novelty effect on assessment interventions: a qualitative replication study of oral performance assessment in undergraduate mathematics. *International Journal of Science and Mathematics Education*, 22(2):375–397, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10368-9.

Jacobbe:2012:EST

[Jac12] Tim Jacobbe. Elementary school teachers' understanding of the mean and median. *International Journal of Science and Mathematics Education*, 10(5):1143–1161, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9321-0.

Jafer:2020:AKP

[Jaf20] Yaqoub J. Jafer. Assessing Kuwaiti pre-service science teachers' greenhouse effect perceptions and misconceptions. *In-*

ternational Journal of Science and Mathematics Education*, 18(4):657–667, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09992-1.

Jao:2017:SPS

[Jao17] Limin Jao. Shifting pre-service teachers' beliefs about mathematics teaching: the contextual situation of a mathematics methods course. *International Journal of Science and Mathematics Education*, 15(5):895–914, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9719-9.

Jiang:2010:SST

[JC10] Chunlian Jiang and Boon Liang Chua. Strategies for solving three fraction-related word problems on speed: a comparative study between Chinese and Singaporean students. *International Journal of Science and Mathematics Education*, 8(1):73–96, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9163-1.

Jacinto:2017:MPS

[JC17] Hélia Jacinto and Susana Carreira. Mathematical problem solving with technology: the techno-mathematical fluency of a student-with-GeoGebra. *International Journal of Science and Mathematics Education*, 15(6):1115–1136, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9728-8.

Jeffries:2020:SFI

[JCC20] David Jeffries, David D. Curtis, and Lindsey N. Conner. Student factors influencing STEM subject choice in year 12: a structural equation model using PISA/LSAY data. *International Journal of Science and Mathematics Education*, 18(3):441–461, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09972-5.

Jiang:2025:EET

[JCT+25] Haozhe Jiang, Ritesh Chugh, Darren Turnbull, Xiaoqin Wang, and Suting Chen. Exploring the effects of technology-related informal mathematics learning activities: a structural equation modeling analysis. *International Journal of Science and Mathematics Education*, 23(1):49–69, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10456-4`.

Joswick:2024:SRB

[JH24] Candace Joswick and Melissa Hulings. A systematic review of BSCS 5E instructional model evidence. *International Journal of Science and Mathematics Education*, 22(1):167–188, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10357-y`.

Jin:2016:UCI

[JHWW16] Hui Jin, Hayat Hokayem, Sasha Wang, and Xin Wei. A US–China interview study: Biology students' argumentation and explanation about energy consumption issues. *International Journal of Science and Mathematics Education*, 14(6):1037–1057, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9651-4`.

Jian:2019:RIF

[Jia19] Yu-Cin Jian. Reading instructions facilitate signaling effect on science text for young readers: an eye-movement study. *International Journal of Science and Mathematics Education*, 17(3):503–522, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9878-y`.

Kim:2019:TLO

[jK19] Hee jeong Kim. Teacher learning opportunities provided by implementing formative assessment lessons: Becoming responsive to student mathematical thinking. *International Journal of Science and Mathematics Education*, 17(2):341–363, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9866-7`.

Kim:2020:TPS

[jKMH20] Hee jeong Kim, Michelle Metzger, and Ruth M. Heaton. Teacher planning sessions as professional opportunities to learn: an elementary mathematics teacher's re-conceptualization of instructional triangles. *International Journal of Science and Mathematics Education*, 18(7):1207–1227, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10019-y`.

Jack:2008:TET

[JLC08] Brady Michael Jack, Chia-Ju Liu, and Houn-Lin Chiu. Taiwan elementary teachers' views of science teaching self-efficacy and outcome expectations. *International Journal of Science and Mathematics Education*, 6(2):437, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-008-9126-y`; `http://link.springer.com/content/pdf/10.1007/s10763-008-9126-y.pdf`.

Jen:2013:PSR

[JLC+13] Tsung-Hau Jen, Che-Di Lee, Chin-Lung Chien, Ying-Shao Hsu, and Kuan-Ming Chen. Perceived social relationships and science learning outcomes for Taiwanese eighth graders: structural equation modeling with a complex sampling consideration. *International Journal of Science and Mathematics Education*, 11(3):575–600, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9355-y`.

Jones:2017:TIH

[JLC17] Steven R. Jones, YaeRi Lim, and Katie R. Chandler. Teaching integration: How certain instructional moves may undermine the potential conceptual value of the Riemann sum and the Riemann integral. *International Journal of Science and Mathematics Education*, 15(6):1075–1095, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9731-0`.

Jack:2012:MCG

[JLCT12] Brady Michael Jack, Chia-Ju Liu, Houn-Lin Chiu, and Chun-Yen Tsai. Measuring the confidence of 8th grade Taiwanese students' knowledge of acids and bases. *International Journal* of *Science and Mathematics Education*, 10(4):889–905, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9300-5.

Juuti:2020:IDN

[JLL20] Kalle Juuti, Anni Loukomies, and Jari Lavonen. Interest in dialogic and non-dialogic teacher talk situations in middle school science classroom. *International Journal of Science and Mathematics Education*, 18(8):1531–1546, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10031-2; http://link.springer.com/content/pdf/10.1007/s10763-019-10031-2.pdf.

Jacobson:2018:MST

[JLO18] Erik Jacobson, Joanne Lobato, and Chandra H. Orrill. Middle school teachers' use of mathematics to make sense of student solutions to proportional reasoning problems. *International Journal of Science and Mathematics Education*, 16(8):1541–1559, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9845-z.

Juuti:2010:STM

[JLU+10] Kalle Juuti, Jari Lavonen, Anna Uitto, Reijo Byman, and Veijo Meisalo. Science teaching methods preferred by grade 9 students in Finland. *International Journal of Science and Mathematics Education*, 8(4):611–632, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9177-8.

Jiang:2021:CSH

[JML21] Zheng Jiang, Ida Ah Chee Mok, and Jianhua Li. Chinese students' hierarchical understanding of part-whole and measure subconstructs. *International Journal of Science and Mathematics Education*, 19(7):1441–1461, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10118-1.

Ju:2016:HMK

[JMS16] Mi-Kyung Ju, Jong-Eun Moon, and Ryoon-Jin Song. History of mathematics in Korean mathematics textbooks: Implication for using ethnomathematics in culturally diverse school. *International Journal of Science and Mathematics Education*, 14(7):1321–1338, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9647-0.

Johansson:2016:MRR

[Joh16] Helena Johansson. Mathematical reasoning requirements in Swedish National Physics Tests. *International Journal of Science and Mathematics Education*, 14(6):1133–1152, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9636-3.

Jones:2019:SAC

[Jon19] Steven R. Jones. Students' application of concavity and inflection points to real-world contexts. *International Journal of Science and Mathematics Education*, 17(3):523–544, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9876-5.

Joklitschke:2022:NCM

[JRS22] Julia Joklitschke, Benjamin Rott, and Maike Schindler. Notions of creativity in mathematics education research: a systematic literature review. *International Journal of Science and Mathematics Education*, 20(6):1161–1181, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10192-z.

Jenssen:2023:MPS

[JRWB23] Lars Jenßen, Bettina Roesken-Winter, and Sigrid Blömeke. Measuring pre-service primary teachers' shame in mathematics — a comprehensive validation study. *International Journal of Science and Mathematics Education*, 21(2):463–488, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10253-x.

Jin:2024:CSV

[JSC24a] Hui Jin, Hyo Jeong Shin, and Dante Cisterna. Correction to: Systematic validation in science learning progression research. *International Journal of Science and Mathematics Education*, 22(8):1885, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10396-5. See [JSC24b].

Jin:2024:SVS

[JSC24b] Hui Jin, Hyo Jeong Shin, and Dante Cisterna. Systematic validation in science learning progression research. *International Journal of Science and Mathematics Education*, 22(1):189–209, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10359-w. See correction [JSC24a].

Jin:2019:SSU

[JSH+19] Hui Jin, Hyo Jeong Shin, Hayat Hokayem, Farah Qureshi, and Thomas Jenkins. Secondary students' understanding of ecosystems: a learning progression approach. *International Journal of Science and Mathematics Education*, 17(2):217–235, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9864-9.

Jiang:2023:WOB

[JSH+23] Ronghuan Jiang, Jon R. Star, Peter Hästö, Lijia Li, Ru de Liu, Dimitri Tuomela, Nuria Joglar Prieto, Riikka Palkki, Miguel Á. Abánades, and Johanna Pejlare. Which one is the "Best": a cross-national comparative study of students' strategy evaluation in equation solving. *International Journal of Science and Mathematics Education*, 21(4):1127–1151, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10282-6.

Jones:2015:AMP

[JSP15] Ian Jones, Malcolm Swan, and Alastair Pollitt. Assessing mathematical problem solving using comparative judgement. *International Journal of Science and Mathematics Education*, 13(1):151–177, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9497-6`.

Johnson:2020:EST

[JSRP20] Patrick Johnson, Aoibhinn Ní Shúilleabháin, Máire Ní Ríordáin, and Mark Prendergast. The evolution of student teachers' concerns regarding mathematics curricular reform. *International Journal of Science and Mathematics Education*, 18(7):1293–1310, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10023-2`.

Jader:2017:SMR

[JSS17] Jonas Jäder, Johan Sidenvall, and Lovisa Sumpter. Students' mathematical reasoning and beliefs in non-routine task solving. *International Journal of Science and Mathematics Education*, 15(4):759–776, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9712-3`.

Jin:2015:MCU

[JW15] Haiyue Jin and Khoon Yoong Wong. Mapping conceptual understanding of algebraic concepts: an exploratory investigation involving grade 8 Chinese students. *International Journal of Science and Mathematics Education*, 13(3):683–703, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9500-2`.

Johnston:2020:SKA

[JWR20] Jennifer Johnston, Gráinne Walshe, and Máire Ní Ríordáin. Supporting key aspects of practice in making mathematics explicit in science lessons. *International Journal of Science and Mathematics Education*, 18(7):1399–1417, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10016-1`.

Jazby:2023:NST

[JWXvD23] Dan Jazby, Wanty Widjaja, Lihua Xu, and Jan H. van Driel. Noticing student thinking under pressure in primary mathematics and science lessons. *International Journal of Science and Mathematics Education*, 21(2):645–666, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10263-9.

Jin:2021:EGF

[JYC21] Hui Jin, Duanli Yan, and Wenju Cui. An empirically grounded framework that evaluates argument quality in scientific and social contexts. *International Journal of Science and Mathematics Education*, 19(4):681–700, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10075-9.

Jong:2024:IUT

[JZC24] Morris Siu-Yung Jong, Xiaoming Zhai, and Weiqin Chen. Innovative uses of technologies in science, mathematics and STEM education in K–12 contexts. *International Journal of Science and Mathematics Education*, 22(S1):1–9, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10530-x.

Kim:2019:FSS

[KA19] Sun Young Kim and Amani K. Hamdan Alghamdi. Female secondary students' and their teachers' perceptions of science learning environments within the context of science education reform in Saudi Arabia. *International Journal of Science and Mathematics Education*, 17(8):1475–1496, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-09946-z.

Kucukaydin:2025:VSR

[KA25] Menşure Alkış Küçükaydın and Elçin Ayaz. Validation of the scientific reasoning competencies instrument: Relationships with epistemological beliefs and analytical thinking. *International Journal of Science and Mathematics Education*, 23(2):343–363, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10482-2.

Koyuncu:2015:IPG

[KAC15] Ilhan Koyuncu, Didem Akyuz, and Erdinc Cakiroglu. Investigating plane geometry problem-solving strategies of prospective mathematics teachers in technology and paper-and-pencil environments. *International Journal of Science and Mathematics Education*, 13(4):837–862, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9510-8.

Kenney:2020:LPM

[KAK+20] Rachael Kenney, Tuyin An, Sung-Hee Kim, Nelson A. Uhan, Ji Soo Yi, and Aiman Shamsul. Linear programming models: Identifying common errors in engineering students' work with complex word problems. *International Journal of Science and Mathematics Education*, 18(4):635–655, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09980-5.

Kapici:2022:CQW

[KAK22] Hasan Ozgur Kapici, Hakan Akcay, and Ece Ebrar Koca. Comparison of the quality of written scientific arguments in different laboratory environments. *International Journal of Science and Mathematics Education*, 20(1):69–88, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10147-w.

Kang:2023:GSP

[Kan23] Jingoo Kang. Gendered science practice at secondary school and its effects on science motivations. *International Journal of Science and Mathematics Education*, 21(6):1725–1747, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10325-y.

Karp:2025:IAG

[Kar25] Alexander Karp. The integrated approach and gifted students: a historical perspective. *International Journal of Sci-*

ence and Mathematics Education, 23(6):2009–2026, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10562-x.

Kaur:2011:MHS

[Kau11] Berinderjeet Kaur. Mathematics homework: a study of three grade eight classrooms in Singapore. *International Journal of Science and Mathematics Education*, 9(1):187–206, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9237-0.

Kawasaki:2007:TWE

[Kaw07] Ken Kawasaki. Towards worldview education beyond language–culture incommensurability. *International Journal of Science and Mathematics Education*, 5(1):29–48, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9023-6.

Kazima:2014:UBE

[Kaz14] Mercy Kazima. Universal basic education and the provision of quality mathematics in Southern Africa. *International Journal of Science and Mathematics Education*, 12(4):841–858, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9434-8.

Kyei-Blankson:2014:TMS

[KB14] Lydia Kyei-Blankson. Training math and science teacher-researchers in a collaborative research environment: implications for math and science education. *International Journal of Science and Mathematics Education*, 12(5):1047–1065, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9444-6.

Khakasa:2016:STP

[KB16a] Marguerite Miheso-O'Connor Khakasa and Margot Berger. Status of teachers' proficiency in mathematical knowledge for teaching at secondary school level in Kenya. *International Journal of Science and Mathematics Education*, 14(2s):419–435, July 2016. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9630-9.

Khishfe:2016:LSC

[KB16b] Rola Khishfe and Saouma BouJaoude. Lebanese students' conceptions of and attitudes towards science and related careers based on their gender and religious affiliations. *International Journal of Science and Mathematics Education*, 14(1s):145–167, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9587-0.

Kim:2017:AKE

[KB17] Dongryeul Kim and Molly Bolger. Analysis of Korean elementary pre-service teachers' changing attitudes about integrated steam pedagogy through developing lesson plans. *International Journal of Science and Mathematics Education*, 15(4):587–605, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9709-3.

Kier:2021:ESV

[KB21] Meredith W. Kier and Margaret R. Blanchard. Eliciting students' voices through STEM career explorations. *International Journal of Science and Mathematics Education*, 19(1):151–169, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10042-z.

Kaiser:2015:ACV

[KBH+15] Gabriele Kaiser, Andreas Busse, Jessica Hoth, Johannes König, and Sigrid Blömeke. About the complexities of video-based assessments: Theoretical and methodological approaches to overcoming shortcomings of research on teachers' competence. *International Journal of Science and Mathematics Education*, 13(2):369–387, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9616-7.

Konig:2015:ECM

[KBK15] Johannes König, Sigrid Blömeke, and Gabriele Kaiser. Early career mathematics teachers' general pedagogical knowledge and skills: Do teacher education, teaching experience, and working conditions make a difference? *International Journal of Science and Mathematics Education*, 13(2):331–350, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9618-5`.

Khajeloo:2022:CAP

[KBK+22] Mojtaba Khajeloo, Julie A. Birt, Elizabeth M. Kenderes, Marcelle A. Siegel, Hai Nguyen, Linh T. Ngo, Bethany R. Mordhorst, and Keala Cummings. Challenges and accomplishments of practicing formative assessment: a case study of College biology instructors' classrooms. *International Journal of Science and Mathematics Education*, 20(2):237–254, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10149-8`.

Klieger:2011:PDS

[KBY11] Aviva Klieger and Nurit Bar-Yossef. Professional development of science teachers as a reflection of large-scale assessment. *International Journal of Science and Mathematics Education*, 9(4):771–791, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9216-5`.

Kiryak:2018:IGS

[KÇ18] Zeynep Kiryak and Muammer Çalik. Improving grade 7 students' conceptual understanding of water pollution via common knowledge construction model. *International Journal of Science and Mathematics Education*, 16(6):1025–1046, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9820-8`.

Ke:2020:GBM

[KC20] Fengfeng Ke and Kathleen M. Clark. Game-based multimodal representations and mathematical problem solving. *International Journal of Science and Mathematics Education*, 18(1):103–122, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9938-3`.

Kang:2022:DRS

[KC22] Hana Kang and Leland Cogan. The differential role of socioeconomic status in the relationship between curriculum-based mathematics and mathematics literacy: the link between TIMSS and PISA. *International Journal of Science and Mathematics Education*, 20(1):133–148, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10133-2`.

Kiryak:2024:ISG

[KÇÖ24] Zeynep Kıryak, Muammer Çalık, and Haluk Özmen. Improving seventh-grade students' scientific vocabulary and communicative interactions: a case of the "Cell and Divisions" subject. *International Journal of Science and Mathematics Education*, 22(8):1809–1831, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10448-4`.

Katalenic:2023:PMT

[KČŠ23] Ana Katalenić, Aleksandra Čižmešija, and Željka Milin Šipuš. Prospective mathematics teachers' knowledge of asymptotes and asymptotic behaviour in calculus. *International Journal of Science and Mathematics Education*, 21(1):131–158, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10247-9`.

Kaberman:2009:QPI

[KD09] Zvia Kaberman and Yehudit Judy Dori. Question posing, inquiry, and modeling skills of chemistry students in the case-based computerized laboratory environment. *International Journal of Science and Mathematics Education*, 7(3):597–625, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9118-3`.

Kilic:2022:PMT

[KD22] Hulya Kilic and Oguzhan Dogan. Preservice mathematics teachers' noticing in action and in reflection. *International Journal of Science and Mathematics Education*, 20(2):345–366, February 2022. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10141-2.

Krainer:2021:RLT

[KEB21] Konrad Krainer, Ruhama Even, and Amanda Berry. Research on learners and teachers of mathematics and science: Forerunners to a focus on teacher educator professional growth. *International Journal of Science and Mathematics Education*, 19(S1):1–19, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic)f. URL https://link.springer.com/article/10.1007/s10763-021-10189-8.

Kertil:2023:PSM

[KEC23] Mahmut Kertil, Ayhan Kursat Erbas, and Bulent Cetinkaya. Pre-service mathematics teachers' understanding of rate of change throughout a model development sequence. *International Journal of Science and Mathematics Education*, 21 (6):1769–1796, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10324-z.

Korur:2017:ETC

[KEET17] Fikret Korur, Gülfem Efe, Fisun Erdogan, and Berna Tunç. Effects of toy crane design-based learning on simple machines. *International Journal of Science and Mathematics Education*, 15(2):251–271, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9688-4.

Kutnick:2017:IEG

[KFM+17] Peter Kutnick, Dennis C. L. Fung, Ida. A. C. Mok, Frederick K. S. Leung, Johnson C. H. Li, Betty P.-Y. Lee, and Veronica K. W. Lai. Implementing effective group work for mathematical achievement in primary school classrooms in Hong Kong. *International Journal of Science and Mathematics Education*, 15(5):957–978, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9729-7.

Kerenxhi:2015:DTS

[KG15] Svjetllana Kërënxhi and Pranvera Gjoci. Dual treatments as starting point for integrative perceptions in teaching mathematics. *International Journal of Science and Mathematics Education*, 13(4):793–809, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9581-6.

Kellner:2011:PTI

[KGA+11] Eva Kellner, Annica Gullberg, Iiris Attorps, Ingvar Thorén, and Roy Tärneberg. Prospective teachers' initial conceptions about pupils' difficulties in science and mathematics: a potential resource in teacher education. *International Journal of Science and Mathematics Education*, 9(4):843–866, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9232-5.

Krell:2024:PBT

[KGM24] Moritz Krell, Carola Garrecht, and Nina Minkley. Preservice biology teachers' socioscientific argumentation: Analyzing structural and content complexity in the context of a mandatory COVID-19 vaccination. *International Journal of Science and Mathematics Education*, 22(1):121–141, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10364-z.

Kuchemann:2006:ISM

[KH06] Dietmar Küchemann and Celia Hoyles. Influences on students' mathematical reasoning and patterns in its development: Insights from a longitudinal study with particular reference to geometry. *International Journal of Science and Mathematics Education*, 4(4):581–608, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9039-6.

Kipnis:2008:ILS

[KH08] Mira Kipnis and Avi Hofstein. The inquiry laboratory as a source for development of metacognitive skills. *International Journal of Science and Mathematics Education*, 6(3):601–627, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9066-y.

Korner:2015:CAP

[KH15] Marianne Korner and Martin Hopf. Cross-age peer tutoring in physics: Tutors, tutees, and achievement in electricity. *International Journal of Science and Mathematics Education*, 13(5):1039–1063, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9539-8.

Khishfe:2023:RBN

[Khi23] Rola Khishfe. Relationship between nature of science and argumentation: a follow-up study. *International Journal of Science and Mathematics Education*, 21(4):1081–1102, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10307-0.

Kaasila:2012:MPR

[KHL12] Raimo Kaasila, Markku S. Hannula, and Anu Laine. "My personal relationship towards mathematics has necessarily not changed but ...": analyzing preservice teachers' mathematical identity talk. *International Journal of Science and Mathematics Education*, 10(4):975–995, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9308-x.

Ketonen:2020:PTP

[KHNV20] Laura Ketonen, Markus Hähkiöniemi, Pasi Nieminen, and Jouni Viiri. Pathways through peer assessment: Implementing peer assessment in a lower secondary physics classroom. *International Journal of Science and Mathematics Education*, 18(8):1465–1484, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10030-3; http://link.springer.com/content/pdf/10.1007/s10763-019-10030-3.pdf.

Kidron:2011:CKA

[Kid11] Ivy Kidron. Constructing knowledge about the notion of limit in the definition of the horizontal asymptote. *International Journal of Science and Mathematics Education*, 9(6):1261–1279, December 2011. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9258-8.

Kilic:2018:PSM

[Kil18] Hulya Kilic. Pre-service mathematics teachers' noticing skills and scaffolding practices. *International Journal of Science and Mathematics Education*, 16(2):377–400, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9784-0.

Kim:2022:SAT

[Kim22] Mijung Kim. Student agency and teacher authority in inquiry–based classrooms: Cases of elementary teachers' classroom talk. *International Journal of Science and Mathematics Education*, 20(8):1927–1948, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10233-7.

Karpudewan:2012:EGC

[KIR12] Mageswary Karpudewan, Zurida Ismail, and Wolff-Michael Roth. The efficacy of a green chemistry laboratory-based pedagogy: changes in environmental values of Malaysia pre-service teachers. *International Journal of Science and Mathematics Education*, 10(3):497–529, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9295-y.

Komatsu:2019:TDP

[KJ19] Kotaro Komatsu and Keith Jones. Task design principles for heuristic refutation in dynamic geometry environments. *International Journal of Science and Mathematics Education*, 17(4):801–824, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9892-0; http://link.springer.com/content/pdf/10.1007/s10763-018-9892-0.pdf.

Kontorovich:2016:CSE

[KK16] Igor' Kontorovich and Boris Koichu. A case study of an expert problem poser for mathematics competitions. *International Journal of Science and Mathematics Education*, 14(1):

81–99, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9467-z.

Kara:2022:IMB

[KK22a] Serpil Kara and Sevgi Kingir. Implementation of the model-based science writing heuristic approach in elementary school science. *International Journal of Science and Mathematics Education*, 20(4):683–703, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10191-0.

Kim:2022:ASR

[KK22b] Hyun-Kyung Kim and Haesun A. Kim. Analysis of student responses to constructed response items in the science assessment of educational achievement in South Korea. *International Journal of Science and Mathematics Education*, 20(5): 901–919, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10198-7.

Koklu:2023:USU

[KK23] Oguz Koklu and Jennifer J. Kaplan. Undergraduate students' use of primitive notions when reasoning about variability. *International Journal of Science and Mathematics Education*, 21(4):1243–1264, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10293-3.

Kavaz:2024:EOF

[KK24a] Seda Kavaz and Omer Kocak. The effect of the online flipped learning model on secondary school students' academic achievement, attitudes towards their mathematics course, and cognitive load. *International Journal of Science and Mathematics Education*, 22(8):1709–1737, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10455-5.

Krakehl:2024:SLS

[KK24b] Robert Krakehl and Angela M. Kelly. School-level science and mathematics predictors of precollege physics enrollment and performance. *International Journal of Science and Mathematics Education*, 22(7):1589–1614, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10436-0.

Kilinc:2017:SFI

[KKE+17] Ahmet Kilinc, Thomas Kelly, Baris Eroglu, Umit Demiral, Tezcan Kartal, Arzu Sonmez, and Mehmet Demirbag. Stickers to facts, imposers, democracy advocators, and committed impartialists: Preservice science teachers' beliefs about teacher's roles in socioscientific discourses. *International Journal of Science and Mathematics Education*, 15(2):195–213, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9682-x.

Kim:2020:ECB

[KKL20] Gahyoung Kim, Yeonjoo Ko, and Hyunju Lee. The effects of community-based socioscientific issues program (SSI-COMM) on promoting students' sense of place and character as citizens. *International Journal of Science and Mathematics Education*, 18(3):399–418, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09976-1.

Kang:2019:SER

[KKS+19] Jingoo Kang, Tuula Keinonen, Shirley Simon, Miia Rannikmäe, Regina Soobard, and Inês Direito. Scenario Evaluation with Relevance and Interest (SERI): Development and validation of a scenario measurement tool for context-based learning. *International Journal of Science and Mathematics Education*, 17(7):1317–1338, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9930-y; http://link.springer.com/content/pdf/10.1007/s10763-018-9930-y.pdf.

Korpershoek:2015:RBS

[KKvdW15] Hanke Korpershoek, Hans Kuyper, and Greetje van der Werf. The relation between students' math and reading ability and their mathematics, physics, and chemistry examination grades in secondary education. *International Journal of Science and Mathematics Education*, 13(5):1013–1037, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9534-0.

Kang:2018:IMR

[KL18a] Rui Kang and Di Liu. The importance of multiple representations of mathematical problems: Evidence from Chinese preservice elementary teachers' analysis of a learning goal. *International Journal of Science and Mathematics Education*, 16(1):125–143, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9760-8.

Kim:2018:RIC

[KL18b] Dong-Joong Kim and Woong Lim. The relative interdependency of colloquial and mathematical discourses regarding the notion and calculations of limit: an evidence-based cross-cultural study. *International Journal of Science and Mathematics Education*, 16(8):1561–1579, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9848-9.

Kang:2023:AEV

[KL23a] Xia Kang and Frederick K. S. Leung. Assessing expectancy and value beliefs in mathematics: Measurement invariance and latent mean differences across two ethnic cultures. *International Journal of Science and Mathematics Education*, 21(7):1985–2004, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10330-1.

Kontorovich:2023:SIA

[KL23b] Igor' Kontorovich and Tianqing Li. Not as straightforward as it appears: Undergraduates leverage areas to find definite integrals. *International Journal of Science and Mathematics Education*, 21(7):2027–2044, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10339-6.

Knabbe:2025:RBT

[KLE25] Alina Knabbe, Dominik Leiss, and Timo Ehmke. Reality-based tasks with complex-situations: Identifying sociodemographic and cognitive factors for solution. *International Journal of Science and Mathematics Education*, 23(1):97–120, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10463-5.

Knievel:2015:BKM

[KLH15] Imke Knievel, Anke M. Lindmeier, and Aiso Heinze. Beyond knowledge: Measuring primary teachers' subject-specific competences in and for teaching mathematics with items based on video vignettes. *International Journal of Science and Mathematics Education*, 13(2):309–329, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9608-z.

Kim:2013:TRI

[KLJ+13] Minkee Kim, Jari Lavonen, Kalle Juuti, Jack Holbrook, and Miia Rannikmäe. Teacher's reflection of inquiry teaching in Finland before and during an in-service program: examination by a progress model of collaborative reflection. *International Journal of Science and Mathematics Education*, 11(2):359–383, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9341-4.

Kaufmann:2023:TEH

[KLR23] Odd Tore Kaufmann, Maria Larsson, and Andreas Ryve. Teachers' error-handling practices within and across lesson phases in the mathematics classroom. *International Journal of Science and Mathematics Education*, 21(4):1289–1314, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10294-2.

Koponen:2013:PSP

[KN13] Ismo Koponen and Maija Nousiainen. Pre-service physics teachers' understanding of the relational structure of physics concepts: organising subject contents for purposes of teaching. *International Journal of Science and Mathematics Edu-*

cation, 11(2):325–357, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9337-0.

Kohen:2022:EMS

[KN22] Zehavit Kohen and Ortal Nitzan. Excellence in mathematics in secondary school and choosing and excelling in STEM professions over significant periods in life. *International Journal of Science and Mathematics Education*, 20(1):169–191, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10138-x.

Kubsch:2020:SSU

[KNF+20] Marcus Kubsch, Jeffrey Nordine, David Fortus, Joseph Krajcik, and Knut Neumann. Supporting students in using energy ideas to interpret phenomena: The role of an energy representation. *International Journal of Science and Mathematics Education*, 18(8):1635–1654, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10035-y; http://link.springer.com/content/pdf/10.1007/s10763-019-10035-y.pdf.

Knipprath:2010:WPT

[Kni10] Heidi Knipprath. What Pisa tells us about the quality and inequality of Japanese education in mathematics and science. *International Journal of Science and Mathematics Education*, 8(3):389–408, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9196-5.

Ko:2010:MTC

[Ko10] Yi-Yin Ko. Mathematics teachers' conceptions of proof: implications for educational research. *International Journal of Science and Mathematics Education*, 8(6):1109–1129, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9235-2.

Kadluba:2025:HAM

[KO25] Alina Kadluba and Andreas Obersteiner. How to assess mathematics teachers' TPACK? A comparison between self-reports and knowledge tests. *International Journal of Science and Mathematics Education*, 23(3):663–688, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10490-2.

Koh:2019:ATC

[Koh19] Joyce Hwee Ling Koh. Articulating teachers' creation of technological pedagogical mathematical knowledge (TPMK) for supporting mathematical inquiry with authentic problems. *International Journal of Science and Mathematics Education*, 17(6):1195–1212, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9914-y.

Konig:2013:FCT

[Kön13] Johannes König. First comes the theory, then the practice? On the acquisition of general pedagogical knowledge during initial teacher education. *International Journal of Science and Mathematics Education*, 11(4):999–1028, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9420-1.

Kar:2025:PPS

[KÖÖ25] Tuğrul Kar, Ferhat Öztürk, and Merve Özkaya. Problem posing via scriptwriting: What instructional flows do mathematics teachers use in implementing the problem-posing task? *International Journal of Science and Mathematics Education*, 23(4):1127–1151, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10507-w.

Kotsopoulos:2010:ATA

[Kot10] Donna Kotsopoulos. An analysis of talking aloud during peer collaborations in mathematics. *International Journal of Science and Mathematics Education*, 8(6):1049–1070, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-010-9221-8.

Kotelawala:2016:SPA

[Kot16] Usha Kotelawala. The status of proving among US secondary mathematics teachers. *International Journal of Science and Mathematics Education*, 14(6):1113–1131, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9638-1.

Koyuncu:2023:IPB

[Koy23] Mehmet Kasım Koyuncu. Is it possible to bring the past into the present for an effective history of mathematics teaching: Newspaper preparation method. *International Journal of Science and Mathematics Education*, 21(2):513–534, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10246-w.

Kim:2018:DAL

[KP18] Sangsoo Kim and Jongwon Park. Development and application of learning materials to help students understand ten statements describing the nature of scientific observation. *International Journal of Science and Mathematics Education*, 16(5):857–876, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9823-5.

Karpudewan:2018:CPS

[KR18a] Mageswary Karpudewan and Wolff-Michael Roth. Changes in primary students' informal reasoning during an environment-related curriculum on socio-scientific issues. *International Journal of Science and Mathematics Education*, 16(3):401–419, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9787-x.

Kazemi:2018:DSM

[KR18b] Farhad Kazemi and Abolfazl Rafiepour. Developing a scale to measure content knowledge and pedagogy content knowledge of in-service elementary teachers on fractions. *International Journal of Science and Mathematics Education*, 16(4):737–757, April 2018. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9792-0.

Kolovou:2023:CTP

[KRS23] Maria Kolovou, Hua Ran, and Walter Secada. CGI teachers' patterns of interacting with male and female students during their first and second years of practice. *International Journal of Science and Mathematics Education*, 21(5):1451–1472, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10314-1.

Kim:2011:CGE

[KRT11] Mijung Kim, Wolff-Michael Roth, and Jennifer Thom. Children's gestures and the embodied knowledge of geometry. *International Journal of Science and Mathematics Education*, 9(1):207–238, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9240-5.

Kosiol:2019:WMI

[KRU19] Timo Kosiol, Stefanie Rach, and Stefan Ufer. (Which) mathematics interest is important for a successful transition to a university study program? *International Journal of Science and Mathematics Education*, 17(7):1359–1380, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9925-8.

Kaplar:2022:IIL

[KRV+22] Marija Kaplar, Slaviša Radović, Kristina Veljković, Ksenija Simić-Muller, and Miroslav Marić. The influence of interactive learning materials on solving tasks that require different types of mathematical reasoning. *International Journal of Science and Mathematics Education*, 20(2):411–433, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10151-8; http://link.springer.com/content/pdf/10.1007/s10763-021-10151-8.pdf.

Kiray:2021:DES

[KS21] Seyit Ahmet Kiray and Sena Simsek. Determination and evaluation of the science teacher candidates' misconceptions about density by using four-tier diagnostic test. *International Journal of Science and Mathematics Education*, 19(5):935–955, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10087-5`.

Katalenic:2020:AAB

[KŠČ20] Ana Katalenić, Željka Milin Šipuš, and Aleksandra Čižmešija. Asymptotes and asymptotic behaviour in graphing functions and curves: an analysis of the Croatian upper secondary education within the anthropological theory of the didactic. *International Journal of Science and Mathematics Education*, 18(6):1185–1205, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10020-5`.

Kukliansky:2016:STV

[KSE16] Ida Kukliansky, Itai Shosberger, and Haim Eshach. Science teachers' voice on homework: beliefs, attitudes, and behaviors. *International Journal of Science and Mathematics Education*, 14(1s):229–250, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9555-8`.

Ko:2023:DVS

[KSL23] Yeonjoo Ko, Sungok Serena Shim, and Hyunju Lee. Development and validation of a scale to measure Views of Social Responsibility of Scientists and Engineers (VSRoSE). *International Journal of Science and Mathematics Education*, 21(1):277–303, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10240-8`.

Kariotoglou:2009:HST

[KST09] Petros Kariotoglou, Anna Spyrtou, and Vassilis Tselfes. How student teachers understand distance force interactions in different contexts. *International Journal of Science and Mathematics Education*, 7(5):851–873, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-008-9147-6`.

Kang:2023:EEC

[KST+23] Jingoo Kang, Anssi Salonen, Sakari Tolppanen, Annette Scheersoi, Jonathan Hense, Miia Rannikmäe, Regina Soobard, and Tuula Keinonen. Effect of embedded careers education in science lessons on students' interest, awareness, and aspirations. *International Journal of Science and Mathematics Education*, 21(1):211–231, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10238-2.

Kock:2015:CCI

[KTBG15] Zeger-Jan Kock, Ruurd Taconis, Sanneke Bolhuis, and Koeno Gravemeijer. Creating a culture of inquiry in the classroom while fostering an understanding of theoretical concepts in direct current electric circuits: a balanced approach. *International Journal of Science and Mathematics Education*, 13(1):45–69, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9535-z.

Kuo:2019:ELN

[KTC19] Yen-Ruey Kuo, Hsiao-Lin Tuan, and Chi-Chin Chin. Examining low and non-low achievers' motivation towards science learning under inquiry-based instruction. *International Journal of Science and Mathematics Education*, 17(5):845–862, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9908-9.

Kulgemeyer:2018:ISS

[Kul18] Christoph Kulgemeyer. Impact of secondary students' content knowledge on their communication skills in science. *International Journal of Science and Mathematics Education*, 16(1):89–108, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9762-6.

Kuo:2025:TTP

[Kuo25] Hsu-Chan Kuo. Transforming tomorrow: a practical synthesis of STEAM and PBL for empowering students' creative thinking. *International Journal of Science and Mathe-*

matics Education, 23(6):2061–2087, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10511-0.

Kuwahara:2013:IPB

[Kuw13] Jennifer L. H. Kuwahara. Impacts of a place-based science curriculum on student place attachment in Hawaiian and Western cultural institutions at an urban high school in Hawai'i. *International Journal of Science and Mathematics Education*, 11(1):191–212, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9387-3.

Kubiatko:2010:RBI

[KV10] Milan Kubiatko and Katerina Vlckova. The relationship between ICT use and science knowledge for Czech students: a secondary analysis of Pisa 2006. *International Journal of Science and Mathematics Education*, 8(3):523–543, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9195-6.

Kim:2022:ISI

[KVB22] Nam Ju Kim, Cristiane Rocha Vicentini, and Brian R. Belland. Influence of scaffolding on information literacy and argumentation skills in virtual field trips and problem-based learning for scientific problem solving. *International Journal of Science and Mathematics Education*, 20(2):215–236, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10145-y.

Kulgemeyer:2023:MPE

[KW23] Christoph Kulgemeyer and Jörg Wittwer. Misconceptions in physics explainer videos and the illusion of understanding: an experimental study. *International Journal of Science and Mathematics Education*, 21(2):417–437, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10265-7.

Kwok:2022:BKA

[KWMW22] Michelle Kwok, Rachael M. Welder, Jason Moore, and Ashley M. Williams. Beyond keywords: Applying systemic functional linguistics to unpack the language of additive word problems. *International Journal of Science and Mathematics Education*, 20(S1):163–186, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10290-6`.

Keraro:2007:ECC

[KWO07] Fred Nyabuti Keraro, Samuel W. Wachanga, and William Orora. Effects of cooperative concept mapping teaching approach on secondary school students' motivation in biology in Gucha District, Kenya. *International Journal of Science and Mathematics Education*, 5(1):111–124, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9026-3`.

Kala:2013:EPO

[KYA13a] Nesli Kala, Fatma Yaman, and Alipaşa Ayas. The effectiveness of predict–observe–explain technique in probing students' understanding about acid–base chemistry: a case for the concepts of pH, pOH, and strength. *International Journal of Science and Mathematics Education*, 11(3):555–574, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9354-z`.

Kidman:2013:EIS

[KYA13b] Joanna Kidman, Chiung-Fen Yen, and Eleanor Abrams. Erratum to: Indigenous students' experiences of the hidden curriculum in science education: A cross-national study in New Zealand and Taiwan. *International Journal of Science and Mathematics Education*, 11(1):267, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9393-5`; `http://link.springer.com/content/pdf/10.1007/s10763-012-9393-5.pdf`. See [KYA13c].

Kidman:2013:ISE

[KYA13c] Joanna Kidman, Chiung-Fen Yen, and Eleanor Abrams. Indigenous students' experiences of the hidden curriculum in science education: a cross-national study in New Zealand and Taiwan. *International Journal of Science and Mathematics Education*, 11(1):43–64, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9365-9. See erratum [KYA13b].

Kim:2012:DLS

[KYJS12] Mijung Kim, Heesook Yoon, Young Rae Ji, and Jinwoong Song. The dynamics of learning science in everyday contexts: a case study of everyday science class in Korea. *International Journal of Science and Mathematics Education*, 10(1):71–97, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9278-z.

Kyle:2006:RRJ

[Kyl06] William C. Kyle, Jr. The road from Rio to Johannesburg: Where are the footpaths to/from science education? *International Journal of Science and Mathematics Education*, 4(1):1–18, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-0856-9.

Langbeheim:2023:RPV

[LAA+23] Elon Langbeheim, Sevil Akaygun, Emine Adadan, Manzini Hlatshwayo, and Umesh Ramnarain. Relating pictorial and verbal forms of assessments of the particle model of matter in two communities of students. *International Journal of Science and Mathematics Education*, 21(8):2185–2201, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10345-8.

Lamb:2012:MSI

[LAMV12] Richard Lawrence Lamb, Leonard Annetta, Jeannette Meldrum, and David Vallett. Measuring science interest: Rasch validation of the Science Interest Survey. *International Journal of Science and Mathematics Education*, 10(3):643–668, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9314-z`.

Laine:2020:ITA

[LAN20] Anu Laine, Maija Ahtee, and Liisa Näveri. Impact of teacher's actions on emotional atmosphere in mathematics lessons in primary school. *International Journal of Science and Mathematics Education*, 18(1):163–181, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09948-x`; `http://link.springer.com/content/pdf/10.1007/s10763-018-09948-x.pdf`.

Laschke:2013:EFM

[Las13] Christin Laschke. Effects of future mathematics teachers' affective, cognitive and socio-demographic characteristics on their knowledge at the end of the teacher education in Germany and Taiwan. *International Journal of Science and Mathematics Education*, 11(4):895–921, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9423-y`.

Lau:2022:PPS

[Lau22] Wilfred W. F. Lau. Predicting pre-service mathematics teachers' teaching and learning conceptions: The role of mathematical beliefs, mathematics self-efficacy, and mathematics teaching efficacy. *International Journal of Science and Mathematics Education*, 20(6):1141–1160, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10204-y`.

Lawson:2005:CHQ

[Law05] Anton E. Lawson. Conducting high quality educational research. *International Journal of Science and Mathematics Education*, 3(1):1–5, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-8367-7`; `http://link.springer.com/content/pdf/10.1007/s10763-004-8367-7.pdf`.

Lee:2008:IIS

[LB08] Hyunju Lee and Sungah Bae. Issues in implementing a structured problem-based learning strategy in a volcano unit: A case study. *International Journal of Science and Mathematics Education*, 6(4):655–676, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9067-x.

Levy:2022:PGP

[LBBE22] Smadar Levy, Esther Bagno, Hana Berger, and Bat-Sheva Eylon. Professional growth of physics teacher–leaders in a professional learning communities program: the context of inquiry–based laboratories. *International Journal of Science and Mathematics Education*, 20(8):1813–1839, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10217-7.

Ledezma:2024:PTR

[LBF24] Carlos Ledezma, Adriana Breda, and Vicenç Font. Prospective teachers' reflections on the inclusion of mathematical modelling during the transition period between the face-to-face and virtual teaching contexts. *International Journal of Science and Mathematics Education*, 22(5):1057–1081, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10412-8.

Langlois:2024:ISM

[LBP+24] Simon Langlois, Nathan Béchard, Guillaume Poliquin, Stéphane Cyr, and Patrice Potvin. Integrating science and mathematics in elementary school: Impact on selected student perceptual variables. *International Journal of Science and Mathematics Education*, 22(4):837–860, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10390-x.

Liu:2014:ETM

[LC14a] Chia-Ju Liu and Wen-Wei Chiang. Erratum to: Theory, method and practice of neuroscientific findings in science education. *International Journal of Science and Mathematics Education*, 12(3):697, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9523-3; http://link.springer.com/content/pdf/10.1007/s10763-014-9523-3.pdf. See [LC14b].

Liu:2014:TMP

[LC14b] Chia-Ju Liu and Wen-Wei Chiang. Theory, method and practice of neuroscientific findings in science education. *International Journal of Science and Mathematics Education*, 12(3):629–646, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9482-0. See erratum [LC14a].

Lin:2023:USM

[LC23] Jing-Wen Lin and Yi-Min Chen. Unpacking students' modeling practices during a modeling-based STEM curriculum on highway route selection: Comparing between high- and low-spatial ability students. *International Journal of Science and Mathematics Education*, 21(S1):67–86, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10384-9.

Lamb:2016:END

[LCA16] Richard Lamb, Andy Cavagnetto, and Tariq Akmal. Examination of the nonlinear dynamic systems associated with science student cognition while engaging in science information processing. *International Journal of Science and Mathematics Education*, 14(1s):187–205, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9593-2.

Lundgren:2021:PPS

[LCB21] Lisa Lundgren, Kent J. Crippen, and Richard T. Bex II. Profiles in practice: Stories of paleontology within an online, scientific community. *International Journal of Science and Mathematics Education*, 19(5):915–933, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10095-5.

Liang:2009:PTV

[LCC+09] Ling L. Liang, Sufen Chen, Xian Chen, Osman Nafiz Kaya, April Dean Adams, Monica Macklin, and Jazlin Ebenezer. Preservice teachers' views about nature of scientific knowledge development: an international collaborative study. *International Journal of Science and Mathematics Education*, 7(5):987–1012, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-008-9140-0`.

Lin:2011:PUT

[LCC11a] Shu-Fen Lin, Wen-Hua Chang, and Yeong-Jing Cheng. The perceived usefulness of teachers' guides for science teachers. *International Journal of Science and Mathematics Education*, 9(6):1367–1389, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9268-6`.

Lu:2011:CSC

[LCC11b] Chow-Chin Lu, Yueh-Yun Chen, and Chen-Wei Chen. A correlative study of CD-ROM picture books in classrooms and school children's formation of descriptive concepts. *International Journal of Science and Mathematics Education*, 9(1): 47–67, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9212-9`.

Li:2024:CTS

[LCTK24a] Rangmei Li, Yiming Cao, Haijun Tang, and Gabriele Kaiser. Correction to: Teachers' scaffolding behavior and visual perception during cooperative learning. *International Journal of Science and Mathematics Education*, 22(8):1887, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10400-y`. See [LCTK24b].

Li:2024:TSB

[LCTK24b] Rangmei Li, Yiming Cao, Haijun Tang, and Gabriele Kaiser. Teachers' scaffolding behavior and visual perception during cooperative learning. *International Journal of Science and Mathematics Education*, 22(2):333–352, February 2024.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10379-6. See correction [LCTK24a].

Looi:2024:ECT

[LCW+24] Chee-Kit Looi, Shiau-Wei Chan, Longkai Wu, Wendy Huang, Mi Song Kim, and Daner Sun. Exploring computational thinking in the context of mathematics learning in secondary schools: Dispositions, engagement and learning performance. *International Journal of Science and Mathematics Education*, 22(5):993–1011, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10419-1.

Looi:2025:CEC

[LCW+25] Chee-Kit Looi, Shiau-Wei Chan, Longkai Wu, Wendy Huang, Mi Song Kim, and Daner Sun. Correction to: Exploring computational thinking in the context of mathematics learning in secondary schools: Dispositions, engagement and learning performance. *International Journal of Science and Mathematics Education*, 23(1):289–290, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10428-0.

Levenson:2025:EGW

[LD25] Esther S. Levenson and Amani Dasuqi. Exploring group work on open-ended geometrical tasks: Face-to-face and online. *International Journal of Science and Mathematics Education*, 23(6):1629–1650, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10532-9.

Lloyd:2021:WYM

[LdCCK21] Gwendolyn M. Lloyd, Andrea de Carle, and Mary Jayne Coon-Kitt. When you're with me, I'm learning: a duoethnography of teacher educators' identities in relation to observing preservice teachers' emergent mathematics instruction. *International Journal of Science and Mathematics Education*, 19(S1):77–98, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10162-5.

Lucero:2020:EHS

[LDG20] Margaret M. Lucero, Cesar Delgado, and Kathryn Green. Elucidating high school biology teachers' knowledge of students' conceptions regarding natural selection. *International Journal of Science and Mathematics Education*, 18(6):1041–1061, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10008-1.

Langley:2006:PHS

[LE06] Dorothy Langley and Bat-Sheva Eylon. Probing high school physics students' views and concerns about learning activities. *International Journal of Science and Mathematics Education*, 4(2):215–239, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-3274-0.

Lee:2011:MCS

[Lee11] Kyeong-Hwa Lee. Modelling of and conjecturing on a soccer ball in a Korean eighth grade mathematics classroom. *International Journal of Science and Mathematics Education*, 9(3):751–769, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9274-8.

Lee:2016:ICC

[Lee16a] Joohi Lee. Implementing college and career standards in math methods course for early childhood and elementary education teacher candidates. *International Journal of Science and Mathematics Education*, 14(1):177–192, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9551-z.

Lee:2016:SUL

[Lee16b] Shin-Yi Lee. Students' use of "Look back" strategies in multiple solution methods. *International Journal of Science and Mathematics Education*, 14(4):701–717, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9599-9.

Lee:2018:IIH

[Lee18] Silvia Wen-Yu Lee. Identifying the item hierarchy and charting the progression across grade levels: Surveying Taiwanese students' understanding of scientific models and modeling. *International Journal of Science and Mathematics Education*, 16(8):1409–1430, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9854-y`.

Lee:2021:PRB

[Lee21a] Mi Yeon Lee. The potential relationship between clinical interview skills and mathematics teacher noticing: an exploratory study. *International Journal of Science and Mathematics Education*, 19(4):793–814, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10070-0`.

Lee:2021:RSM

[Lee21b] Shin-Yi Lee. Research status of mathematical problem posing in mathematics education journals. *International Journal of Science and Mathematics Education*, 19(8):1677–1693, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10128-z`.

Lehmann:2022:MSA

[Leh22] Timothy H. Lehmann. Making sense of algorithms in discrete mathematics. *International Journal of Science and Mathematics Education*, 20(5):1057–1077, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10180-3`.

Lemmo:2021:TCM

[Lem21] Alice Lemmo. A tool for comparing mathematics tasks from paper-based and digital environments. *International Journal of Science and Mathematics Education*, 19(8):1655–1675, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10119-0`; `http://link.`

springer.com/content/pdf/10.1007/s10763-020-10119-0.pdf.

Leng:2006:EAC

[Len06] Ng Wee Leng. Effects of an Ancient Chinese mathematics enrichment programme on secondary school students' achievement in mathematics. *International Journal of Science and Mathematics Education*, 4(3):485–511, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9017-4.

Leppavirta:2012:AUS

[Lep12] Johanna Leppavirta. Assessing undergraduate students' conceptual understanding and confidence of electromagnetics. *International Journal of Science and Mathematics Education*, 10(5):1099–1117, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9317-9.

Lerman:2004:E

[Ler04] Stephen Lerman. Editorial. *International Journal of Science and Mathematics Education*, 2(1):1–3, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/content/pdf/10.1023/B%3AIJMA.0000026603.44687.ce.pdf.

Lerman:2007:DLR

[Ler07] Stephen Lerman. Directions for literacy research in science and mathematics education. *International Journal of Science and Mathematics Education*, 5(4):755–759, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9088-5.

Leu:2005:EPM

[Leu05] Yuh-Chyn Leu. The enactment and perception of mathematics pedagogical values in an elementary classroom: Buddhism, Confucianism, and curriculum reform. *International Journal of Science and Mathematics Education*, 3(2):175–212, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-3371-5.

Leung:2019:ESP

[Leu19] Allen Leung. Exploring STEM pedagogy in the mathematics classroom: a tool-based experiment lesson on estimation. *International Journal of Science and Mathematics Education*, 17(7):1339–1358, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9924-9.

Leung:2022:STB

[Leu22] Jessica Shuk Ching Leung. Shifting the teaching beliefs of preservice science teachers about socioscientific issues in a teacher education course. *International Journal of Science and Mathematics Education*, 20(4):659–682, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10177-y.

Lamb:2017:AME

[LF17] Richard L. Lamb and Jonah B. Firestone. The application of multiobjective evolutionary algorithms to an educational computational model of science information processing: a computational experiment in science education. *International Journal of Science and Mathematics Education*, 15(3): 473–486, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9705-7.

Lingefjaard:2018:ES

[LF18] Thomas Lingefjård and Djamshid Farahani. The elusive slope. *International Journal of Science and Mathematics Education*, 16(6):1187–1206, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9811-9; http://link.springer.com/content/pdf/10.1007/s10763-017-9811-9.pdf.

Lee:2003:TSI

[LFF03] Sunny S. U. Lee, Barry J. Fraser, and Darrell L. Fisher. Teacher–student interactions in Korean high school science classrooms. *International Journal of Science and Mathematics Education*, 1(1):67–85, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Lesseig:2019:ACI

[LFM+19] Kristin Lesseig, Jonah Firestone, Judy Morrison, David Slavit, and Tamara Holmlund. An analysis of cultural influences on STEM schools: Similarities and differences across K–12 contexts. *International Journal of Science and Mathematics Education*, 17(3):449–466, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9875-6`.

Levenson:2013:ITP

[LG13] Esther Levenson and Hagar Gal. Insights from a teacher professional development course: rona's changing perspectives regarding mathematically-talented students. *International Journal of Science and Mathematics Education*, 11(5):1087–1114, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9368-6`.

Lawrenz:2017:E

[LGS17a] Frances Lawrenz, Koeno Gravemeijer, and Michelle Stephan. Epilogue. *International Journal of Science and Mathematics Education*, 15(1s):125–128, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9816-4`; `http://link.springer.com/content/pdf/10.1007/s10763-017-9816-4.pdf`. See [LGS18a].

Lawrenz:2017:ISI

[LGS17b] Frances Lawrenz, Koeno Gravemeijer, and Michelle Stephan. Introduction to this special issue. *International Journal of Science and Mathematics Education*, 15(1s):1–4, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9815-5`; `http://link.springer.com/content/pdf/10.1007/s10763-017-9815-5.pdf`. See correction [LGS18b].

Lawrenz:2018:CEF

[LGS18a] Frances Lawrenz, Koeno Gravemeijer, and Michelle Stephan. Correction to: Epilogue (found in Int J of Sci and Math Educ (2017) **15** (Suppl 1):S1–S4). *International Journal of*

Science and Mathematics Education, 16(8):1635, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9920-0`; `http://link.springer.com/content/pdf/10.1007/s10763-018-9920-0.pdf`. See [LGS17a].

Lawrenz:2018:CIS

[LGS18b] Frances Lawrenz, Koeno Gravemeijer, and Michelle Stephan. Correction to: Introduction to this special issue (found in Int J of Sci and Math Educ (2017) **15** (Suppl 1):S1–S4). *International Journal of Science and Mathematics Education*, 16(8):1633, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9919-6`; `http://link.springer.com/content/pdf/10.1007/s10763-018-9919-6.pdf`. See [LGS17b].

Lofgren:2008:FYS

[LH08] Lena Löfgren and Gustav Helldén. Following young students' understanding of three phenomena in which transformations of matter occur. *International Journal of Science and Mathematics Education*, 6(3):481–504, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9064-5`.

Lee:2014:RBF

[LH14] Mi Yeon Lee and Amy J. Hackenberg. Relationships between fractional knowledge and algebraic reasoning: the case of Willa. *International Journal of Science and Mathematics Education*, 12(4):975–1000, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9442-8`.

Liou:2015:STU

[LH15] Pey-Yan Liou and Yi-Chen Hung. Statistical techniques utilized in analyzing Pisa and TIMSS data in science education from 1996 to 2013: a methodological review. *International Journal of Science and Mathematics Education*, 13(6):1449–1468, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9558-5`.

Lin:2016:DAC

[LH16] Shu-Hui Lin and Yun-Chen Huang. Development and application of a Chinese version of the short attitudes toward mathematics inventory. *International Journal of Science and Mathematics Education*, 14(1):193–216, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9563-8.

Leavy:2017:EIR

[LHC17] Aisling Leavy, Mairead Hourigan, and Claire Carroll. Exploring the impact of reform mathematics on entry-level preservice primary teachers attitudes towards mathematics. *International Journal of Science and Mathematics Education*, 15(3):509–526, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9699-1.

Lin:2009:PLG

[LHL+09] Chuan-Ju Lin, Pi-Hsia Hung, Su-Wei Lin, Bor-Hung Lin, and Fou-Lai Lin. The power of learning goal orientation in predicting student mathematics achievement. *International Journal of Science and Mathematics Education*, 7(3):551–573, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9132-0.

Lin:2012:REE

[LHL+12] Tzu-Chiang Lin, Ying-Shao Hsu, Shu-Sheng Lin, Maio-Li Changlai, Kun-Yuan Yang, and Ting-Ling Lai. A review of empirical evidence on scaffolding for science education. *International Journal of Science and Mathematics Education*, 10(2):437–455, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9322-z.

Li:2025:UPS

[LHO25] Zuokun Li, Wanling Hu, and Pey Tee Oon. Unveiling preservice teachers' competency and challenges in designing 5E inquiry-based integrated STEM lessons: a quantitative ethnography approach. *International Journal of Science and Mathematics Education*, 23(6):1729–1767, September 2025.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10529-4.

Lee:2024:PTT

[LHY24] Ji-Eun Lee, Sunghwan Hwang, and Sheunghyun Yeo. Preservice teachers' task identification and modification related to cognitive demand. *International Journal of Science and Mathematics Education*, 22(4):911–935, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10410-w. See correction [Ari24].

Li:2011:ETT

[Li11] Yeping Li. Elementary teachers' thinking about a good mathematics lesson. *International Journal of Science and Mathematics Education*, 9(4):949–973, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9263-y.

Li:2025:IAI

[Li25] Mao Li. Integrating artificial intelligence in primary mathematics education: Investigating internal and external influences on teacher adoption. *International Journal of Science and Mathematics Education*, 23(5):1283–1308, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10515-w.

Liljedahl:2007:PBJ

[Lil07] Peter Liljedahl. Persona-based journaling: Striving for authenticity in representing the problem-solving process. *International Journal of Science and Mathematics Education*, 5(4):661–680, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9092-9.

Lin:2004:DAT

[Lin04] Sheau-Wen Lin. Development and application of a two-tier diagnostic test for high school students' understanding of flowering plant growth and development. *International*

Journal of Science and Mathematics Education, 2(2):175–199, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-6484-y`.

Lin:2005:E

[Lin05a] Fou-Lai Lin. Editorial. *International Journal of Science and Mathematics Education*, 1(4):383–384, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-4574-0`; `http://link.springer.com/content/pdf/10.1007/s10763-005-4574-0.pdf`.

Lin:2005:URB

[Lin05b] Pi-Jen Lin. Using research-based video-cases to help preservice primary teachers conceptualize a contemporary view of mathematics teaching. *International Journal of Science and Mathematics Education*, 3(3):351–377, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-8369-5`.

Lins:2005:E

[Lin05c] Romulo Campos Lins. Editorial. *International Journal of Science and Mathematics Education*, 3(2):167–174, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-6906-5`; `http://link.springer.com/content/pdf/10.1007/s10763-005-6906-5.pdf`.

Lin:2006:CTU

[Lin06] Pi-Jen Lin. Conceptualizing teachers' understanding of students' mathematical learning by using assessment tasks*. *International Journal of Science and Mathematics Education*, 4(3):545–580, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9030-2`.

Lin:2012:ETS

[Lin12] Fou-Lai Lin. Editorial transition to the second decade of ijsme. *International Journal of Science and Mathematics Education*, 10(2):237–240, April 2012. CODEN ???? ISSN

1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9332-5; http://link.springer.com/content/pdf/10.1007/s10763-012-9332-5.pdf.

Lin:2014:EST

[Lin14a] Jing-Wen Lin. Elementary school teachers' knowledge of model functions and modeling processes: a comparison of science and non-science majors. *International Journal of Science and Mathematics Education*, 12(5):1197–1220, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9446-4.

Lin:2014:SNS

[Lin14b] Shu-Sheng Lin. Science and non-science undergraduate students' critical thinking and argumentation performance in reading a science news report. *International Journal of Science and Mathematics Education*, 12(5):1023–1046, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9451-7. See erratum [Lin16b].

Lin:2016:DSE

[Lin16a] Jing-Wen Lin. Do skilled elementary teachers hold scientific conceptions and can they accurately predict the type and source of students' preconceptions of electric circuits? *International Journal of Science and Mathematics Education*, 14(2s):287–307, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9635-4.

Lin:2016:ESN

[Lin16b] Shu-Sheng Lin. Erratum to: Science and non-science undergraduate students' critical thinking and argumentation performance in reading a science news report. *International Journal of Science and Mathematics Education*, 14(5):997, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9524-2; http://link.springer.com/content/pdf/10.1007/s10763-014-9524-2.pdf. See [Lin14b].

Lindvall:2017:TLS

[Lin17] Jannika Lindvall. Two large–scale professional development programs for mathematics teachers and their impact on student achievement. *International Journal of Science and Mathematics Education*, 15(7):1281–1301, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9750-x.

Lin:2025:CVC

[Lin25] Yung-Chi Lin. A comparison of virtual classroom simulation and traditional role-play in two mathematics teaching methods courses. *International Journal of Science and Mathematics Education*, 23(6):1599–1627, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10527-6.

Liu:2005:MHE

[Liu05] Shu-Chiu Liu. Models of “The heavens and the earth”: An investigation of German and Taiwanese students’ alternative conceptions of the universe. *International Journal of Science and Mathematics Education*, 3(2):295–325, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-4032-4.

Liu:2009:HPD

[Liu09] Po-Hung Liu. History as a platform for developing college students’ epistemological beliefs of mathematics. *International Journal of Science and Mathematics Education*, 7(3):473–499, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9127-x.

Larkin:2016:HMW

[LJ16] Kevin Larkin and Robyn Jorgensen. ‘I hate maths: Why do we need to do maths?’ Using iPad video diaries to investigate attitudes and emotions towards mathematics in year 3 and year 6 students. *International Journal of Science and Mathematics Education*, 14(5):925–944, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9621-x.

Larsson:2020:MMS

[LJ20] Pia Nygård Larsson and Anders Jakobsson. Meaning-making in science from the perspective of students' hybrid language use. *International Journal of Science and Mathematics Education*, 18(5):811–830, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09994-z; http://link.springer.com/content/pdf/10.1007/s10763-019-09994-z.pdf.

Liu:2008:TET

[LJC08] Chia-Ju Liu, Brady Michael Jack, and Houn-Lin Chiu. Taiwan elementary teachers' views of science teaching self-efficacy and outcome expectations. *International Journal of Science and Mathematics Education*, 6(1):19–35, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9065-4.

Lundberg:2018:TKE

[LK18a] Anna. L. V. Lundberg and Cecilia Kilhamn. Transposition of knowledge: Encountering proportionality in an algebra task. *International Journal of Science and Mathematics Education*, 16(3):559–579, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9781-3; http://link.springer.com/content/pdf/10.1007/s10763-016-9781-3.pdf.

Lutovac:2018:FDR

[LK18b] Sonja Lutovac and Raimo Kaasila. Future directions in research on mathematics-related teacher identity. *International Journal of Science and Mathematics Education*, 16(4):759–776, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9796-4.

Latsi:2022:MAA

[LK22] Maria Latsi and Chronis Kynigos. Mathematical assemblages around dynamic aspects of angle in digital and physical space. *International Journal of Science and Mathematics Education*, 20(8):1677–1698, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10225-7.

Leow:2024:SGT

[LK24] Si Hoon Leow and Berinderjeet Kaur. A study of grade two students solving a non-routine problem with access to manipulatives. *International Journal of Science and Mathematics Education*, 22(7):1457–1478, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10443-9.

Lem:2015:CME

[LKC+15] Stephanie Lem, Goya Kempen, Eva Ceulemans, Patrick Onghena, Lieven Verschaffel, and Wim Van Dooren. Combining multiple external representations and refutational text: An intervention on learning to interpret box plots. *International Journal of Science and Mathematics Education*, 13(4):909–926, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9604-3.

Lu:2020:MEC

[LKL20] Xiaoli Lu, Gabriele Kaiser, and Frederick Koon Shing Leung. Mentoring early career mathematics teachers from the mentees' perspective— a case study from China. *International Journal of Science and Mathematics Education*, 18 (7):1355–1374, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10027-y.

Lee:2005:UAI

[LL05] Sung-Tao Lee and Huann-Shyang Lin. Using argumentation to investigate science teachers' teaching practices: The perspective of instructional decisions and justifications. *International Journal of Science and Mathematics Education*, 3(3):429–461, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-1592-x.

Lazarowitz:2006:FAP

[LL06] Reuven Lazarowitz and Carl Lieb. Formative assessment pre-test to identify college students' prior knowledge, misconceptions and learning difficulties in biology. *International Journal of Science and Mathematics Education*, 4(4):741–762, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9024-5`.

Lin:2014:CLC

[LL14] John Jr-Hung Lin and Sunny S. J. Lin. Cognitive load for configuration comprehension in computer-supported geometry problem solving: an eye movement perspective. *International Journal of Science and Mathematics Education*, 12(3): 605–627, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9479-8`.

Lin:2017:DRT

[LL17] Sheau-Wen Lin and Yu Liu. A diagnostic-remediation teaching system for enhancing elementary students' science listening comprehension. *International Journal of Science and Mathematics Education*, 15(8):1485–1500, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9756-4`.

Lee:2020:PTE

[LL20] Ji-Eun Lee and Mi Yeon Lee. Preservice teachers' exploration of model breaking points. *International Journal of Science and Mathematics Education*, 18(3):549–565, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09974-3`.

Lee:2021:PST

[LL21a] Mi Yeon Lee and Ji-Eun Lee. Pre-service teachers' selection, interpretation, and sequence of fraction examples. *International Journal of Science and Mathematics Education*, 19(3): 539–558, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10062-0`.

Lee:2021:SAM

[LL21b] Mi Yeon Lee and Ji-Eun Lee. Spotlight on area models: Pre-service teachers' ability to link fractions and geometric measurement. *International Journal of Science and Mathematics Education*, 19(5):1079–1102, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10098-2.

Larkin:2023:TAS

[LL23] Kevin Larkin and Thomas Lowrie. Teaching approaches for STEM integration in pre- and primary school: a systematic qualitative literature review. *International Journal of Science and Mathematics Education*, 21(S1):11–39, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10362-1.

Lee:2024:FMA

[LL24] Wei-Cheng Lee and Chiu-Lin Lai. Facilitating mathematical argumentation by gamification: a gamified mobile collaborative learning approach for math courses. *International Journal of Science and Mathematics Education*, 22(S1):11–35, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10462-6.

Lee:2025:IPS

[LL25a] Mi Yeon Lee and Ji-Eun Lee. Investigating pre-service teachers' problem-solving ability and their curricular noticing ability through pedagogical sequencing activities. *International Journal of Science and Mathematics Education*, 23(5):1211–1236, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10506-x.

Li:2025:DVB

[LL25b] Ruying Li and Gaofeng Li. Developing and validating a biological system thinking test for middle school students. *International Journal of Science and Mathematics Education*, 23(3):827–847, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10496-w.

Lin:2015:DCB

[LLC+15] Sheau-Wen Lin, Yu Liu, Shin-Feng Chen, Jing-Ru Wang, and Huey-Lien Kao. Development of a computer-based measure of listening comprehension of science talk. *International Journal of Science and Mathematics Education*, 13(6):1469–1486, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9559-4.

Lin:2016:ESS

[LLC+16] Sheau-Wen Lin, Yu Liu, Shin-Feng Chen, Jing-Ru Wang, and Huey-Lien Kao. Elementary school students' science talk ability in inquiry-oriented settings in Taiwan: Test development, verification, and performance benchmarks. *International Journal of Science and Mathematics Education*, 14 (7):1199–1214, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9663-0.

Liou:2023:GDS

[LLHC23] Pey-Yan Liou, Yao-Mei Lin, Ssu-Ching Huang, and Sufen Chen. Gender differences in science motivational beliefs and their relations with achievement over grades 4 and 8: a multinational perspective. *International Journal of Science and Mathematics Education*, 21(1):233–249, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10243-5.

Lu:2015:AAH

[LLL15] Yu-Ling Lu, Ie-Bin Lian, and Chi-Jui Lien. The application of the analytic hierarchy process for evaluating creative products in science class and its modification for educational evaluation. *International Journal of Science and Mathematics Education*, 13(2s):413–435, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9485-x.

Luan:2022:HSS

[LLL22] Hui Luan, Tung-Lin Li, and Min-Hsien Lee. High school students' environmental education in Taiwan: Scientific epistemic views, decision-making style, and recycling intention.

International Journal of Science and Mathematics Education, 20(1):25–44, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10136-z.

Litster:2021:RGA

[LLN+21] Kristy Litster, Christina W. Lommatsch, Joshua R. Novak, Patricia S. Moyer-Packenham, M. Jill Harmon, Allison L. Roxburgh, and Emma P. Bullock. The role of gender on the associations among children's attitudes, mathematics knowledge, digital game use, perceptions of affordances, and achievement. *International Journal of Science and Mathematics Education*, 19(7):1463–1483, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10111-8.

Lee:2019:DPT

[LLP19] Eun-Jung Lee, Kyeong-Hwa Lee, and Minsun Park. Developing preservice teachers' abilities to modify mathematical tasks: Using noticing-oriented activities. *International Journal of Science and Mathematics Education*, 17(5):965–985, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9891-1.

Lore:2024:ICT

[LLP+24] Christopher Lore, Hee-Sun Lee, Amy Pallant, Charles Connor, and Jie Chao. Integrating computational thinking into geoscientific inquiry about volcanic eruption hazards and risks. *International Journal of Science and Mathematics Education*, 22(6):1173–1195, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10426-2.

Liu:2009:ISH

[LLT09] Tzu-Chien Liu, Yi-Chun Lin, and Chin-Chung Tsai. Identifying senior high school students' misconceptions about statistical correlation, and their possible causes: an exploratory study using concept mapping with interviews. *International Journal of Science and Mathematics Education*, 7(4):791–820, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9142-y.

Lim:2020:IPF

[LLT+20] Woong Lim, Ji-Eun Lee, Kersti Tyson, Hee-Jeong Kim, and Jihye Kim. An integral part of facilitating mathematical discussions: Follow-up questioning. *International Journal of Science and Mathematics Education*, 18(2):377–398, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09966-3.

Lee:2020:HSS

[LLW+20] Min-Hsien Lee, Jyh-Chong Liang, Ying-Tien Wu, Guo-Li Chiou, Chung-Yuan Hsu, Chia-Yu Wang, Jing-Wen Lin, and Chin-Chung Tsai. High school students' conceptions of science laboratory learning, perceptions of the science laboratory environment, and academic self-efficacy in science learning. *International Journal of Science and Mathematics Education*, 18(1):1–18, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09951-w.

Leikin:2013:EPE

[LLWS13] Roza Leikin, Mark Leikin, Ilana Waisman, and Shelley Shaul. Effect of the presence of external representations on accuracy and reaction time in solving mathematical double-choice problems by students of different levels of instruction. *International Journal of Science and Mathematics Education*, 11 (5):1049–1066, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9389-1.

Lin:2010:LAS

[LM10] Shu-Sheng Lin and Joel J. Mintzes. Learning argumentation skills through instruction in socioscientific issues: the effect of ability level. *International Journal of Science and Mathematics Education*, 8(6):993–1017, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9215-6.

Louis:2012:DSS

[LM12] Rachel A. Louis and Jean M. Mistele. The differences in scores and self-efficacy by student gender in mathematics and science. *International Journal of Science and Mathematics Education*, 10(5):1163–1190, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9325-9.

Lai:2015:HKG

[LM15] Mun Yee Lai and Sara Murray. Hong Kong grade 6 students' performance and mathematical reasoning in decimals tasks: procedurally based or conceptually based? *International Journal of Science and Mathematics Education*, 13(1):123–149, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9531-3.

Lee:2021:AEG

[LM21] Se Woong Lee and Xinyi Mao. Algebra by the eighth grade: The association between early study of Algebra I and students' academic success. *International Journal of Science and Mathematics Education*, 19(6):1271–1289, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10116-3.

Lo:2024:OMP

[LNN24] Chung Kwan Lo, Davy Tsz Kit Ng, and Fletcher Ng. Observing mathematical properties in the virtual world: an exploratory study of online independent learning of locus concepts. *International Journal of Science and Mathematics Education*, 22(S1):37–58, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10466-2.

Laine:2018:CPT

[LNP+18] Anu Laine, Liisa Nåveri, Erkki Pehkonen, Maija Ahtee, and Markku S. Hannula. Connections of primary teachers' actions and pupils' solutions to an open problem. *International Journal of Science and Mathematics Education*, 16(5):967–983, June 2018. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9809-3.

Lampert:2022:IGB

[LNW22] Irene Lampert, Kai Niebert, and Markus Wilhelm. Instructional guidelines based on conceptions of students and scientists about economic and population growth within planetary boundaries. *International Journal of Science and Mathematics Education*, 20(7):1315–1336, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10200-2.

Lawson:2008:CSM

[LOJ08] Anton E. Lawson, Michael Oehrtman, and Jamie Jensen. Connecting science and mathematics: The nature of scientific and statistical hypothesis testing. *International Journal of Science and Mathematics Education*, 6(2):405–416, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9108-5.

Lorenzo:2005:DIE

[Lor05] Mercedes Lorenzo. The development, implementation, and evaluation of a problem solving heuristic. *International Journal of Science and Mathematics Education*, 3(1):33–58, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-8359-7; http://link.springer.com/content/pdf/10.1007/s10763-004-8359-7.pdf.

Lim:2011:TMT

[LP11] Chap Sam Lim and Norma Presmeg. Teaching mathematics in two languages: a teaching dilemma of Malaysian Chinese primary schools. *International Journal of Science and Mathematics Education*, 9(1):137–161, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9225-4.

Lee:2023:WCD

[LP23] Jiyoung Lee and JeongSuk Pang. What is so complicated in developing students' conception of the equal sign? *In-*

ternational Journal of Science and Mathematics Education, 21(2):559–580, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10248-8.

Lee:2024:ETV

[LPK24] Kyung-Jin Lee, JinHyeong Park, and Suh-Ryung Kim. Exploration of the truth values of conditionals set up in everyday context and in open sentences. *International Journal of Science and Mathematics Education*, 22(3):657–678, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10391-w.

Llinares:2008:SSS

[LR08] Salvador Llinares and Ana Isabel Roig. Secondary school students' construction and use of mathematical models in solving word problems. *International Journal of Science and Mathematics Education*, 6(3):505–532, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9055-6.

Lane:2020:FMT

[LR20] Ciara Lane and Máire Ní Ríordáin. Out-of-field mathematics teachers' beliefs and practices: an examination of change and tensions using zone theory. *International Journal of Science and Mathematics Education*, 18(2):337–355, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09964-5.

Lin:2014:EIS

[LS14] Emily Lin and Qingmin Shi. Exploring individual and school-related factors and environmental literacy: comparing U.S. and Canada using Pisa 2006. *International Journal of Science and Mathematics Education*, 12(1):73–97, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9396-2.

Lee:2015:DPO

[LS15] Soo Jin Lee and Jaehong Shin. Distributive partitioning operation in mathematical situations involving fractional quantities. *International Journal of Science and Mathematics Education*, 13(2s):329–355, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9478-9.

Lautert:2021:UUA

[LS21] Sintria Labres Lautert and Analúcia Dias Schliemann. Using and understanding algorithms to solve double and multiple proportionality problems. *International Journal of Science and Mathematics Education*, 19(7):1421–1440, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10123-4.

Lytle:2023:SPI

[LS23] Ashley Lytle and Jiyun Elizabeth L. Shin. Self and professors' incremental beliefs as predictors of STEM engagement among undergraduate students. *International Journal of Science and Mathematics Education*, 21(3):1013–1029, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10272-8.

Lin:2024:CMD

[LS24] Shu-Fen Lin and Wan-Chin Shie. A cooperative model of development and validation of a curriculum-based scientific competence test. *International Journal of Science and Mathematics Education*, 22(3):491–514, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10366-x.

Lee:2025:MSS

[LS25] Soo Jin Lee and Jaehong Shin. Middle school students' proportional reasoning at different stages of units coordination. *International Journal of Science and Mathematics Education*, 23(6):1651–1676, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10526-7.

Lim:2018:UPT

[LSK18] Woong Lim, Ji-Won Son, and Dong-Joong Kim. Understanding preservice teacher skills to construct lesson plans. *International Journal of Science and Mathematics Education*, 16(3):519–538, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9783-1.

Liu:2014:USS

[LsL14] Shu-Chiu Liu and Huann shyang Lin. Undergraduate students' science-related ideas as embedded in their environmental worldviews. *International Journal of Science and Mathematics Education*, 12(5):1001–1021, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9448-2.

Lawrie:2019:ITP

[LSW19] Gwendolyn A. Lawrie, Madeleine Schultz, and Anthony H. Wright. Insights and teacher perceptions regarding students' conceptions as they enter tertiary chemistry studies: a comparative study. *International Journal of Science and Mathematics Education*, 17(1):43–65, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9853-z.

Lynch:2011:MBL

[LT11] Douglas Jay Lynch and Hernando Trujillo. Motivational beliefs and learning strategies in organic chemistry. *International Journal of Science and Mathematics Education*, 9 (6):1351–1365, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9264-x.

Lim-Teo:2007:DDE

[LTCCY07] Suat Khoh Lim-Teo, Kwee Gek Chua, Wai Kwong Cheang, and Joseph K. Yeo. The development of diploma in education student teachers' mathematics pedagogical content knowledge. *International Journal of Science and Mathematics Education*, 5(2):237–261, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9056-5.

Lotter:2018:IPT

[LTD+18] Christine R. Lotter, Stephen Thompson, Tammiee S. Dickenson, Whitney F. Smiley, Genine Blue, and Mary Rea. The impact of a practice–teaching professional development model on teachers' inquiry instruction and inquiry efficacy beliefs. *International Journal of Science and Mathematics Education*, 16(2):255–273, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9779-x.

Lemonidis:2018:STC

[LTM18] Charalampos Lemonidis, Helen Tsakiridou, and Ioanna Meliopoulou. In-service teachers' content and pedagogical content knowledge in mental calculations with rational numbers. *International Journal of Science and Mathematics Education*, 16(6):1127–1145, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9822-6.

Levenson:2006:MPB

[LTT06] Esther Levenson, Dina Tirosh, and Pessia Tsamir. Mathematically and practically-based explanations: individual preferences and sociomathematical norms. *International Journal of Science and Mathematics Education*, 4(2):319–344, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9011-x.

Leong:2019:CST

[LTT+19] Yew Hoong Leong, Eng Guan Tay, Tin Lam Toh, Khiok Seng Quek, and Romina Ann Soon Yap. Concretisations: a support for teachers to carry out instructional innovations in the mathematics classroom. *International Journal of Science and Mathematics Education*, 17(2):365–384, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9868-5.

Leong:2021:SCP

[LTT+21] Yew Hoong Leong, Tin Lam Toh, Eng Guan Tay, Khiok Seng Quek, Pee Choon Toh, and Dindyal Jaguthsing. Scaling up of continual professional development for mathematics problem solving in Singapore schools. *International Journal of Science and Mathematics Education*, 19(6):1291–1310, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10097-3`.

Luitel:2013:MIP

[Lui13] Bal Chandra Luitel. Mathematics as an im/pure knowledge system: symbiosis, (w)holism and synergy in mathematics education. *International Journal of Science and Mathematics Education*, 11(1):65–87, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9366-8`.

Lin:2016:TPT

[LW16] Kuen-Yi Lin and P. John Williams. Taiwanese preservice teachers' science, technology, engineering, and mathematics teaching intention. *International Journal of Science and Mathematics Education*, 14(6):1021–1036, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9645-2`.

Lee:2018:EMI

[LW18] Wei-Kuang Lee and Chao-Jung Wu. Eye movements in integrating geometric text and figure: Scanpaths and given-new effects. *International Journal of Science and Mathematics Education*, 16(4):699–714, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9790-2`.

Lin:2024:USP

[LWZ+24] Xiao-Fan Lin, Seng Yue Wong, Wei Zhou, Weipeng Shen, Wenyi Li, and Chin-Chung Tsai. Undergraduate students' profiles of cognitive load in augmented reality-assisted science learning and their relation to science learning self-efficacy and behavior patterns. *International Journal of Science and Mathematics Education*, 22(2):419–445, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10376-9`.

Lin:2007:RCG

[LY07] Fou-Lai Lin and Kai-Lin Yang. The reading comprehension of geometric proofs: The contribution of knowledge and reasoning. *International Journal of Science and Mathematics Education*, 5(4):729–754, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9095-6`.

Lee:2010:GDR

[LY10] Chun-Yi Lee and Yuan Yuan. Gender differences in the relationship between Taiwanese adolescents' mathematics attitudes and their perceptions toward virtual manipulatives. *International Journal of Science and Mathematics Education*, 8(5):937–950, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9193-8`.

Lee:2013:WCC

[LY13] Gyoungho Lee and Jinseog Yi. Where cognitive conflict arises from?: The structure of creating cognitive conflict. *International Journal of Science and Mathematics Education*, 11(3):601–623, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9356-x`.

Lin:2004:FRR

[LYC04] Fou-Lai Lin, Kai-Lin Yang, and Chuang-Yih Chen. The features and relationships of reasoning, proving and understanding proof in number patterns. *International Journal of Science and Mathematics Education*, 2(2):227–256, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-3413-z`.

Li:2023:DRN

[LYL23] Chen Li, Jian Yu, and Gaofeng Li. Development of the representation of the nature of science in textbooks: the case of high school biology textbooks in Mainland China. *International Journal of Science and Mathematics Education*, 21(6):1749–1768, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10327-w. See correction [LYL24].

Li:2024:CDR

[LYL24] Chen Li, Jian Yu, and Gaofeng Li. Correction to: Development of the representation of the nature of science in textbooks: the case of high school biology textbooks in Mainland China. *International Journal of Science and Mathematics Education*, 22(8):1889, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10394-7. See [LYL23].

Lotter:2014:BCP

[LYP14] Christine Lotter, Jan A. Yow, and Thomas T. Peters. Building a community of practice around inquiry instruction through a professional development program. *International Journal of Science and Mathematics Education*, 12(1):1–23, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9391-7.

Lin:2007:MMD

[LYY07] Fou-Lai Lin, Larry D. Yore, and Sharyl A. Yore. Mentoring makes a difference. *International Journal of Science and Mathematics Education*, 5(2):187–191, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9068-9.

Li:2018:CSR

[LZL+18] Mang Li, Chunping Zheng, Jyh-Chong Liang, Yun Zhang, and Chin-Chung Tsai. Conceptions, self-regulation, and strategies of learning science among Chinese high school students. *International Journal of Science and Mathematics Education*, 16(1):69–87, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9766-2.

Menon:2021:IPT

[MA21] Deepika Menon and Saiqa Azam. Investigating preservice teachers' science teaching self-efficacy: an analysis of reflective practices. *International Journal of Science and*

Mathematics Education, 19(8):1587–1607, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10131-4.

Ma:2023:EIB

[Ma23] Yue Ma. The effect of inquiry-based practices on scientific literacy: the mediating role of science attitudes. *International Journal of Science and Mathematics Education*, 21(7):2045–2066, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10336-9.

Madej:2022:PSS

[Mad22] Lars Madej. Primary school students' knowledge of the equal sign— the Swedish case. *International Journal of Science and Mathematics Education*, 20(2):321–343, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10144-z; http://link.springer.com/content/pdf/10.1007/s10763-020-10144-z.pdf.

Majidi:2014:CBK

[Maj14] Sharareh Majidi. A comparison between the knowledge organization of university physics teachers and the textbooks they use for their teaching purposes: Biot-Savart Law and Ampère's Law. *International Journal of Science and Mathematics Education*, 12(6):1281–1314, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9457-1.

Marra:2011:OPD

[MAL+11] Rose M. Marra, Fran Arbaugh, John Lannin, Sandra Abell, Mark Ehlert, Rena Smith, Dominike Merle-Johnson, and Meredith Park Rogers. Orientations to professional development design and implementation: understanding their relationship to PD outcomes across multiple projects. *International Journal of Science and Mathematics Education*, 9(4):793–816, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9223-6.

Maschietto:2015:AMZ

[Mas15] Michela Maschietto. The arithmetical machine Zero +1 in mathematics laboratory: instrumental genesis and semiotic mediation. *International Journal of Science and Mathematics Education*, 13(1s):121–144, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9493-x.

Mesutoglu:2020:EDM

[MB20] Canan Mesutoglu and Evrim Baran. Examining the development of middle school science teachers' understanding of engineering design process. *International Journal of Science and Mathematics Education*, 18(8):1509–1529, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10041-0.

Milovanovic:2021:APE

[MB21] Ilija Milovanović and Bojan Branovački. Adaptation and psychometric evaluation of modified abbreviated math anxiety scale for children in Serbia. *International Journal of Science and Mathematics Education*, 19(3):579–598, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10066-w.

Mellado:2008:CPP

[MBBR08] Vicente Mellado, María Luisa Bermejo, Lorenzo J. Blanco, and Constantino Ruiz. The classroom practice of a prospective secondary biology teacher and his conceptions of the nature of science and of teaching and learning science. *International Journal of Science and Mathematics Education*, 6(1):37–62, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9081-z.

Melville:2013:SIC

[MBF13] Wayne Melville, Anthony Bartley, and Xavier Fazio. Scaffolding the inquiry continuum and the constitution of identity. *International Journal of Science and Mathematics Education*, 11(5):1255–1273, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-012-9375-7.

Mintzes:2004:UCC

[MC04] Joel J. Mintzes and Mei-Hung Chiu. Understanding and conceptual change in science and mathematics: An international agenda within a constructivist framework. *International Journal of Science and Mathematics Education*, 2(2):111–114, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-7277-z; http://link.springer.com/content/pdf/10.1007/s10763-004-7277-z.pdf.

McComas:2003:TCN

[McC03] William F. McComas. A textbook case of the nature of science: Laws and theories in the science of biology. *International Journal of Science and Mathematics Education*, 1(2): 141–155, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Marchant:2023:SIM

[MCF23] Paola Marchant, Carlos Cornejo, and Patricio Felmer. Student insights in mathematics problem solving: Cognition, affect, and gesture. *International Journal of Science and Mathematics Education*, 21(3):713–736, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10270-w.

McGinnis:2003:CSM

[McG03] J. Randy McGinnis. College science, mathematics, and methods teaching faculty talk about science and mathematics: An examination of faculty discourse in a reform-based teacher preparation program. *International Journal of Science and Mathematics Education*, 1(1):5–38, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Martin-Dunlop:2008:LEA

[MDF08] Catherine Martin-Dunlop and Barry J. Fraser. Learning environment and attitudes associated with an innovative science course designed for prospective elementary teachers.

International Journal of Science and Mathematics Education, 6(1):163–190, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9070-2.

Middleton:2013:CCR

[MDT13] Michael Middleton, Juliann Dupuis, and Judy Tang. Classrooms and culture: the role of context in shaping motivation and identity for science learning in indigenous adolescents. *International Journal of Science and Mathematics Education*, 11(1):111–141, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9385-5.

Markic:2013:PCP

[ME13] Silvija Markic and Ingo Eilks. Potential changes in prospective chemistry teachers' beliefs about teaching and learning — a cross-level study. *International Journal of Science and Mathematics Education*, 11(4):979–998, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9417-9.

Meaney:2007:WIC

[Mea07] Tamsin Meaney. Weighing up the influence of context on judgements of mathematical literacy. *International Journal of Science and Mathematics Education*, 5(4):681–704, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9093-8.

Melville:2010:CRS

[Mel10] Wayne Melville. Curriculum reform and a science department: a Bourdieuian analysis. *International Journal of Science and Mathematics Education*, 8(6):971–991, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9204-9.

Merrill:2007:AFC

[Mer07] Stephen J. Merrill. To again feel the creative voice. *International Journal of Science and Mathematics Education*, 5(1):

145–164, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9047-6.

Mink:2005:EKM

[MF05] Deborah V. Mink and Barry J. Fraser. Evaluation of a K–5 mathematics program which integrates children's literature: Classroom environment and attitudes. *International Journal of Science and Mathematics Education*, 3(1):59–85, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-2975-0; http://link.springer.com/content/pdf/10.1007/s10763-004-2975-0.pdf.

Morrison:2021:TRS

[MFG+21] Judith Morrison, Janet Frost, Chad Gotch, Amy Roth McDuffie, Bruce Austin, and Brian French. Teachers' role in students' learning at a project-based STEM high school: Implications for teacher education. *International Journal of Science and Mathematics Education*, 19(6):1103–1123, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10108-3.

Morentin:2015:PST

[MG15a] Maite Morentin and Jenaro Guisasola. Primary and secondary teachers' ideas on school visits to science centres in the Basque Country. *International Journal of Science and Mathematics Education*, 13(1s):191–214, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9481-1.

Morentin:2015:RSM

[MG15b] Maite Morentin and Jenaro Guisasola. The role of science museum field trips in the primary teacher preparation. *International Journal of Science and Mathematics Education*, 13(5):965–990, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9522-4.

Moon:2025:CMU

[MGV+25] Sungmin Moon, Shu-Sha Angie Guan, Jose H. Vargas, Judith C. P. Lin, Patchareeya Kwan, Carrie L. Saetermoe, Gilberto Flores, and Gabriela Chavira. Critical mentorship in undergraduate research experience BUILDs science identity and self-efficacy. *International Journal of Science and Mathematics Education*, 23(2):321–341, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10476-0.

Mainali:2017:CTI

[MH17] Bhesh Raj Mainali and André Heck. Comparison of traditional instruction on reflection and rotation in a Nepalese high school with an ICT-rich, student-centered, investigative approach. *International Journal of Science and Mathematics Education*, 15(3):487–507, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9701-y.

Marshall:2009:KSM

[MHIS09] Jeff C. Marshall, Robert Horton, Brent L. Igo, and Deborah M. Switzer. K–12 science and mathematics teachers' beliefs about and use of inquiry in the classroom. *International Journal of Science and Mathematics Education*, 7(3):575–596, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9122-7.

Mikeska:2025:TEU

[MHK25] Jamie N. Mikeska, Heather Howell, and Devon Kinsey. Teacher educators' use of formative feedback during preservice teachers' simulated teaching experiences in mathematics and science. *International Journal of Science and Mathematics Education*, 23(6):1917–1945, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10489-9.

Mattheis:2015:EHS

[MIJJ15] Allison Mattheis, Debra Ingram, Murray S. Jensen, and Jon Jackson. Examining high school anatomy and physiology teacher experience in a cadaver dissection laboratory and impacts on practice. *International Journal of Science and Mathematics Education*, 13(3):535–559, June

2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9507-8.

Miyazaki:2008:CIS

[Miy08] Mikio Miyazaki. Cognitive incoherence of students regarding the establishment of universality of propositions through experimentation/measurement. *International Journal of Science and Mathematics Education*, 6(3):533–558, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9097-4.

Medina-Jerez:2018:SER

[MJ18] William Medina-Jerez. Science education research trends in Latin America. *International Journal of Science and Mathematics Education*, 16(3):465–485, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9785-z.

Medina-Jerez:2011:UDC

[MJMOR11] William Medina-Jerez, Kyndra V. Middleton, and Walter Orihuela-Rabaza. Using the DAST-C to explore Colombian and Bolivian students' images of scientists. *International Journal of Science and Mathematics Education*, 9(3):657–690, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9218-3.

Manoharan:2023:MTP

[MK23] Manju Manoharan and Berinderjeet Kaur. Mathematics teachers' perceptions of diagrams. *International Journal of Science and Mathematics Education*, 21(4):1315–1337, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10312-3.

Mikk:2016:RBS

[MKSK16] Jaan Mikk, Heiki Krips, Ülle Säälik, and Karmen Kalk. Relationships between student perception of teacher–student relations and PISA results in mathematics and science. *International Journal of Science and Mathematics Education*, 14

(8):1437–1454, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9669-7`.

Mun:2015:CCC

[MLK+15] Kongju Mun, Hyunju Lee, Sung-Won Kim, Kyunghee Choi, Sung-Youn Choi, and Joseph S. Krajcik. Cross-cultural comparison of perceptions on the global scientific literacy with Australian, Chinese, and Korean middle school students. *International Journal of Science and Mathematics Education*, 13(2s):437–465, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9492-y`.

Markovitz:2025:WSS

[MLL25] Lior Miller Markovitz, Roza Leikin, and Gad M. Landau. Who succeeds in STEM studies? Following the funnel. *International Journal of Science and Mathematics Education*, 23(6):1981–2007, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-025-10594-3`.

Meuleners:2025:DTM

[MLN25] Julia S. Meuleners, Christian Lindermayer, and Birgit J. Neuhaus. Are digital tools more often implemented in high-quality lessons? — Profiles of instructional quality and the use of digital tools in biology and mathematics lessons. *International Journal of Science and Mathematics Education*, 23(5):1439–1465, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10510-1`.

Morrison:2005:PTD

[MMA05] Judith A. Morrison, Amy Roth McDuffie, and Valarie L. Akerson. Preservice teachers' development and implementation of science performance assessment tasks. *International Journal of Science and Mathematics Education*, 3(3):379–406, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-5108-x`.

Masingila:2011:USS

[MMK11] Joanna O. Masingila, Samson M. Muthwii, and Patrick M. Kimani. Understanding students' out-of-school mathematics and science practice. *International Journal of Science and Mathematics Education*, 9(1):89–108, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9220-9`.

McCrudden:2011:DSF

[MMM11] Matthew T. McCrudden, Montana K. McCormick, and Erin M. McTigue. Do the spatial features of an adjunct display that readers complete while reading affect their understanding of a complex system? *International Journal of Science and Mathematics Education*, 9(1):163–185, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9236-1`.

McGee:2014:SSR

[MMP14] Daniel Lee McGee and Rafael Martinez-Planell. A study of semiotic registers in the development of the definite integral of functions of two and three variables. *International Journal of Science and Mathematics Education*, 12(4):883–916, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9437-5`.

McGee:2015:IEP

[MMR15] Daniel Lee McGee and Deborah Moore-Russo. Impact of explicit presentation of slopes in three dimensions on students' understanding of derivatives in multivariable calculus. *International Journal of Science and Mathematics Education*, 13(2s):357–384, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9542-0`.

Moutinho:2016:MMA

[MMV16] Sara Moutinho, Rui Moura, and Clara Vasconcelos. Mental models about seismic effects: students' profile based comparative analysis. *International Journal of Science and Mathematics Education*, 14(3):391–415, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-014-9572-7.

Moin:2009:IAG

[MMZ09] Laura J. Moin, Kathleen Magiera, and Naomi Zigmond. Instructional activities and group work in the us inclusive high school co-taught science class. *International Journal of Science and Mathematics Education*, 7(4):677–697, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9133-z.

Mogelvang:2023:COL

[MN23] Anja Møgelvang and Jorun Nyléhn. Co-operative learning in undergraduate mathematics and science education: a scoping review. *International Journal of Science and Mathematics Education*, 21(6):1935–1959, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10331-0.

Mamlok-Naaman:2005:LST

[MNBZH+05] Rachel Mamlok-Naaman, Ruth Ben-Zvi, Avi Hofstein, Joseph Menis, and Sibel Erduran. Learning science through a historical approach: Does it affect the attitudes of non–science-oriented students towards science? *International Journal of Science and Mathematics Education*, 3(3):485–507, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-0696-7.

Mamlok-Naaman:2012:DTA

[MNE12] Rachel Mamlok-Naaman and Ingo Eilks. Different types of action research to promote chemistry teachers' professional development — a joined theoretical reflection on two cases from Israel and Germany. *International Journal of Science and Mathematics Education*, 10(3):581–610, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9306-z.

Morina:2023:TEI

[MO23] Anabel Moriña and Inmaculada Orozco. Teaching experiences of inclusive Spanish STEM faculty with students with disabilities. *International Journal of Science and Mathematics Education*, 21(3):993–1012, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10276-4.

Maulana:2012:TSI

[MOdBB12] Ridwan Maulana, Marie-Christine Opdenakker, Perry den Brok, and Roel J. Bosker. Teacher–student interpersonal behavior in secondary mathematics classes in Indonesia. *International Journal of Science and Mathematics Education*, 10(1):21–47, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9276-1.

Moseley:2007:CUJ

[MOI07] Bryan James Moseley, Yukari Okamoto, and Junichi Ishida. Comparing US and Japanese elementary school teachers' facility for linking rational number representations. *International Journal of Science and Mathematics Education*, 5(1):165–185, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9040-0.

Moru:2009:EOCa

[Mor09a] Eunice Kolitsoe Moru. Epistemological obstacles in coming to understand the limit of a function at undergraduate level: a case from the National University of Lesotho. *International Journal of Science and Mathematics Education*, 7(3):431–454, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9143-x.

Moru:2009:EOCb

[Mor09b] Eunice Kolitsoe Moru. Epistemological obstacles in coming to understand the limit of a function at undergraduate level: a case from the National University of Lesotho. *International Journal of Science and Mathematics Education*, 7(5):1057–1059, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9168-9; http://link.springer.com/content/pdf/10.1007/s10763-009-9168-9.pdf.

Morrison:2014:SPT

[Mor14] Judith A. Morrison. Scientists' participation in teacher professional development: the impact on fourth to eighth grade teachers' understanding and implementation of inquiry science. *International Journal of Science and Mathematics Education*, 12(4):793–816, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9439-3`.

McConney:2010:SMA

[MP10] Andrew McConney and Laura B. Perry. Science and mathematics achievement in Australia: the role of school socioeconomic composition in educational equity and effectiveness. *International Journal of Science and Mathematics Education*, 8(3):429–452, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9197-4`.

Moru:2010:IPG

[MPB10] Eunice Kolitsoe Moru, Jan Persens, and Trygve Breiteig. Investigating a possible gap between students' expectations and perceptions: the case of a pre-entry science program. *International Journal of Science and Mathematics Education*, 8(2):323–348, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9175-x`.

Mintzes:2007:KRB

[MQ07] Joel Mintzes and Heather J. Quinn. Knowledge restructuring in biology: Testing a punctuated model of conceptual change. *International Journal of Science and Mathematics Education*, 5(2):281–306, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9035-x`.

Mujtaba:2014:SPM

[MR14] Tamjid Mujtaba and Michael J. Reiss. A survey of psychological, motivational, family and perceptions of physics education factors that explain 15-year-old students' aspirations to study physics in post-compulsory English schools. *International Journal of Science and Mathematics Education*, 12(2):

371–393, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9404-1`.

Milford:2010:OBU

[MRA10] Todd Milford, Shelley P. Ross, and John O. Anderson. An opportunity to better understand schooling: the growing presence of Pisa in the Americas*. *International Journal of Science and Mathematics Education*, 8(3):453–473, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9201-z`.

Mumba:2023:RSE

[MRC23] Frackson Mumba, Alexis Rutt, and Vivien Mweene Chabalengula. Representation of science and engineering practices and design skills in engineering design-integrated science units developed by pre-service teachers. *International Journal of Science and Mathematics Education*, 21(2):439–461, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10266-6`.

Molina:2017:SSS

[MRDCC17] Marta Molina, Susana Rodríguez-Domingo, María Consuelo Cañadas, and Encarnación Castro. Secondary school students' errors in the translation of algebraic statements. *International Journal of Science and Mathematics Education*, 15(6):1137–1156, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9739-5`.

Maiorca:2021:ILE

[MRJ+21] Cathrine Maiorca, Thomas Roberts, Christa Jackson, Sarah Bush, Ashley Delaney, Margaret J. Mohr-Schroeder, and Soledad Yao Soledad. Informal learning environments and impact on interest in STEM careers. *International Journal of Science and Mathematics Education*, 19(1):45–64, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10038-9`.

Mejia-Rodriguez:2021:GDM

[MRLM21] Ana María Mejía-Rodríguez, Hans Luyten, and Martina R. M. Meelissen. Gender differences in mathematics self-concept across the world: an exploration of student and parent data of TIMSS 2015. *International Journal of Science and Mathematics Education*, 19(6):1229–1250, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10100-x; http://link.springer.com/content/pdf/10.1007/s10763-020-10100-x.pdf.

So:2013:CMP

[mS13] Winnie Wing mui So. Connecting mathematics in primary science inquiry projects. *International Journal of Science and Mathematics Education*, 11(2):385–406, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9342-3.

Martinez-Sierra:2014:GMT

[MS14] Gustavo Martinez-Sierra. Good mathematics teaching from Mexican high school students' perspective. *International Journal of Science and Mathematics Education*, 12(6):1547–1573, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9480-2.

Menon:2018:SST

[MS18] Deepika Menon and Troy D. Sadler. Sources of science teaching self-efficacy for preservice elementary teachers in science content courses. *International Journal of Science and Mathematics Education*, 16(5):835–855, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9813-7.

Marshall:2017:IBI

[MSA17] Jeff C. Marshall, Julie B. Smart, and Daniel M. Alston. Inquiry-based instruction: A possible solution to improving student learning of both science concepts and scientific practices. *International Journal of Science and Mathematics Education*, 15(5):777–796, June 2017. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9718-x.

Martinez-Sierra:2022:WST

[MSAGHM22] Gustavo Martínez-Sierra, Yurdia Arellano-García, and Antonia Hernández-Moreno. Which situations trigger emotions of secondary school mathematics teachers? *International Journal of Science and Mathematics Education*, 20(3):575–595, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10158-1.

Martinez-Sierra:2019:DEE

[MSAGHMNG19] Gustavo Martínez-Sierra, Yurdia Arellano-García, Antonia Hernández-Moreno, and Cristian Nava-Guzmán. Daily emotional experiences of a high school mathematics teacher in the classroom: a qualitative experience-sampling method. *International Journal of Science and Mathematics Education*, 17(3):591–611, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9879-x.

Martinez-Sierra:2017:SEH

[MSdSGG17] Gustavo Martínez-Sierra and María del Socorro García-González. Students' emotions in the high school mathematical class: Appraisals in terms of a structure of goals. *International Journal of Science and Mathematics Education*, 15(2):349–369, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9698-2.

Martinez-Sierra:2020:HSM

[MSGGVZDF20] Gustavo Martínez-Sierra, Javier García-García, María Valle-Zequeida, and Crisólogo Dolores-Flores. High school mathematics teachers' beliefs about assessment in mathematics and the connections to their mathematical beliefs. *International Journal of Science and Mathematics Education*, 18(3): 485–507, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09967-2.

Marshall:2010:DVE

[MSH10] Jeff C. Marshall, Julie Smart, and Robert M. Horton. The design and validation of equip: an instrument to assess inquiry-based instruction. *International Journal of Science and Mathematics Education*, 8(2):299–321, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9174-y.

Manou:2022:WDN

[MSK22] Leonidas Manou, Anna Spyrtou, and Petros Kariotoglou. What does "Nanoscience–Nanotechnology" mean to primary school teachers? *International Journal of Science and Mathematics Education*, 20(6):1269–1290, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10199-6.

Maass:2022:PAC

[MSS22] Katja Maass, Stefan Sorge, and Oliver Straser. Promoting active citizenship in mathematics and science teaching. *International Journal of Science and Mathematics Education*, 20(4):727–746, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10182-1.

Makela:2023:ECS

[MTMKR23] Tiina Mäkelä, Ari Tuhkala, Matias Mäki-Kuutti, and Juhani Rautopuro. Enablers and constraints of STEM programme implementation: an external change agent perspective from a national STEM programme in Finland. *International Journal of Science and Mathematics Education*, 21(3):969–991, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10271-9.

Mauricio:2017:DSE

[MVC17a] Paulo Maurício, Bianor Valente, and Isabel Chagas. A didactic sequence of elementary geometric optics informed by history and philosophy of science. *International Journal of Science and Mathematics Education*, 15(3):527–543, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9662-1.

Mauricio:2017:TLS

[MVC17b] Paulo Maurício, Bianor Valente, and Isabel Chagas. A teaching–learning sequence of colour informed by history and philosophy of science. *International Journal of Science and Mathematics Education*, 15(7):1177–1194, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9736-8`.

Madsen:2009:RBT

[MW09] Lene Møller Madsen and Carl Winsløw. Relations between teaching and research in physical geography and mathematics at research-intensive universities. *International Journal of Science and Mathematics Education*, 7(4):741–763, August 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-008-9134-y`.

Merritt:2023:EET

[MWA23] Eileen G. Merritt, Andrea E. Weinberg, and Leanna Archambault. Exploring energy through the lens of equity: Funds of knowledge conveyed through video-based discussion. *International Journal of Science and Mathematics Education*, 21(8):2237–2260, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10352-3`.

McGinnis:2005:UMS

[MWM05] J. Randy McGinnis, Tad Watanabe, and Amy Roth McDuffie. University mathematics and science faculty modeling their understanding of reform based instruction in a teacher preparation program: Voices of faculty and teacher candidates. *International Journal of Science and Mathematics Education*, 3(3):407–428, September 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-3591-3`.

Mason:2019:RIC

[MZC+19] Lucia Mason, Sonia Zaccoletti, Barbara Carretti, Sara Scrimin, and Irene-Anna N. Diakidoy. The role of inhibition in conceptual learning from refutation and standard expository texts. *International Journal of Science* *and Mathematics Education*, 17(3):483–501, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9874-7.

Nikolic:2024:PSB

[NA24] Nataša Nikolić and Radovan Antonijević. Problem-solving in biology teaching: Students' activities and their achievement. *International Journal of Science and Mathematics Education*, 22(4):765–785, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10407-5.

Nas:2022:FCG

[NAÇE22] Sibel Er Nas, Hava İpek Akbulut, Muammer Çalik, and Merve İrem Emir. Facilitating conceptual growth of the mainstreamed students with learning disabilities via a science experimental guidebook: a case of physical events. *International Journal of Science and Mathematics Education*, 20(1): 45–67, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10140-3.

Naresh:2015:SSI

[Nar15] Nirmala Naresh. A stone or a sculpture? It is all in your perception. *International Journal of Science and Mathematics Education*, 13(6):1567–1588, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9549-6.

Nam:2011:ISW

[NCH11] Jeonghee Nam, Aeran Choi, and Brian Hand. Implementation of the science writing heuristic (swh) approach in 8th grade science classrooms. *International Journal of Science and Mathematics Education*, 9(5):1111–1133, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9250-3.

Norton:2014:MMB

[NDD14] Anderson Norton and Kirby Deater-Deckard. Mathematics in mind, brain, and education: a neo-Piagetian approach.

International Journal of Science and Mathematics Education, 12(3):647–667, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9512-6.

Narjaikaew:2010:MTS

[NEAC10] Pattawan Narjaikaew, Narumon Emarat, Kwan Arayathanitkul, and Bronwen Cowie. Magnetism teaching sequences based on an inductive approach for first-year Thai university science students. *International Journal of Science and Mathematics Education*, 8(5):891–910, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9191-x.

Ng:2020:TMV

[NF20] Oi-Lam Ng and Francesca Ferrara. Towards a materialist vision of 'learning as making': the case of 3D printing pens in school mathematics. *International Journal of Science and Mathematics Education*, 18(5):925–944, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10000-9.

Nitsch:2015:SCW

[NFB$^+$15] Renate Nitsch, Anneke Fredebohm, Regina Bruder, Augustin Kelava, Dominik Naccarella, Timo Leuders, and Markus Wirtz. Students' competencies in working with functions in secondary mathematics education — empirical examination of a competence structure model. *International Journal of Science and Mathematics Education*, 13(3):657–682, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9496-7.

Neumann:2010:PES

[NFK10] Knut Neumann, Hans E. Fischer, and Alexander Kauertz. From Pisa to educational standards: the impact of large–scale assessments on science education in Germany. *International Journal of Science and Mathematics Education*, 8(3):545–563, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9206-7.

Ng:2010:EAC

[Ng10] Wee Leng Ng. Effects of an Ancient Chinese mathematics enrichment programme on secondary school students' achievement in mathematics. *International Journal of Science and Mathematics Education*, 8(1):25–50, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9057-4.

Ng:2019:ETM

[Ng19] Oi-Lam Ng. Examining technology-mediated communication using a commognitive lens: the case of touchscreen-dragging in dynamic geometry environments. *International Journal of Science and Mathematics Education*, 17(6):1173–1193, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9910-2.

Ng:2020:DSM

[Ng20] Clarence Ng. Disadvantaged students' motivation, aspiration and subject choice in mathematics: a prospective qualitative investigation. *International Journal of Science and Mathematics Education*, 18(5):945–964, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09981-4.

Neber:2008:CHS

[NHLS08] Heinz Neber, Jing He, Bang-Xiang Liu, and Neville Schofield. Chinese high-school students in physics classroom as active, self-regulated learners: Cognitive, motivational and environmental aspects. *International Journal of Science and Mathematics Education*, 6(4):769–788, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9110-y.

Niss:2017:ORS

[Nis17] Martin Niss. Obstacles related to structuring for mathematization encountered by students when solving physics problems. *International Journal of Science and Mathematics Education*, 15(8):1441–1462, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-016-9754-6.

Naranjo:2024:HSC

[NJ24] Omar A. Naranjo and Steven R. Jones. How students construct sophisticated differential equations to model real-world contexts. *International Journal of Science and Mathematics Education*, 22(5):945–969, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10411-9.

Nunokawa:2004:SAP

[NK04] Kazuhiko Nunokawa and Masashi Kuwayama. Students' appropriation process of mathematical ideas and their creation of hybrids of old and new ideas. *International Journal of Science and Mathematics Education*, 1(3):283–309, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Nawani:2018:TUF

[NKR+18] Jigna Nawani, Lena Kotzebue, Julia Rixius, Michael Graml, and Birgit J. Neuhaus. Teachers' use of focus questions in German biology classrooms: a video-based naturalistic study. *International Journal of Science and Mathematics Education*, 16(8):1431–1451, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9837-z. See erratum [NvKR+18].

Ng:2016:SML

[NLW16] Betsy L. L. Ng, W. C. Liu, and John C. K. Wang. Student motivation and learning in mathematics and science: A cluster analysis. *International Journal of Science and Mathematics Education*, 14(7):1359–1376, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9654-1.

Newton:2011:ESP

[NN11] Douglas P. Newton and Lynn D. Newton. Engaging science: pre-service primary school teachers' notions of engaging science lessons. *International Journal of Science* and Mathematics Education, 9(2):327–345, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9244-1.

Navarro:2022:SWH

[NOVRR22] Federico Navarro, Julieta Orlando, Caren Vega-Retter, and Alejandro D. Roth. "Science writing in higher education: Effects of teaching self–assessment of scientific poster construction on writing quality and academic achievement". *International Journal of Science and Mathematics Education*, 20(1):89–110, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10137-y.

Neugebauer:2023:QTP

[NP23] Philipp Neugebauer and Susanne Prediger. Quality of teaching practices for all students: Multilevel analysis of language-responsive teaching for robust understanding. *International Journal of Science and Mathematics Education*, 21(3):811–834, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10274-6.

Nicolaou:2016:HLA

[NPP16] Aristoklis A. Nicolaou and Demetra Pitta-Pantazi. Hierarchical levels of abilities that constitute fraction understanding at elementary school. *International Journal of Science and Mathematics Education*, 14(4):757–776, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9603-4.

Nantawanit:2012:PSC

[NPR12] Nantawan Nantawanit, Bhinyo Panijpan, and Pintip Ruenwongsa. Promoting students' conceptual understanding of plant defense responses using the fighting plant learning unit (fplu). *International Journal of Science and Mathematics Education*, 10(4):827–864, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9297-9.

Nehring:2017:CTQ

[NPT17] Andreas Nehring, Andreas Päßler, and Rüdiger Tiemann. The complexity of teacher questions in chemistry classrooms: an empirical analysis on the basis of two competence models. *International Journal of Science and Mathematics Education*, 15(2):233–250, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9683-9`.

Nam:2013:PPC

[NRKR13] Younkyeong Nam, Gillian Roehrig, Anne Kern, and Bree Reynolds. Perceptions and practices of culturally relevant science teaching in American Indian classrooms. *International Journal of Science and Mathematics Education*, 11 (1):143–167, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9372-x`.

Nipyrakis:2025:EMT

[NSA25] Argyris Nipyrakis, Dimitris Stavrou, and Lucy Avraamidou. Examining s-t-e-m teachers' design of integrated STEM lesson plans. *International Journal of Science and Mathematics Education*, 23(2):537–560, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10474-2`.

Neofotistos:2024:MSH

[NSH24] Rigas Neofotistos, Ioannis Starakis, and Krystallia Halkia. "Is the Moon self- or hetero-luminous?": an investigation of primary school students' ideas on the luminosity of the Moon. *International Journal of Science and Mathematics Education*, 22(6):1239–1263, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10427-1`.

Nieminen:2013:GDL

[NSV13] Pasi Nieminen, Antti Savinainen, and Jouni Viiri. Gender differences in learning of the concept of force, representational consistency, and scientific reasoning. *International*

Journal of Science and Mathematics Education, 11(5):1137–1156, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9363-y`.

Nawani:2018:ETU

[NvKR+18] Jigna Nawani, Lena von Kotzebue, Julia Rixius, Michael Graml, and Birgit J. Neuhaus. Erratum to: Teachers' Use of Focus Questions in German Biology Classrooms: a Video–Based Naturalistic Study. *International Journal of Science and Mathematics Education*, 16(8):1453, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9849-8; http://link.springer.com/content/pdf/10.1007/s10763-017-9849-8.pdf`. See [NKR+18].

Noyes:2011:WIP

[NWD11] Andrew Noyes, Geoff Wake, and Pat Drake. Widening and increasing post-16 mathematics participation: pathways, pedagogies and politics. *International Journal of Science and Mathematics Education*, 9(2):483–501, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9281-4`.

Nakiboglu:2011:ATH

[NY11] Canan Nakiboğlu and H. Esra Yildirir. Analysis of Turkish high school chemistry textbooks and teacher-generated questions about gas laws. *International Journal of Science and Mathematics Education*, 9(5):1047–1071, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9231-6`.

Nyikahadzoyi:2015:TKC

[Nyi15] Maroni Runesu Nyikahadzoyi. Teachers' knowledge of the concept of a function: a theoretical framework. *International Journal of Science and Mathematics Education*, 13(2s):261–283, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9486-9`.

Ogan-Bekiroglu:2012:ERB

[OBE12] Feral Ogan-Bekiroglu and Handan Eskin. Examination of the relationship between engagement in scientific argumentation and conceptual knowledge. *International Journal of Science and Mathematics Education*, 10(6):1415–1443, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9346-z.

Ohle:2015:IIT

[OBF15] Annika Ohle, William J. Boone, and Hans E. Fischer. Investigating the impact of teachers' physics CK on students outcomes. *International Journal of Science and Mathematics Education*, 13(6):1211–1233, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9547-8.

Osman:2017:ILG

[OBH17] Enja Osman, Saouma BouJaoude, and Hiba Hamdan. An investigation of Lebanese G7–12 students' misconceptions and difficulties in genetics and their genetics literacy. *International Journal of Science and Mathematics Education*, 15 (7):1257–1280, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9743-9.

Olive:2008:LDQ

[OÇ08] John Olive and Günhan Çağlayan. Learners' difficulties with quantitative units in algebraic word problems and the teacher's interpretation of those difficulties. *International Journal of Science and Mathematics Education*, 6(2):269–292, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9107-6.

Olsher:2021:EVT

[OC21] Shai Olsher and Jason Cooper. Expressing the voice of the textbook — insights gained from tagging didactic metadata. *International Journal of Science and Mathematics Education*, 19(8):1635–1653, December 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-020-10124-3.

Ozmen:2009:CSE

[ÖDC09] Haluk Özmen, Gökhan Demırcıoğlu, and Richard K. Coll. A comparative study of the effects of a concept mapping enhanced laboratory experience on Turkish high school students' understanding of acid-base chemistry. *International Journal of Science and Mathematics Education*, 7(1):1–24, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9087-6.

Oliva:2015:CML

[OdC15] José Ma. Oliva, María del Mar Aragón, and Josefa Cuesta. The competence of modelling in learning chemical change: a study with secondary school students. *International Journal of Science and Mathematics Education*, 13(4):751–791, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9583-4.

Ouertatani:2007:ABA

[ODTS07] Latifa Ouertatani, Alain Dumon, Malika Ayadi Trabelsi, and Mohamed Soudani. Acids and bases: The appropriation of the Arrhenius model by Tunisian grade 10 students. *International Journal of Science and Mathematics Education*, 5(3):483–506, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9049-4.

Olsher:2019:OTS

[OE19] Shai Olsher and Ruhama Even. Organizing tools suggested by teachers in the mathematics textbook they use in class. *International Journal of Science and Mathematics Education*, 17(7):1381–1399, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9902-2.

Otto:2012:UST

[OEMZ12] Charlotte A. Otto, Susan A. Everett, Richard H. Moyer, and Paul W. Zitzewitz. Using a state teacher certification test to assess an inquiry-based science education program. *International Journal of Science and Mathematics Education*, 10(3): 531–552, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9296-x`.

Osmanoglu:2024:EHP

[OGY24] Aslihan Osmanoglu and Dilek Girit-Yildiz. Examining how prospective mathematics teachers' instructional visions align with their responding practices through scripting tasks. *International Journal of Science and Mathematics Education*, 22(7):1411–1434, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10435-1`.

Oh:2011:UEC

[Oh11] Jun-Young Oh. Using an enhanced conflict map in the classroom (photoelectric effect) based on Lakatosian heuristic principle strategies. *International Journal of Science and Mathematics Education*, 9(5):1135–1166, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9252-1`; `http://link.springer.com/content/pdf/10.1007/s10763-010-9252-1.pdf`.

Oh:2014:UAC

[Oh14] Jun-Young Oh. Understanding the alternative conceptions of pre-service secondary science teachers about tidal phenomena based on Toulmin's argumentation. *International Journal of Science and Mathematics Education*, 12(2):353–370, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9403-2`.

ODwyer:2023:SSA

[OHLC23] Anne O'Dwyer, Mairéad Hourigan, Aisling M. Leavy, and Edward Corry. 'I have seen STEM in action and it's quite do-able!' The impact of an extended professional development model on teacher efficacy in primary STEM education. *International Journal of Science and Mathematics Education*, 21(S1):131–157, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10361-2`.

Oliver:2021:IMO

[OHMW21] Kevin M. Oliver, Jennifer K. Houchins, Robert L. Moore, and Chuang Wang. Informing makerspace outcomes through a linguistic analysis of written and video-recorded project assessments. *International Journal of Science and Mathematics Education*, 19(2):333–354, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10060-2.

Oehrtman:2008:CSM

[OL08] Michael Oehrtman and Anton E. Lawson. Connecting science and mathematics: The nature of proof and disproof in science and mathematics. *International Journal of Science and Mathematics Education*, 6(2):377–403, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9111-x.

Osman:2014:IIM

[OL14] Kamisah Osman and Tien Tien Lee. Impact of interactive multimedia module with pedagogical agents on students' understanding and motivation in the learning of electrochemistry. *International Journal of Science and Mathematics Education*, 12(2):395–421, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9407-y.

Oliveira:2010:DET

[Oli10] Alandeom W. Oliveira. Developing elementary teachers' understanding of the discourse structure of inquiry-based science classrooms. *International Journal of Science and Mathematics Education*, 8(2):247–269, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9172-0.

Olson:2007:PTT

[Ols07] Joanne K. Olson. Preservice teachers' thinking within a research-based framework: what informs decisions? *International Journal of Science and Mathematics Education*, 5(1):49–83, March 2007. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9027-2.

Olsson:2018:CRU

[Ols18] Jan Olsson. The contribution of reasoning to the utilization of feedback from software when solving mathematical problems. *International Journal of Science and Mathematics Education*, 16(4):715–735, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9795-x; http://link.springer.com/content/pdf/10.1007/s10763-016-9795-x.pdf.

Ozgeldi:2021:ICD

[Ön21] Meriç Özgeldi and Utkun Aydın. Identifying competency demands in calculus textbook examples: the case of integrals. *International Journal of Science and Mathematics Education*, 19(1):171–191, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10046-9.

Ondes:2025:RTS

[Önd25] Rabia Nur Öndeş. Research trends in STEM clubs: a content analysis. *International Journal of Science and Mathematics Education*, 23(2):561–588, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10477-z.

Olteanu:2012:IEC

[OO12] Constanta Olteanu and Lucian Olteanu. Improvement of effective communication — the case of subtraction. *International Journal of Science and Mathematics Education*, 10(4):803–826, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9294-z.

OKeeffe:2015:RLA

[OO15] Lisa O'Keeffe and John O'Donoghue. A role for language analysis in mathematics textbook analysis. *International Journal of Science and Mathematics Education*, 13(3):605–630, June 2015. CODEN ???? ISSN 1571-0068 (print),

1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9463-3.

Ozdemir:2023:SFI

[ÖÖ23] Oya Ağlarcı Özdemir and Fatma Önen Öztürk. Science fiction as an instructional strategy: Foundations, procedures, and results for pre-service teachers. *International Journal of Science and Mathematics Education*, 21(1):187–209, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10244-4.

Ozturk:2025:EIS

[OR25] Nilay Ozturk and Gillian H. Roehrig. Effects of an integrated STEM unit designed around socioscientific issues on middle school students' socioscientific reasoning. *International Journal of Science and Mathematics Education*, 23(5):1493–1518, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10517-8.

Orosco:2016:MES

[Oro16] Michael J. Orosco. Measuring elementary student's mathematics motivation: A validity study. *International Journal of Science and Mathematics Education*, 14(5):945–958, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9632-7.

Oh:2005:SRI

[OS05] Phil Seok Oh and Myeong-Kyeong Shin. Students' reflections on implementation of group investigation in Korean secondary science classrooms. *International Journal of Science and Mathematics Education*, 3(2):327–349, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-4502-8.

Obara:2010:CEN

[OS10] Samuel Obara and Margaret Sloan. Classroom experiences with new curriculum materials during the implementation of performance standards in mathematics: a case study of teachers coping with change. *International Journal of*

Science and Mathematics Education, 8(2):349–372, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9176-9.

Ozturk:2024:MSS

[ÖSY24] Mesut Öztürk, İsmail Sarikaya, and Kübra Ada Yıldız. Middle school students' problem solving performance: Identifying the factors that influence it. *International Journal of Science and Mathematics Education*, 22(6):1363–1379, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10423-5.

Ofri:2025:OCP

[OT25] Ofra Ofri and Michal Tabach. Overt and covert participation in an argumentative whole-class discussion: Spread of ideas about quadratic functions. *International Journal of Science and Mathematics Education*, 23(3):639–661, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10488-w.

Ortiz:2025:SEG

[OVE25] Rita Ortiz, Elizabeth Vicario, and Sarina J. Ergas. A study of the engagement of Ghanaian high school students in authentic science using model biodigesters. *International Journal of Science and Mathematics Education*, 23(5):1401–1438, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10508-9.

Owens:2014:DOP

[Owe14] Kay Owens. Diversifying our perspectives on mathematics about space and geometry: an ecocultural approach. *International Journal of Science and Mathematics Education*, 12(4):941–974, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9441-9.

Own:2006:AAW

[Own06] Zangyuan Own. The application of an adaptive Web-based learning environment on oxidation–reduction reactions. *International Journal of Science and Mathematics Education*, 4(1):73–96, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-8129-6.

Own:2010:AAW

[Own10] Zangyuan Own. The application of an adaptive, Web-based learning environment on oxidation-reduction reactions. *International Journal of Science and Mathematics Education*, 8(1):1–23, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9033-z.

Ozalp:2025:PTL

[Öza25] Dilek Özalp. Preservice teachers learn to engage in argument from evidence through the science writing heuristic. *International Journal of Science and Mathematics Education*, 23(4):949–986, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10503-0.

Ozdemir:2010:EVT

[Ozd10] Gokhan Ozdemir. Exploring visuospatial thinking in learning about mineralogy: spatial orientation ability and spatial visualization ability. *International Journal of Science and Mathematics Education*, 8(4):737–759, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9183-x.

Pournara:2022:RSM

[PA22] Craig Pournara and Jill Adler. Revisiting school mathematics in pre-service secondary teacher education: Purposes, opportunities and challenges. *International Journal of Science and Mathematics Education*, 20(2):391–410, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10150-9.

Pincheira:2025:MKE

[PA25] Nataly Pincheira and Ángel Alsina. Mathematical knowledge of early algebra exhibited by pre-service early childhood education teachers. *International Journal of Science and Mathematics Education*, 23(2):461–487, February 2025.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10478-y.

Papadopoulos:2010:RTE

[Pap10] Ioannis Papadopoulos. “Reinventing” techniques for the estimation of the area of irregular plane figures: from the eighteenth century to the modern classroom. *International Journal of Science and Mathematics Education*, 8(5):869–890, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9190-y.

Parameswaran:2007:UNL

[Par07] Revathy Parameswaran. On understanding the notion of limits and infinitesimal quantities. *International Journal of Science and Mathematics Education*, 5(2):193–216, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9050-y.

Prophet:2009:LSP

[PB09] Robert B. Prophet and Nandkishor B. Badede. Language and student performance in junior secondary science examinations: The case of second language learners in Botswana. *International Journal of Science and Mathematics Education*, 7(2):235–251, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9058-3.

Pettersen:2019:MCD

[PB19] Andreas Pettersen and Johan Braeken. Mathematical competency demands of assessment items: a search for empirical evidence. *International Journal of Science and Mathematics Education*, 17(2):405–425, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9870-y.

Peters-Burton:2023:STS

[PBDE23] Erin E. Peters-Burton, Zoubeida R. Dagher, and Sibel Erduran. Student, teacher, and scientist views of the scientific enterprise: an epistemic network re-analysis. *International*

Journal of Science and Mathematics Education, 21(2):347–375, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10254-w`.

Pocalana:2025:MDG

[PBR25] Gabriella Pocalana, Giulia Bini, and Ornella Robutti. Multiple documentational genesis and praxeologies: a networked approach to investigate mathematics teachers' documentation work. *International Journal of Science and Mathematics Education*, 23(5):1183–1209, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10505-y`.

Park:2013:ASU

[PC13] Eun-Jung Park and Kyunghee Choi. Analysis of student understanding of science concepts including mathematical representations: pH values and the relative differences of pH values. *International Journal of Science and Mathematics Education*, 11(3):683–706, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9359-7`.

Premo:2018:CCE

[PCL18] Joshua Premo, Andy Cavagnetto, and Richard Lamb. The Cooperative Classroom Environment Measure (CCEM): Refining a measure that assesses factors motivating student prosociality. *International Journal of Science and Mathematics Education*, 16(4):677–697, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9804-8`.

Pinto:2022:FRE

[PCM22] Eder Pinto, María C. Cañadas, and Antonio Moreno. Functional relationships evidenced and representations used by third graders within a functional approach to early algebra. *International Journal of Science and Mathematics Education*, 20(6):1183–1202, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10183-0`.

Prieto:2017:EIM

[PD17] Elena Prieto and Nicola Dugar. An enquiry into the influence of mathematics on students' choice of STEM careers. *International Journal of Science and Mathematics Education*, 15 (8):1501–1520, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9753-7.

Palha:2015:ESP

[PDG15] Sonia Palha, Rijkje Dekker, and Koeno Gravemeijer. The effect of shift-problem lessons in the mathematics classroom. *International Journal of Science and Mathematics Education*, 13(6):1589–1623, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9543-z.

Pekdag:2021:ECR

[PDÜA21] Bülent Pekdağ, Gamze Dolu, Handan Ürek, and Nursen Azizoğlu. Exploring on-campus and in real school classroom microteaching practices: the effect on the professional development of preservice teachers. *International Journal of Science and Mathematics Education*, 19(6):1145–1166, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10109-2.

Pedersen:2015:WCA

[Ped15] Ida Friestad Pedersen. What characterizes the algebraic competence of Norwegian upper secondary school students? Evidence from TIMSS Advanced. *International Journal of Science and Mathematics Education*, 13(1s):71–96, March 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9468-y.

Parviainen:2023:TEM

[PEK+23] Piia Parviainen, Kenneth Eklund, Merja Koivula, Tarja Liinamaa, and Niina Rutanen. Teaching early mathematical skills to 3- to 7-year-old children — differences related to mathematical skill category, Children's age group and teachers' characteristics. *International Journal of Science* *and Mathematics Education*, 21(7):1961–1983, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10341-y`.

Pelen:2025:BAA

[Pel25] Mustafa Serkan Pelen. Beyond the across algorithm: Informal strategies for inverse proportional problems. *International Journal of Science and Mathematics Education*, 23 (5):1341–1368, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10524-9`.

Prediger:2024:EIQ

[PEQS24] Susanne Prediger, Kirstin Erath, Kim Quabeck, and Rebekka Stahnke. Effects of interaction qualities beyond task quality: Disentangling instructional support and cognitive demands. *International Journal of Science and Mathematics Education*, 22(4):885–909, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10389-4`.

Perry:2020:DEG

[Per20] Lindsey Perry. Development of an early grade relational reasoning subtask: collecting validity evidence on technical adequacy and reliability. *International Journal of Science and Mathematics Education*, 18(3):589–609, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09968-1`.

Peters:2013:ERA

[Pet13] Michelle L. Peters. Examining the relationships among classroom climate, self-efficacy, and achievement in undergraduate mathematics: a multi-level analysis. *International Journal of Science and Mathematics Education*, 11(2):459–480, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9347-y`.

Peten:2022:IAD

[Pet22] Duygu Metin Peten. Influence of the argument-driven inquiry with explicit-reflective nature of scientific inquiry intervention on pre-service science teachers' understandings about the nature of scientific inquiry. *International Journal of Science and Mathematics Education*, 20(5):921–941, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10197-8`.

Pino-Fan:2023:MTC

[PFCM23] Luis R. Pino-Fan, Walter F. Castro, and Vicenç Font Moll. A macro tool to characterize and develop key competencies for the mathematics teacher' practice. *International Journal of Science and Mathematics Education*, 21(5):1407–1432, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10301-6`.

Pino-Fan:2018:AMA

[PFFG+18] Luis R. Pino-Fan, Vicenç Font, Wilson Gordillo, Víctor Larios, and Adriana Breda. Analysis of the meanings of the antiderivative used by students of the first engineering courses. *International Journal of Science and Mathematics Education*, 16(6):1091–1113, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9826-2`.

Priemer:2018:LAM

[PH18] Burkhard Priemer and Julia Hellwig. Learning about measurement uncertainties in secondary education: A model of the subject matter. *International Journal of Science and Mathematics Education*, 16(1):45–68, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9768-0`.

Paige:2019:SHE

[PH19] Kathryn Paige and Graham Hardy. Science as human endeavour, critical pedagogy and practitioner inquiry: Three early career cases. *International Journal of Science and Mathematics Education*, 17(4):679–699, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9887-x`.

Pittalis:2023:YSA

[Pit23] Marios Pittalis. Young students' arithmetic–algebraic structure sense: an empirical model and profiles of students. *International Journal of Science and Mathematics Education*, 21(6):1865–1887, August 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10333-y`.

Partanen:2015:SNN

[PK15] Anna-Maija Partanen and Raimo Kaasila. Sociomathematical norms negotiated in the discussions of two small groups investigating calculus. *International Journal of Science and Mathematics Education*, 13(4):927–946, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9521-5`.

Park:2015:EMI

[PL15] Do-Yong Park and Cindy Logsdon. Effects of modeling instruction on descriptive writing and observational skills in middle school. *International Journal of Science and Mathematics Education*, 13(1):71–94, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9456-2`.

Park:2019:KPE

[PL19a] Mimi Park and Eun-Jung Lee. Korean preservice elementary teachers' abilities to identify equiprobability bias and teaching strategies. *International Journal of Science and Mathematics Education*, 17(8):1585–1603, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9933-8`.

Patahuddin:2019:ETK

[PL19b] Sitti Maesuri Patahuddin and Tom Lowrie. Examining teachers' knowledge of line graph task: a case of travel task. *International Journal of Science and Mathematics Education*, 17(4):781–800, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9893-z`.

Panaoura:2017:SMR

[PMCG+17] Areti Panaoura, Paraskevi Michael-Chrysanthou, Athanasios Gagatsis, Iliada Elia, and Andreas Philippou. A structural model related to the understanding of the concept of function: Definition and problem solving. *International Journal of Science and Mathematics Education*, 15(4):723–740, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9714-1`.

Potvin:2015:PIC

[PMLC15] Patrice Potvin, Steve Masson, Stéphanie Lafortune, and Guillaume Cyr. Persistence of the intuitive conception that heavier objects sink more: a reaction time study with different levels of interference. *International Journal of Science and Mathematics Education*, 13(1):21–43, February 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9520-6`; `http://link.springer.com/content/pdf/10.1007/s10763-014-9520-6.pdf`.

Planinic:2012:CSU

[PMSK+12] Maja Planinic, Zeljka Milin-Sipus, Helena Katic, Ana Susac, and Lana Ivanjek. Comparison of student understanding of line graph slope in physics and mathematics. *International Journal of Science and Mathematics Education*, 10(6):1393–1414, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9344-1`.

Patterson:2004:CST

[PN04] Nikita D. Patterson and Karen S. Norwood. A case study of teacher beliefs on students' beliefs about multiple representations. *International Journal of Science and Mathematics Education*, 2(1):5–23, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Pettersen:2018:ICD

[PN18] Andreas Pettersen and Guri A. Nortvedt. Identifying competency demands in mathematical tasks: Recognising what matters. *International Journal of Science and*

Mathematics Education, 16(5):949–965, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9807-5.

Pongsophon:2025:DIC

[Pon25] Pongprapan Pongsophon. Dimensionality and invariance of contemporary mathematical instruction competence across educational systems. *International Journal of Science and Mathematics Education*, 23(4):1079–1104, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10502-1.

Panizzon:2008:APE

[PP08] Debra Panizzon and John Pegg. Assessment practices: Empowering mathematics and science teachers in rural secondary schools to enhance student learning. *International Journal of Science and Mathematics Education*, 6(2):417–436, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9084-9.

Pantziara:2015:SMM

[PP15] Marilena Pantziara and George N. Philippou. Students' motivation in the mathematics classroom. revealing causes and consequences. *International Journal of Science and Mathematics Education*, 13(2s):385–411, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9502-0.

Papadopoulos:2019:WTW

[PP19] Ioannis Papadopoulos and Nafsika Patsiala. When the "Tug-of-War" game facilitates the development of algebraic thinking. *International Journal of Science and Mathematics Education*, 17(7):1401–1421, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9928-5.

Park:2018:EYC

[PPB18] Do-Yong Park, Mi-Hwa Park, and Alan B. Bates. Exploring Young Children's understanding about the concept of volume through engineering design in a STEM activity: A case study. *International Journal of Science and Mathematics Education*, 16(2):275–294, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9776-0.

Pitta-Pantazi:2020:DTA

[PPCC20] Demetra Pitta-Pantazi, Maria Chimoni, and Constantinos Christou. Different types of algebraic thinking: an empirical study focusing on middle school students. *International Journal of Science and Mathematics Education*, 18(5):965–984, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10003-6.

Pitta-Pantazi:2025:RRA

[PPCC25] Demetra Pitta-Pantazi, Maria Chimoni, and Constantinos Christou. Revisiting the relationship of arithmetical thinking and letter-symbolic algebra. *International Journal of Science and Mathematics Education*, 23(3):689–711, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10493-z.

Palla:2012:SSS

[PPS12] Marina Palla, Despina Potari, and Panagiotis Spyrou. Secondary school students' understanding of mathematical induction: structural characteristics and the process of proof construction. *International Journal of Science and Mathematics Education*, 10(5):1023–1045, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9311-2.

Pocalana:2024:EDM

[PR24] Gabriella Pocalana and Ornella Robutti. Evolution of didacticians' meta-didactical praxeologies and documentation work. *International Journal of Science and Mathematics Education*, 22(1):211–233, January 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10367-w.

Proulx:2024:RPR

[Pro24] Jérôme Proulx. Relative proportional reasoning: Transition from additive to multiplicative thinking through qualitative and quantitative enmeshments. *International Journal of Science and Mathematics Education*, 22(2):353–374, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10373-y.

Petocz:2007:USC

[PRW+07] Peter Petocz, Anna Reid, Leigh N. Wood, Geoff H. Smith, Glyn Mather, Ansie Harding, Johann Engelbrecht, Ken Houston, Joel Hillel, and Gillian Perrett. Undergraduate students' conceptions of mathematics: An international study. *International Journal of Science and Mathematics Education*, 5(3):439–459, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9059-2.

Patkin:2019:SAP

[PSB19] Dorit Patkin, Atara Shriki, and Ruthi Barkai. Strategies applied by pre-service elementary school mathematics teachers for coping with tasks that require a mental rotation. *International Journal of Science and Mathematics Education*, 17 (8):1563–1584, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9932-9.

Pyzdrowski:2013:RAI

[PSC+13] Laura J. Pyzdrowski, Ye Sun, Reagan Curtis, David Miller, Gary Winn, and Robin A. M. Hensel. Readiness and attitudes as indicators for success in college calculus. *International Journal of Science and Mathematics Education*, 11(3): 529–554, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9352-1.

Pearce:2020:UDM

[PSM+20] Erin Pearce, Morgan Stewart, Ummuhan Malkoc, Ronald Ivy, and Molly Weinburgh. Utilizing a dynamic model of food chains to enhance English learners' science knowledge and language construction. *International Journal of*

Science and Mathematics Education, 18(5):887–901, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10004-5.

Pamuk:2017:MAS

[PSO17] Savas Pamuk, Semra Sungur, and Ceren Oztekin. A multilevel analysis of students' science achievements in relation to their self-regulation, epistemological beliefs, learning environment perceptions, and teachers' personal characteristics. *International Journal of Science and Mathematics Education*, 15(8):1423–1440, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9761-7.

Papadopoulos:2023:MBT

[PT23] Ioannis Papadopoulos and Athina Thoma. Mental brackets and their use by high school students in arithmetic and algebra. *International Journal of Science and Mathematics Education*, 21(4):1197–1218, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10298-y.

Pulsawad:2025:EDS

[PToLL25] Wittaya Pulsawad, Anusorn Tong-on, Luecha Ladachart, and Ladapa Ladachart. Examining disciplinary specificity of preservice mathematics and science teachers' professional identities. *International Journal of Science and Mathematics Education*, 23(3):737–771, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10486-y.

Pauka:2005:VES

[PTW05] Soikava Pauka, David F. Treagust, and Bruce Waldrip. Village elders' and secondary school students' explanations of natural phenomena in Papua New Guinea. *International Journal of Science and Mathematics Education*, 3(2):213–238, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-6529-2.

Patahuddin:2018:ANL

[PUR18] Sitti Maesuri Patahuddin, H. B. Usman, and Ajay Ramful. Affordances from number lines in fractions instruction: Students' interpretation of teacher's intentions. *International Journal of Science and Mathematics Education*, 16(5):909–928, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9800-z`.

Paul:2014:UMS

[PV14] Cynthia S. Paul and Sheila R. Vaidya. An urban middle school case study of mathematics achievement. *International Journal of Science and Mathematics Education*, 12(5):1241–1260, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9453-5`.

Pimthong:2012:TLA

[PYR+12] Pattamaporn Pimthong, Naruemon Yutakom, Vantipa Roadrangka, Sudjid Sanguanruang, Bronwen Cowie, and Beverley Cooper. Teaching and learning about matter in grade 6 classrooms: a conceptual change approach. *International Journal of Science and Mathematics Education*, 10 (1):121–137, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9280-5`.

Pasha-Zaidi:2016:GSE

[PZA16] Nausheen Pasha-Zaidi and Ernest Afari. Gender in STEM education: an exploratory study of student perceptions of math and science instructors in the United Arab Emirates. *International Journal of Science and Mathematics Education*, 14(7):1215–1231, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9656-z`.

Paige:2016:RES

[PZLR16] Kathryn Paige, Yvonne Zeegers, David Lloyd, and Philip Roetman. Researching the effectiveness of a science professional learning programme using a proposed curriculum framework for schools: a case study. *International Journal of Science and Mathematics Education*, 14(1):149–175, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9569-2.

Qi:2023:TLT

[QCH23] Chunxia Qi, Chen Cao, and Rongjin Huang. Teacher learning through collaboration between teachers and researchers: a case study in China. *International Journal of Science and Mathematics Education*, 21(1):93–112, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10241-7.

Quinn:2025:IMO

[QH25] Frances Quinn and Linda Hobbs. "I'm on my own and I'm not trained": a cultural–historical activity theory analysis of teaching mathematics out-of-field in a small school. *International Journal of Science and Mathematics Education*, 23(1): 1–23, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10454-6.

Quigley:2020:CLS

[QHS+20] Cassie F. Quigley, Dani Herro, Calli Shekell, Heidi Cian, and Lori Jacques. Connected learning in STEAM classrooms: Opportunities for engaging youth in science and math classrooms. *International Journal of Science and Mathematics Education*, 18(8):1441–1463, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10034-z.

Qhobela:2014:ESS

[QM14] Makomosela Qhobela and Eunice Kolitsoe Moru. Examining secondary school physics teachers' beliefs about teaching and classroom practices in Lesotho as a foundation for professional development. *International Journal of Science and Mathematics Education*, 12(6):1367–1392, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9445-5.

Qureshi:2017:IBC

[QVST17] Sheila Qureshi, Venkat Rao Vishnumolakala, Daniel C. Southam, and David F. Treagust. Inquiry-based chemistry education in a high-context culture: a Qatari case study. *International Journal of Science and Mathematics Education*, 15(6):1017–1038, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9735-9`.

Ronda:2017:MMT

[RA17] Erlina Ronda and Jill Adler. Mining mathematics in textbook lessons. *International Journal of Science and Mathematics Education*, 15(6):1097–1114, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9738-6`.

Rogers:2007:EPD

[RAL+07] Meredith Park Rogers, Sandra Abell, John Lannin, Chia-Yu Wang, Kusalin Musikul, David Barker, and Shannon Dingman. Effective professional development in science and mathematics education: Teachers' and facilitators' views. *International Journal of Science and Mathematics Education*, 5 (3):507–532, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9053-8`.

Ramnarain:2024:INS

[Ram24] Umesh Ramnarain. The inclusion of nature of science in South African life sciences and physical sciences school curricula. *International Journal of Science and Mathematics Education*, 22(5):1151–1165, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10415-5`.

Ranade:2006:DCP

[Ran06] Mridula D. Ranade. Development of CAI presentations for science teaching and overview of research findings. *International Journal of Science and Mathematics Education*, 4 (4):763–789, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-9022-7`.

Randler:2009:ETD

[RB09] Christoph Randler and Franz X. Bogner. Efficacy of two different instructional methods involving complex ecological content. *International Journal of Science and Mathematics Education*, 7(2):315–337, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9117-4.

Reis:2013:IAK

[RB13] Giuliano Reis and Richard Barwell. The interactional accomplishment of not knowing in elementary school science and mathematics: implications for classroom performance assessment practices. *International Journal of Science and Mathematics Education*, 11(5):1067–1085, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9377-5.

Rogers:2021:FCG

[RBE21] Meredith Park Rogers, Amanda Berry, and Ruhama Even. Finding common ground: A synthesis of science and mathematics teacher educators' experiences with professional growth. *International Journal of Science and Mathematics Education*, 19(S1):167–180, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10188-9.

Rodriguez:2020:GFA

[RBT20] Jon-Marc G. Rodriguez, Kinsey Bain, and Marcy H. Towns. Graphical forms: The adaptation of Sherin's symbolic forms for the analysis of graphical reasoning across disciplines. *International Journal of Science and Mathematics Education*, 18(8):1547–1563, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10025-0.

Ruz:2022:EHC

[RCC22] Felipe Ruz, Beth L. Chance, and José M. Contreras. Exploring how Chilean pre-service teachers' attitudes towards stochastics vary by content topic. *International Journal of*

Science and Mathematics Education, 20(8):1767–1789, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10235-5`.

Rogers:2011:FYI

[RCG+11] Meredith A. Park Rogers, Dionne I. Cross, Melissa Sommerfeld Gresalfi, Amy E. Trauth-Nare, and Gayle A. Buck. First year implementation of a project-based learning approach: the need for addressing teachers' orientations in the era of reform. *International Journal of Science and Mathematics Education*, 9(4):893–917, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9248-x`.

Rahayu:2011:UAB

[RCT+11] Sri Rahayu, A. L. Chandrasegaran, David F. Treagust, Masakazu Kita, and Suhadi Ibnu. Understanding acid–base concepts: evaluating the efficacy of a senior high school student–centred instructional program in Indonesia. *International Journal of Science and Mathematics Education*, 9 (6):1439–1458, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9272-x`.

Redmond:2020:SFS

[RG20] Petrea Redmond and Hannah Gutke. STEMming the flow: Supporting females in STEM. *International Journal of Science and Mathematics Education*, 18(2):221–237, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09963-6`.

Reid-Griffin:2008:UPR

[RGC08] Angelia Reid-Griffin and Glenda Carter. Uncovering the potential: The role of technologies on science learning of middle school students. *International Journal of Science and Mathematics Education*, 6(2):329–350, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9105-8`.

Ruhrig:2015:CST

[RH15] Jan Ruhrig and Dietmar Höttecke. Components of science teachers' professional competence and their orientational frameworks when dealing with uncertain evidence in science teaching. *International Journal of Science and Mathematics Education*, 13(2):447–465, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9628-3`.

Rach:2017:TSU

[RH17] Stefanie Rach and Aiso Heinze. The transition from school to university in mathematics: Which influence do school-related variables have? *International Journal of Science and Mathematics Education*, 15(7):1343–1363, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9744-8`.

Russo:2019:TPS

[RH19] James Russo and Sarah Hopkins. Teachers' perceptions of students when observing lessons involving challenging tasks. *International Journal of Science and Mathematics Education*, 17(4):759–779, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9888-9`.

Russo:2023:SAC

[RH23] James Russo and Sarah Hopkins. Not so simple addition: Comparing student performance and teacher perceptions of retrieval. *International Journal of Science and Mathematics Education*, 21(8):2279–2301, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10346-7`.

Reiss:2011:UPR

[RHM+11] Michael Reiss, Celia Hoyles, Tamjid Mujtaba, Bijan Riazi-Farzad, Melissa Rodd, Shirley Simon, and Fani Stylianidou. Understanding participation rates in post-16 mathematics and physics: conceptualising and operationalising the upmap project. *International Journal of Science and*

Mathematics Education, 9(2):273–302, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9286-z.

Ramsay-Jordan:2021:HSM

[RJ21] Natasha N. Ramsay-Jordan. How secondary mathematics preservice teachers grapple with enacting culturally responsive practices at placement sites. *International Journal of Science and Mathematics Education*, 19(5):997–1013, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10091-9.

Rizk:2012:EBS

[RJHB12] Nadya Rizk, Lama Jaber, Sarah Halwany, and Saouma Bou-Jaoude. Epistemological beliefs in science: an exploratory study of Lebanese university students' epistemologies. *International Journal of Science and Mathematics Education*, 10(3):473–496, June 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9289-9.

Rahayu:2010:AIJ

[RK10] Sri Rahayu and Masakazu Kita. An analysis of Indonesian and Japanese students' understandings of macroscopic and submicroscopic levels of representing matter and its changes. *International Journal of Science and Mathematics Education*, 8(4):667–688, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9180-0.

Robinson:2012:OTT

[RL12] Naomi Robinson and Roza Leikin. One teacher, two lessons: the lesson study process. *International Journal of Science and Mathematics Education*, 10(1):139–161, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9282-3.

Revina:2019:HSF

[RL19] Shintia Revina and Frederick Koon Shing Leung. How the same flowers grow in different soils? The implementation of realistic mathematics education in Utrecht and

Jakarta classrooms. *International Journal of Science and Mathematics Education*, 17(3):565–589, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9883-1.

Radevic:2024:CTM

[RM24] Luna Radević and Ilija Milovanović. Current trends in math anxiety research: a bibliometric approach. *International Journal of Science and Mathematics Education*, 22(6):1345–1362, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10424-4.

Rezat:2022:SCR

[RML22] Sebastian Rezat, Sara Malik, and Markus Leifeld. Scaffolding close reading of mathematical text in pre-service primary teacher education at the tertiary level: Design and evaluation. *International Journal of Science and Mathematics Education*, 20(S1):215–236, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10309-y.

Rodrigues:2025:DIO

[RMMC25] Lara Rodrigues, Alejandra Meneses, Maximiliano Montenegro, and Cristián Cortés. Direct and indirect opportunities to learn astronomy within the Chilean science curriculum. *International Journal of Science and Mathematics Education*, 23(1):169–191, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10459-1.

Russo:2022:IMP

[RMR22] James Russo, Amy MacDonald, and Toby Russo. The influence of making predictions on the accuracy of numerosity estimates in elementary-aged children. *International Journal of Science and Mathematics Education*, 20(3):531–551, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10156-3.

Rollinde:2019:LST

[Rol19] E. Rollinde. Learning science through enacted astronomy. *International Journal of Science and Mathematics Education*, 17(2):237–252, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9865-8.

Ronen:2018:ATE

[Ron18] Ilana Ronen. "Authentic tasks" and "Extreme tasks": Potential approaches to overcoming incorrect responses in conservation tasks. *International Journal of Science and Mathematics Education*, 16(7):1337–1354, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9831-5.

Ronen:2020:EAA

[Ron20] Ilana Klima Ronen. Empathy awareness among pre-service teachers: the case of the incorrect use of the intuitive rule "Same A–Same B". *International Journal of Science and Mathematics Education*, 18(1):183–201, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09952-9.

Rott:2020:TBE

[Rot20] Benjamin Rott. Teachers' behaviors, epistemological beliefs, and their interplay in lessons on the topic of problem solving. *International Journal of Science and Mathematics Education*, 18(5):903–924, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09993-0.

Ruthven:2009:COP

[RR09] Kenneth Ruthven and Michael Reiss. Call for outline paper proposals for a special issue on enhancing the participation, engagement, and achievement of young people in science and mathematics education. *International Journal of Science and Mathematics Education*, 7(3):647–649, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9152-4.

Reiss:2011:EPE

[RR11] Michael Reiss and Kenneth Ruthven. Enhancing the participation, engagement and achievement of young people in science and mathematics education: introduction. *International Journal of Science and Mathematics Education*, 9(2):239–241, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9285-0; http://link.springer.com/content/pdf/10.1007/s10763-011-9285-0.pdf.

Ramnarain:2016:AGO

[RR16] Umesh Dewnarain Ramnarain and Sam Ramaila. The achievement goals orientation of South African first year university physics students. *International Journal of Science and Mathematics Education*, 14(1s):81–105, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9590-5.

Rhoads:2011:TIE

[RRW11] Kathryn Rhoads, Iuliana Radu, and Keith Weber. The teacher internship experiences of prospective high school mathematics teachers. *International Journal of Science and Mathematics Education*, 9(4):999–1022, August 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9267-7.

Rach:2024:ATV

[RS24] Stefanie Rach and Stanislaw Schukajlow. Affecting task values, costs, and effort in University mathematics courses: the role of profession-related tasks on motivational and behavioral states. *International Journal of Science and Mathematics Education*, 22(5):1013–1035, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10413-7.

Romine:2014:SIT

[RSPK14] William Romine, Troy D. Sadler, Morgan Presley, and Michelle L. Klosterman. Student interest in technology and science (sits) survey: development, validation, and use of a new instrument. *International Journal of Science and Mathematics Education*, 12(2):261–283, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL http://link.springer.com/article/10.1007/s10763-013-9410-3.

ran:2019:PSE

[rSY19] Dekant Kıran, Semra Sungur, and Sündüs Yerdelen. Predicting science engagement with motivation and teacher characteristics: a multilevel investigation. *International Journal of Science and Mathematics Education*, 17(1):67–88, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9882-2.

Rundgren:2010:CFV

[RT10] Carl-Johan Rundgren and Lena A. E. Tibell. Critical features of visualizations of transport through the cell membrane — an empirical study of upper secondary and tertiary students' meaning — making of a still image and an animation. *International Journal of Science and Mathematics Education*, 8(2):223–246, April 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9171-1.

Rahayu:2022:HSP

[RTC22] Sri Rahayu, David F. Treagust, and A. L. Chandrasegaran. High school and preservice chemistry teacher education students' understanding of Voltaic and electrolytic cell concepts: Evidence of consistent learning difficulties across years. *International Journal of Science and Mathematics Education*, 20(8):1859–1882, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10226-6.

Romine:2020:EPW

[RTM+20] William Romine, Chia-Lin Tsai, Michele Miller, Nai-En Tang, and William Folk. Evaluation of a process by which individual interest supports learning within a formal middle school classroom context. *International Journal of Science and Mathematics Education*, 18(7):1419–1439, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10032-1.

Ruthven:2011:UIS

[Rut11] Kenneth Ruthven. Using international study series and meta-analytic research syntheses to scope pedagogical development aimed at improving student attitude and achievement in school mathematics and science. *International Journal of Science and Mathematics Education*, 9(2):419–458, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9243-2.

Romance:2017:ICS

[RV17] Nancy Romance and Michael Vitale. Implications of a cognitive science model integrating literacy in science on achievement in science and reading: Direct effects in grades 3–5 with transfer to grades 6–7. *International Journal of Science and Mathematics Education*, 15(6):979–995, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9721-2.

Roorda:2015:AOT

[RVG15] Gerrit Roorda, Pauline Vos, and Martin J. Goedhart. An actor-oriented transfer perspective on high school students' development of the use of procedures to solve problems on rate of change. *International Journal of Science and Mathematics Education*, 13(4):863–889, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9501-1.

Ross:2020:MAI

[RVTV20] Wendy Ross, Frédéric Vallée-Tourangeau, and Jo Van Herwegen. Mental arithmetic and interactivity: the effect of manipulating external number representations on older children's mental arithmetic success. *International Journal of Science and Mathematics Education*, 18(5):985–1000, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09978-z; http://link.springer.com/content/pdf/10.1007/s10763-019-09978-z.pdf.

Rau:2016:CPC

[RXLC16] Pei-Luen Patrick Rau, Anping Xie, Ziyang Li, and Cuiling Chen. The cognitive process of Chinese abacus arithmetic. *International Journal of Science and Mathematics Education*, 14(8):1499–1516, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9658-x`.

Sisman:2016:SSG

[SA16] Gulcin Tan Sisman and Meral Aksu. A study on sixth grade students' misconceptions and errors in spatial measurement: Length, area, and volume. *International Journal of Science and Mathematics Education*, 14(7):1293–1319, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9642-5`.

Stephan:2022:SSC

[SA22] Michelle Stephan and Didem Akyuz. Semiotics from a social constructivist perspective. *International Journal of Science and Mathematics Education*, 20(7):1499–1519, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10212-y`.

Shahbari:2018:DTA

[SAA18] Juhaina Awawdeh Shahbari and Fadia Nasser Abu-Alhija. Does training in alternative assessment matter? The case of prospective and practicing mathematics teachers' attitudes toward alternative assessment and their beliefs about the nature of mathematics. *International Journal of Science and Mathematics Education*, 16(7):1315–1335, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9830-6`.

Safadi:2018:KIP

[Saf18] Rafi' Safadi. Knowledge-integration processes and learning outcomes associated with a self-diagnosis activity: the case of 5th-graders studying simple fractions. *International Journal of Science and Mathematics Education*, 16(5):929–948, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-017-9798-2.

Saralar-Aras:2025:EPS

[SAG25] İpek Saralar-Aras and Habibe Güneş. Enhancing pre-service mathematics teachers' competencies in distance education: an empirical investigation utilizing micro-teaching and peer assessment. *International Journal of Science and Mathematics Education*, 23(6):1825–1854, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10501-2.

Sahin:2010:CAC

[Şah10] İsmet Şahin. Curriculum assessment: constructivist primary mathematics curriculum in Turkey. *International Journal of Science and Mathematics Education*, 8(1):51–72, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9162-2.

Shaby:2024:SID

[SAK24] Neta Shaby, Orit Ben-Zvi Assaraf, and Nicole Pillemer Koch. Students' interactions during laboratory group activity in a science museum. *International Journal of Science and Mathematics Education*, 22(4):703–720, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10404-8.

Sapkova:2013:SLM

[Šap13] Aļesja Šapkova. Study on Latvian mathematics teachers' espoused beliefs about teaching and learning and reported practices. *International Journal of Science and Mathematics Education*, 11(3):733–759, June 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9361-0.

Steinke:2022:EDS

[SAPM22] Jocelyn Steinke, Brooks Applegate, Jay R. Penny, and Sean Merlino. Effects of diverse STEM role model videos in promoting adolescents' identification. *International Journal of*

Science and Mathematics Education, 20(2):255–276, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10168-z.

Sasson:2019:PRA

[Sas19] Irit Sasson. Participation in research apprenticeship program: Issues related to career choice in STEM. *International Journal of Science and Mathematics Education*, 17(3):467–482, March 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9873-8.

Sasson:2021:BSC

[Sas21] Irit Sasson. Becoming a scientist — career choice characteristics. *International Journal of Science and Mathematics Education*, 19(3):483–497, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10059-9.

Saw:2019:IIS

[Saw19] Guan Saw. The impact of inclusive STEM high schools on student outcomes: a statewide longitudinal evaluation of Texas STEM Academies. *International Journal of Science and Mathematics Education*, 17(8):1445–1457, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-09942-3.

Schonborn:2009:KTB

[SB09] Konrad J. Schönborn and Susanne Bögeholz. Knowledge transfer in biology and translation across external representations: experts' views and challenges for learning. *International Journal of Science and Mathematics Education*, 7(5):931–955, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9153-3; http://link.springer.com/content/pdf/10.1007/s10763-009-9153-3.pdf.

Shehab:2017:ACR

[SB17] Saadeddine Salim Shehab and Saouma BouJaoude. Analysis of the chemical representations in secondary Lebanese chemistry textbooks. *International Journal of Science and Mathematics Education*, 15(5):797–816, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9720-3.

Salloum:2021:UIM

[SB21] Sara Salloum and Saouma BouJaoude. Understanding interactions in multilingual science classrooms through cultural–historical activity theory (CHAT): What do contradictions tell us? *International Journal of Science and Mathematics Education*, 19(7):1333–1355, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10114-5.

Senyigit:2025:RSA

[ŞB25] Çiğdem Şenyiğit and Hasan Bakırcı. The role of STEM awareness and 21st century skills competence perceptions on pre-service primary school teachers' teacher self-efficacy for STEM practices. *International Journal of Science and Mathematics Education*, 23(6):1769–1791, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10535-6.

Susac:2014:EMR

[SBK+14] Ana Susac, Andreja Bubic, Jurica Kaponja, Maja Planinic, and Marijan Palmovic. Eye movements reveal students' strategies in simple equation solving. *International Journal of Science and Mathematics Education*, 12(3):555–577, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9514-4.

Scataglini-Belghitar:2012:EAC

[SBM12] Giovanna Scataglini-Belghitar and John Mason. Establishing appropriate conditions: Students learning to apply a theorem. *International Journal of Science and Mathematics Education*, 10(4):927–953, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9305-0.

Siraj-Blatchford:2014:CPP

[SBN14] Iram Siraj-Blatchford and Kwi-Ok Nah. A comparison of the pedagogical practices of mathematics education for young children in England and South Korea. *International Journal of Science and Mathematics Education*, 12 (1):145–165, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9412-1`. See erratum [SBN16].

Siraj-Blatchford:2016:ECP

[SBN16] Iram Siraj-Blatchford and Kwi-Ok Nah. Erratum to: A comparison of the pedagogical practices of mathematics education for young children in England and South Korea. *International Journal of Science and Mathematics Education*, 14(5):999, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9529-x`; `http://link.springer.com/content/pdf/10.1007/s10763-014-9529-x.pdf`. See erratum [SBN14].

Seybold:2014:PCE

[SBR14] Brigitte Seybold, Thomas Braunbeck, and Christoph Randler. Primate conservation — an evaluation of two different educational programs in Germany. *International Journal of Science and Mathematics Education*, 12(2):285–305, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9405-0`.

Safrudiannur:2022:PLA

[SBR22] Safrudiannur, Lennart Belke, and Benjamin Rott. A pseudo-longitudinal approach for investigating pre-service teachers' beliefs during their university education. *International Journal of Science and Mathematics Education*, 20(6):1099–1122, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10194-x`.

Scantlebury:2007:AIG

[SBS+07] Kathryn Scantlebury, Dale Baker, Ayumi Sugi, Atsushi Yoshida, and Sibel Uysal. Avoiding the issue of gender in

Japanese science education. *International Journal of Science and Mathematics Education*, 5(3):415–438, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9045-8.

Stavy:2006:IRU

[SBT+06] Ruth Stavy, Reuven Babai, Pessia Tsamir, Dina Tirosh, Fou-Lai Lin, and Campbell McRobbie. Are intuitive rules universal? *International Journal of Science and Mathematics Education*, 4(3):417–436, November 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9012-9.

Sade:2003:TTE

[SC03] David Sade and Richard K. Coll. Technology and technology education: Views of some Solomon Island primary teachers and curriculum development officers. *International Journal of Science and Mathematics Education*, 1(1):87–114, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Smith:2011:WTI

[SC11] Emma Smith and Sandra Cooke. ‘I was told it was going to be hard work but i wasn’t told it was going to be this much work’: the experiences and aspirations of undergraduate science students. *International Journal of Science and Mathematics Education*, 9(2):303–326, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9228-1.

Sarkar:2014:BST

[SC14] Mahbub Sarkar and Deborah Corrigan. Bangladeshi science teachers’ perspectives of scientific literacy and teaching practices. *International Journal of Science and Mathematics Education*, 12(5):1117–1141, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9450-8.

Seah:2021:CSS

[SC21] Lay Hoon Seah and Kennedy Kam Ho Chan. A case study of a science teacher's knowledge of students in relation to addressing the language demands of science. *International Journal of Science and Mathematics Education*, 19(2):267–287, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10049-6`.

Simpson:2016:GBA

[SCB16] Amber Simpson, S. Megan Che, and William C. Bridges, Jr. Girls' and boys' academic self-concept in science in single-sex and coeducational classes. *International Journal of Science and Mathematics Education*, 14(8):1407–1418, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9676-8`.

Suseelan:2023:STD

[SCC23] Menaga Suseelan, Cheng Meng Chew, and Huan Chin. School-type difference among rural grade four Malaysian students' performance in solving mathematics word problems involving higher order thinking skills. *International Journal of Science and Mathematics Education*, 21(1):49–69, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10245-3`.

Seetee:2021:VSM

[SCDC21] Navara Seetee, Chi Chi, Amandeep Dhir, and Sufen Chen. Validation of the science, mathematics, and English task value scales based on longitudinal data. *International Journal of Science and Mathematics Education*, 19(3):443–460, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10081-x`.

Saadati:2019:MCM

[SCG+19] Farzaneh Saadati, Gamal Cerda, Valentina Giaconi, Cristian Reyes, and Patricio Felmer. Modeling Chilean mathematics teachers' instructional beliefs on problem solving practices. *International Journal of Science and Mathematics Education*, 17(5):1009–1029, June 2019. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9897-8.

Schoerning:2014:EPE

[Sch14] Emily Schoerning. The effect of plain-English vocabulary on student achievement and classroom culture in college science instruction. *International Journal of Science and Mathematics Education*, 12(2):307–327, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9398-8.

Schademan:2015:BCB

[Sch15] Alfred R. Schademan. Building connections between a cultural practice and modeling in science education. *International Journal of Science and Mathematics Education*, 13(6):1425–1448, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9554-9.

Schliemann:2022:TDS

[SCiB22] Analúcia D. Schliemann, David W. Carraher, and Montserrat Teixidor i Bigas. Teacher development structured around reasoning about functions. *International Journal of Science and Mathematics Education*, 20(4):793–816, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10169-y.

Shore:2012:PER

[SCS+12] Bruce M. Shore, Tanya Chichekian, Cassidy A. Syer, Mark W. Aulls, and Carl H. Frederiksen. Planning, enactment, and reflection in inquiry-based learning: validating the Mcgill Strategic Demands of Inquiry Questionnaire. *International Journal of Science and Mathematics Education*, 10(2):315–337, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9301-4.

Shin:2019:IUC

[SCSK19] Namsoo Shin, Sung-Youn Choi, Shawn Y. Stevens, and Joseph S. Krajcik. The impact of using coherent curriculum on students' understanding of core ideas in chemistry. *International Journal of Science and Mathematics Education*, 17(2):295–315, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9861-z.

Simsek:2025:AFI

[SCW25] Ali Simsek and Alison Clark-Wilson. Adopting a framework for investigating mathematics teachers' technology-integrated classroom teaching practice: Structuring features of classroom practice. *International Journal of Science and Mathematics Education*, 23(3):589–616, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10480-4.

Saglam:2016:QRE

[SD16] Yasemin Sağlam and Şenol Dost. A qualitative research on example generation capabilities of university students. *International Journal of Science and Mathematics Education*, 14(5):979–996, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9624-7.

Sebatana:2022:RME

[SD22] Motlhale Judicial Sebatana and Washington Takawira Dudu. Reality or mirage: Enhancing 21st-century skills through problem-based learning while teaching particulate nature of matter. *International Journal of Science and Mathematics Education*, 20(5):963–980, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10206-w.

Sekao:2022:SAP

[SE22] David Sekao and Johann Engelbrecht. South African primary mathematics teachers' experiences and perspectives about lesson study. *International Journal of Science and Mathematics Education*, 20(7):1431–1453, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10214-w.

Seah:2016:ETP

[Sea16] Lay Hoon Seah. Elementary teachers' perception of language issues in science classrooms. *International Journal of Science and Mathematics Education*, 14(6):1059–1078, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9648-z`.

Sahin:2018:CEI

[SEW18] Alpaslan Sahin, Adem Ekmekci, and Hersh C. Waxman. Collective effects of individual, behavioral, and contextual factors on high school students' future STEM career plans. *International Journal of Science and Mathematics Education*, 16(1S):69–89, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9847-x`.

Spinner:2005:EIM

[SF05] Howard Spinner and Barry J. Fraser. Evaluation of an innovative mathematics program in terms of classroom environment, student attitudes, and conceptual development. *International Journal of Science and Mathematics Education*, 3(2):267–293, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-6531-8`.

Simpson:2022:TWP

[SF22] Amber Simpson and Michelle Feyerabend. Tug-of-war: the pull of formal institutional practices and structures and the desire for personal change. *International Journal of Science and Mathematics Education*, 20(1):149–168, January 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10139-w`.

Schur:2009:TJN

[SG09] Yaron Schur and Igal Galili. Thinking journey- a new mode of teaching science. *International Journal of Science and Mathematics Education*, 7(3):627–646, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9119-2`.

Stein:2015:IOD

[SG15] Hana Stein and Igal Galili. The impact of an operational definition of the weight concept on students' understanding. *International Journal of Science and Mathematics Education*, 13(6):1487–1515, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9556-7`.

Such:2024:IIO

[SG24] Brenda Such and Stefanie Gazda. The influence of iterative online course designs on student learning outcomes in large undergraduate biology courses and labs. *International Journal of Science and Mathematics Education*, 22(7):1501–1514, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10429-z`.

Such:2025:CII

[SG25] Brenda Such and Stefanie Gazda. Correction to: The influence of iterative online course designs on student learning outcomes in large undergraduate biology courses and labs. *International Journal of Science and Mathematics Education*, 23(1):291, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10442-w`.

Soneira:2018:IEW

[SGCA18] Carlos Soneira, José Antonio González-Calero, and David Arnau. Indexical expressions in word problems and their influence on multiple referents of the unknown. *International Journal of Science and Mathematics Education*, 16(6):1147–1167, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9824-4`.

Sandoval:2023:PSE

[SGCS23] Ivonne Sandoval, Montserrat García-Campos, and Leticia Sosa. Providing support and examples for teaching linear equations in secondary school: the role of knowledge of mathematics teaching. *International Journal of Science and Mathematics Education*, 21(4):1265–1287, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (elec-

tronic). URL https://link.springer.com/article/10.1007/s10763-022-10283-5.

Steffensky:2015:PVC

[SGHM15] Mirjam Steffensky, Bernadette Gold, Manfred Holdynski, and Kornelia Möller. Professional vision of classroom management and learning support in science classrooms — does professional vision differ across general and content-specific classroom interactions? *International Journal of Science and Mathematics Education*, 13(2):351–368, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9607-0. See erratum [SGHM16].

Steffensky:2016:EPV

[SGHM16] Mirjam Steffensky, Bernadette Gold, Manfred Holdynski, and Kornelia Möller. Erratum to: Professional Vision of Classroom Management and Learning Support in Science Classrooms — Does Professional Vision Differ Across General and Content-Specific Classroom Interactions? *International Journal of Science and Mathematics Education*, 14(5):1001–1002, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9627-4; http://link.springer.com/content/pdf/10.1007/s10763-015-9627-4.pdf. See [SGHM15].

Shahali:2024:IST

[SH24] Edy Hafizan Mohd Shahali and Lilia Halim. The influence of science teachers' beliefs, attitudes, self-efficacy and school context on integrated STEM teaching practices. *International Journal of Science and Mathematics Education*, 22(4):787–807, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10403-9.

Sharma:2006:HSS

[Sha06] S. V. Sharma. High school students interpreting tables and graphs: Implications for research. *International Journal of Science and Mathematics Education*, 4(2):241–268, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9005-8.

Shahbari:2025:FDT

[Sha25] Juhaina Awawdeh Shahbari. Features of digital tools utilized in mathematical modeling process. *International Journal of Science and Mathematics Education*, 23(2):415–439, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10472-4`.

Schwarts:2025:HAD

[SHB25] Gil Schwarts, Patricio Herbst, and Amanda M. Brown. Harnessing asynchronous digital simulations of problem-based lessons to support mathematics teachers' professional development: a design-based approach. *International Journal of Science and Mathematics Education*, 23(6):1883–1916, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10514-x`.

Shinno:2018:RLS

[Shi18] Yusuke Shinno. Reification in the learning of square roots in a ninth grade classroom: Combining semiotic and discursive approaches. *International Journal of Science and Mathematics Education*, 16(2):295–314, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9765-3`.

Shin:2021:PMT

[Shi21] Dongjo Shin. Preservice mathematics teachers' selective attention and professional knowledge-based reasoning about students' statistical thinking. *International Journal of Science and Mathematics Education*, 19(5):1037–1055, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10101-w`.

Shin:2022:TMI

[Shi22] Dongjo Shin. Teaching mathematics integrating intelligent tutoring systems: Investigating prospective teachers' concerns and TPACK. *International Journal of Science and Mathematics Education*, 20(8):1659–1676, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10221-x.

Sabbah:2021:IAF

[SHM21] Soryna Sabbah and Einat Heyd-Metzuyanim. Integration of Arab female students at a technological university — narratives of identity in figured worlds. *International Journal of Science and Mathematics Education*, 19(5):977–996, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10084-8.

Shymansky:2003:E

[Shy03] James Shymansky. Editorial. *International Journal of Science and Mathematics Education*, 1(2):139–140, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/content/pdf/10.1023/B%3AIJMA.0000016904.71046.ef.pdf.

Saleh:2023:ERB

[SIA23] Mounir R. Saleh, Bashirah Ibrahim, and Ernest Afari. Exploring the relationship between attitudes of preservice primary science teachers toward integrated STEM teaching and their adaptive expertise in science teaching. *International Journal of Science and Mathematics Education*, 21(S1):181–204, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10369-8.

Shirley:2011:PIC

[SIS+11] Melissa L. Shirley, Karen E. Irving, Vehbi A. Sanalan, Stephen J. Pape, and Douglas T. Owens. The practicality of implementing connected classroom technology in secondary mathematics and science classrooms. *International Journal of Science and Mathematics Education*, 9(2):459–481, April 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9251-2.

Sormunen:2020:MCP

[SJL20] Kati Sormunen, Kalle Juuti, and Jari Lavonen. Maker-centered project-based learning in inclusive classes: Supporting students' active participation with teacher-directed reflective discussions. *International Journal of Science and Mathematics Education*, 18(4):691–712, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09998-9; http://link.springer.com/content/pdf/10.1007/s10763-019-09998-9.pdf.

Soni:2017:RPM

[SK17] Akanksha Soni and Santha Kumari. The role of parental math anxiety and math attitude in their children's math achievement. *International Journal of Science and Mathematics Education*, 15(2):331–347, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9687-5.

Sung:2023:ESE

[SK23] Euisuk Sung and Todd R. Kelley. Elementary students' engineering design process: How young students solve engineering problems. *International Journal of Science and Mathematics Education*, 21(5):1615–1638, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10317-y.

Saglam:2011:ICF

[SKA11] Yilmaz Saglam, Emre Harun Karaaslan, and Alipasa Ayas. The impact of contextual factors on the use of students' conceptions. *International Journal of Science and Mathematics Education*, 9(6):1391–1413, December 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9269-5.

Saw:2025:ODL

[SKMB25] Guan K. Saw, Lindsey T. Kunisaki, and Kimberly A. Megyesi-Brem. Opportunities for deeper learning and adolescents' creative thinking competency in STEM: The mediating role of situated expectancy-value beliefs. *International Journal of Science and Mathematics Education*, 23(6):2089–2112, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10567-6.

Schultheis:2023:EDN

[SKS+23] Elizabeth H. Schultheis, Melissa K. Kjelvik, Jeffrey Snowden, Louise Mead, and Molly A. M. Stuhlsatz. Effects of data nuggets on student interest in STEM careers, self-efficacy in data tasks, and ability to construct scientific explanations. *International Journal of Science and Mathematics Education*, 21(4):1339–1362, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10295-1.

Lin:2013:CP

[sL13] Huann shyang Lin. Call for papers. *International Journal of Science and Mathematics Education*, 11(1):269–270, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9394-4.

Lin:2014:E

[sL14] Huann shyang Lin. Erratum. *International Journal of Science and Mathematics Education*, 12(1):239, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9511-7; http://link.springer.com/content/pdf/10.1007/s10763-014-9511-7.pdf.

Schindler:2020:SCP

[SL20] Maike Schindler and Achim J. Lilienthal. Students' creative process in mathematics: Insights from eye-tracking-stimulated recall interview on students' work on multiple solution tasks. *International Journal of Science and Mathematics Education*, 18(8):1565–1586, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10033-0; http://link.springer.com/content/pdf/10.1007/s10763-019-10033-0.pdf.

Son:2021:ERB

[SL21] Ji-Won Son and Mi Yeon Lee. Exploring the relationship between preservice teachers' conceptions of problem solving and their problem-solving performances. *International Journal of Science and Mathematics Education*, 19(1):129–150, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10045-w.

Shen:2017:ASD

[SLC17] Ji Shen, Ou Lydia Liu, and Hsin-Yi Chang. Assessing students' deep conceptual understanding in physical sciences: an example on sinking and floating. *International Journal of Science and Mathematics Education*, 15(1):57–70, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9680-z.

Sia:2019:EBC

[SLCK19] Carolyn Jia Ling Sia, Chap Sam Lim, Cheng Meng Chew, and Liew Kee Kor. Expert-based cognitive model and student–based cognitive model in the learning of "Time": Match or mismatch? *International Journal of Science and Mathematics Education*, 17(6):1089–1107, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9916-9.

Spektor-Levy:2009:TSC

[SLES09] Ornit Spektor-Levy, Bat-Sheva Eylon, and Zahava Scherz. Teaching scientific communication skills in science studies: does it make a difference? *International Journal of Science and Mathematics Education*, 7(5):875–903, October 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9150-6.

Schoevers:2020:EME

[SLK20] Eveline M. Schoevers, Paul P. M. Leseman, and Evelyn H. Kroesbergen. Enriching mathematics education with visual arts: Effects on elementary school students' ability in geometry and visual arts. *International Journal of Science and Mathematics Education*, 18(8):1613–1634, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10018-z; http://link.springer.com/content/pdf/10.1007/s10763-019-10018-z.pdf.

Staus:2020:VMS

[SLL+20] Nancy L. Staus, Kristin Lesseig, Richard Lamb, John Falk, and Lynn Dierking. Validation of a measure of STEM interest for adolescents. *International Journal of Science and Mathematics Education*, 18(2):279–293, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09970-7`.

Schallert:2022:TIB

[SLV22] Stefanie Schallert, Zsolt Lavicza, and Ellen Vandervieren. Towards inquiry-based flipped classroom scenarios: a design heuristic and principles for lesson planning. *International Journal of Science and Mathematics Education*, 20(2):277–297, February 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-021-10167-0; http://link.springer.com/content/pdf/10.1007/s10763-021-10167-0.pdf`.

Sun:2010:DVR

[SLW10] Koun-Tem Sun, Ching-Ling Lin, and Sheng-Min Wang. A 3-D virtual reality model of the Sun and the Moon for e-learning at elementary schools. *International Journal of Science and Mathematics Education*, 8(4):689–710, August 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9181-z`.

Spyrtou:2018:TTL

[SLZ+18] Anna Spyrtou, Jari Lavonen, Anastasios Zoupidis, Anni Loukomies, Dimitris Pnevmatikos, Kalle Juuti, and Petros Kariotoglou. Transferring a teaching learning sequence between two different educational contexts: the case of Greece and Finland. *International Journal of Science and Mathematics Education*, 16(3):443–463, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9786-y`.

Shapira-Lishchinsky:2020:MAP

[SLZ20] Orly Shapira-Lishchinsky and Erez Zavelevsky. Multiple appearances of parental interactions and math achievement on

TIMSS international assessment. *International Journal of Science and Mathematics Education*, 18(1):145–161, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09949-w`.

Sanchez-Matamoros:2015:DPS

[SMFL15] Gloria Sánchez-Matamoros, Ceneida Fernández, and Salvador Llinares. Developing pre-service teachers' noticing of students' understanding of the derivative concept. *International Journal of Science and Mathematics Education*, 13(6): 1305–1329, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9544-y`.

Scheiner:2019:WMM

[SMG+19] Thorsten Scheiner, Miguel A. Montes, Juan D. Godino, José Carrillo, and Luis R. Pino-Fan. What makes mathematics teacher knowledge specialized? Offering alternative views. *International Journal of Science and Mathematics Education*, 17(1):153–172, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9859-6`.

Segal:2024:IPA

[SML24] Ruti Segal, Avraham Merzel, and Yaron Lehavi. Improving the professional awareness of mathematics teachers and teacher instructors using video–based curiosity–driven discourse — a case study. *International Journal of Science and Mathematics Education*, 22(5):1083–1106, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10418-2`.

Schuler-Meyer:2019:FLP

[SMPK+19] Alexander Schüler-Meyer, Susanne Prediger, Taha Kuzu, Lena Wessel, and Angelika Redder. Is formal language proficiency in the home language required to profit from a bilingual teaching intervention in mathematics? A mixed methods study on fostering multilingual students' conceptual understanding. *International Journal of Science and Mathematics Education*, 17(2):317–339, February 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9857-8; http://link.springer.com/content/pdf/10.1007/s10763-017-9857-8.pdf.

Szeibert:2023:CSU

[SMSBZ23] Janka Szeibert, Anna Muzsnay, Csaba Szabó, and Csilla Gyöngyvér Bereczky-Zámbó. A case study of using test–enhanced learning as a formative assessment in high school mathematics. *International Journal of Science and Mathematics Education*, 21(2):623–643, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10264-8.

Sullivan:2006:TAM

[SMZ06] Peter Sullivan, Judith Mousley, and Robyn Zevenbergen. Teacher actions to maximize mathematics learning opportunities in heterogeneous classrooms. *International Journal of Science and Mathematics Education*, 4(1):117–143, March 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9002-y.

So:2003:LST

[So03] Winnie Wing-Mui So. Learning science through investigations: An experience with Hong Kong primary school children. *International Journal of Science and Mathematics Education*, 1(2):175–200, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

So:2016:RPE

[So16] Winnie W. M. So. Representational practices in extracurricular science inquiry projects: a study with Asian primary pupils. *International Journal of Science and Mathematics Education*, 14(1):55–79, February 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9566-5.

Sokha:2024:EIC

[Sok24] Khut Sokha. Examine the impact of contextual, personal, and behavioral factors on high school teachers' engagement in teaching science using an integrated STEM approach. *International Journal of Science and Mathematics Education*, 22(8):1857–1883, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10447-5.

Soneira:2022:URW

[Son22] Carlos Soneira. The use of representations when solving algebra word problems and the sources of solution errors. *International Journal of Science and Mathematics Education*, 20(5):1037–1056, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10181-2.

Shahat:2013:DDV

[SOTF13] Mohamed A. Shahat, Annika Ohle, David F. Treagust, and Hans E. Fischer. Design, development and validation of a model of problem solving for Egyptian science classes. *International Journal of Science and Mathematics Education*, 11(5):1157–1181, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9367-7.

Soyibo:2005:CAS

[SP05] Kola Soyibo and Jacqueline Pinnock. Correlations among six learner variables and the performance of a sample of Jamaican eleventh-graders on an achievement test on respiration. *International Journal of Science and Mathematics Education*, 3(2):239–265, June 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-7155-8.

Shahbari:2015:RCC

[SP15] Juhaina Awawdeh Shahbari and Irit Peled. Resolving cognitive conflict in a realistic situation with modeling characteristics: coping with a changing reference in fractions. *International Journal of Science and Mathematics Education*, 13(4):891–907, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9509-1.

Shahbari:2017:MPS

[SP17] Juhaina Awawdeh Shahbari and Irit Peled. Modelling in primary school: Constructing conceptual models and making sense of fractions. *International Journal of Science* *and Mathematics Education*, 15(2):371–391, February 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9702-x.

Shin:2021:DLB

[SP21a] Wonho Shin and Jongwon Park. Developing a list of behavioral characteristics of creative physicists during their growth period. *International Journal of Science and Mathematics Education*, 19(4):701–725, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10082-w.

Superfine:2021:UCA

[SP21b] Alison Castro Superfine and Kathleen Pitvorec. Using community artifacts to support novice math teacher educators in teaching prospective teachers. *International Journal of Science and Mathematics Education*, 19(S1):59–75, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10152-7.

Saat:2023:CGM

[SPF23] Rohaida Mohd Saat, Chua Yan Piaw, and Hidayah Mohd Fadzil. Creating a grounded model of performance quality of Scientist–Teacher–Student Partnership (STSP) for STEM education. *International Journal of Science and Mathematics Education*, 21(1):325–345, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10236-4.

Safrudiannur:2021:OAM

[SR21] Safrudiannur and Benjamin Rott. Offering an approach to measure beliefs quantitatively: Capturing the influence of students' abilities on teachers' beliefs. *International Journal of Science and Mathematics Education*, 19(2):419–441, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10063-z.

Stephens:2023:SDA

[SRSD23] A. Lynn Stephens, Steven Roderick, Namsoo Shin, and Daniel Damelin. Students do not always mean what we think they mean: a questioning strategy to elicit the reasoning behind unexpected causal patterns in student system models. *International Journal of Science and Mathematics Education*, 21(5):1591–1614, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10308-z`.

Stephens:2025:CSD

[SRSD25] A. Lynn Stephens, Steven Roderick, Namsoo Shin, and Daniel Damelin. Correction to: Students do not always mean what we think they mean: a questioning strategy to elicit the reasoning behind unexpected causal patterns in student system models. *International Journal of Science and Mathematics Education*, 23(1):287–288, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10422-6`.

Sawatzki:2018:SST

[SS18] Carly Sawatzki and Peter Sullivan. Shopping for shoes: Teaching students to apply and interpret mathematics in the real world. *International Journal of Science and Mathematics Education*, 16(7):1355–1373, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9833-3`.

Stoffelsma:2019:RBE

[SS19] Lieke Stoffelsma and Wilbert Spooren. The relationship between English reading proficiency and academic achievement of first-year science and mathematics students in a multilingual context. *International Journal of Science and Mathematics Education*, 17(5):905–922, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9905-z`; `http://link.springer.com/content/pdf/10.1007/s10763-018-9905-z.pdf`.

Shin:2021:SRD

[SS21] Dongjo Shin and Jaekwoun Shim. A systematic review on data mining for mathematics and science education. *International Journal of Science and Mathematics Education*, 19(4): 639–659, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10085-7.

She:2018:SML

[SSS18] Hsiao Ching She, Kaye Stacey, and William H. Schmidt. Science and mathematics literacy: PISA for better school education. *International Journal of Science and Mathematics Education*, 16(1S):1–5, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9911-1; https://link.springer.com/content/pdf/10.1007/s10763-018-9911-1.pdf.

Stamovlasis:2005:CVP

[ST05] Dimitrios Stamovlasis and Georgios Tsaparlis. Cognitive variables in problem solving: A nonlinear approach. *International Journal of Science and Mathematics Education*, 3 (1):7–32, March 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-3918-5; http://link.springer.com/content/pdf/10.1007/s10763-004-3918-5.pdf.

Semiz:2024:TST

[ST24] Güliz Karaarslan Semiz and Gaye Teksöz. Tracing system thinking skills in science curricula: a case study from Turkey. *International Journal of Science and Mathematics Education*, 22(3):515–536, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10383-w.

Sia:2012:HSS

[STC12] Ding Teng Sia, David F. Treagust, and A. L. Chandrasegaran. High school students' proficiency and confidence levels in displaying their understanding of basic electrolysis concepts. *International Journal of Science and Mathematics Education*, 10(6):1325–1345, December 2012.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9338-z.

Salimpour:2023:CCD

[STD+23] Saeed Salimpour, Russell Tytler, Brian Doig, Michael T. Fitzgerald, and Urban Eriksson. Conceptualising the Cosmos: Development and validation of the cosmology concept inventory for high school. *International Journal of Science and Mathematics Education*, 21(1):251–275, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10252-y.

Sterner:2025:UGR

[Ste25] Helén Sterner. Using graphical representations to develop students' correspondence relationships and covariational thinking in pattern generalizations in primary school. *International Journal of Science and Mathematics Education*, 23 (6):1573–1597, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10520-z.

Straub:2020:SSR

[Str20] Miranda C. P. Straub. A study of student responses to participation in online citizen science projects. *International Journal of Science and Mathematics Education*, 18(5):869–886, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10001-8.

Stylianides:2008:IGO

[Sty08] Gabriel J. Stylianides. Investigating the guidance offered to teachers in curriculum materials: The case of proof in mathematics. *International Journal of Science and Mathematics Education*, 6(1):191–215, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9074-y.

Su:2008:ECC

[Su08] King-Dow Su. The effects of a chemistry course with integrated information communication technologies on university students' learning and attitudes. *International Journal of Science and Mathematics Education*, 6(2):225–249, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9062-7.

Sumpter:2013:TIB

[Sum13] Lovisa Sumpter. Themes and interplay of beliefs in mathematical reasoning. *International Journal of Science and Mathematics Education*, 11(5):1115–1135, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9392-6.

Sumpter:2016:BPA

[Sum16a] Lovisa Sumpter. 'Boys press all the buttons and hope it will help': Upper secondary school teachers' gendered conceptions about students' mathematical reasoning. *International Journal of Science and Mathematics Education*, 14(8):1535–1552, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9660-3.

Sumpter:2016:IUS

[Sum16b] Lovisa Sumpter. Investigating upper secondary school teachers' conceptions: Is mathematical reasoning considered gendered? *International Journal of Science and Mathematics Education*, 14(2s):347–362, July 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9634-5.

Sumpter:2020:PEE

[Sum20] Lovisa Sumpter. Preschool educators' emotional directions towards mathematics. *International Journal of Science and Mathematics Education*, 18(6):1169–1184, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10015-2; http://link.springer.com/content/pdf/10.1007/s10763-019-10015-2.pdf.

Savinainen:2008:FCI

[SV08] Antti Savinainen and Jouni Viiri. The force concept inventory as a measure of students conceptual coherence. *International Journal of Science and Mathematics Education*, 6 (4):719–740, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9103-x.

Sayac:2022:MAP

[SV22] Nathalie Sayac and Michiel Veldhuis. Mathematics assessment practices of primary school teachers in France. *International Journal of Science and Mathematics Education*, 20 (7):1595–1610, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10229-3.

Shanmugam:2025:EUO

[SVB25] S. Kanageswari Suppiah Shanmugam, Arsaythamby Veloo, and Yus'aiman Bin Jusoh Yusoff. Examining utility of oral-administered test accommodation in assessing Aboriginal pupils' mathematics performance using score comparability. *International Journal of Science and Mathematics Education*, 23(1):25–48, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10451-9.

Skordoulis:2009:SCO

[SVDK09] Constantine Skordoulis, Theodore Vitsas, Vassilis Dafermos, and Eugenia Koleza. The system of coordinates as an obstacle in understanding the concept of dimension. *International Journal of Science and Mathematics Education*, 7(2): 253–272, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9130-2.

Siller:2025:PPW

[SVJ25] Hans-Stefan Siller, Katrin Vorhölter, and Janina Just. Problem posing as a way of promoting individual mathematical thinking in STEM contexts — the case of climate change. *International Journal of Science and Mathematics Education*, 23(6):2113–2133, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10518-7.

Sodervik:2015:CUP

[SVME15] Ilona Södervik, Viivi Virtanen, and Mirjamaija Mikkilä-Erdmann. Challenges in understanding photosynthesis in a university introductory biosciences class. *International Journal of Science and Mathematics Education*, 13(4):733–750, August 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9571-8.

Sutopo:2014:IRA

[SW14] Sutopo and Bruce Waldrip. Impact of a representational approach on students' reasoning and conceptual understanding in learning mechanics. *International Journal of Science and Mathematics Education*, 12(4):741–765, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9431-y.

Simpson:2023:MSM

[SW23] Adrian Simpson and Yuqian Wang. Making sense of 'mastery': Understandings of a policy term among a sample of teachers in England. *International Journal of Science and Mathematics Education*, 21(2):581–600, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10178-x.

Shymansky:2012:HMP

[SWA+12] James A. Shymansky, Tzu-Ling Wang, Leonard A. Annetta, Larry D. Yore, and Susan A. Everett. How much professional development is needed to effect positive gains in K–6 student achievement on high stakes science tests? *International Journal of Science and Mathematics Education*, 10(1):1–19, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9265-9.

Summers:2019:CLS

[SWAEKS19] Ryan Summers, Shuai Wang, Fouad Abd-El-Khalick, and Ziad Said. Comparing Likert scale functionality across culturally and linguistically diverse groups in science education research: an illustration using Qatari students' responses to an attitude toward science survey. *International Journal* *of Science and Mathematics Education*, 17(5):885–903, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9889-8.

Smith:2020:SSS

[SWCH20] Thomas J. Smith, David A. Walker, Hsiang-Ting Chen, and Zuway-R. Hong. Students' sense of school belonging and attitude towards science: a cross-cultural examination. *International Journal of Science and Mathematics Education*, 18(5): 855–867, June 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10002-7.

Sahin:2020:IHP

[SWDR20] Alpaslan Sahin, Hersh C. Waxman, Edward Demirci, and Virginia Snodgrass Rangel. An investigation of harmony public school students' college enrollment and STEM major selection rates and perceptions of factors in STEM major selection. *International Journal of Science and Mathematics Education*, 18(7):1249–1269, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10017-0.

Sum:2024:USD

[SWYS24] Emily S. W. Sum, Miranda K. Y. Wong, Antonia Y. T. Yip, and Wee Tiong Seah. Using storytelling to develop fraction concepts with culturally and linguistically diverse learners. *International Journal of Science and Mathematics Education*, 22(3):633–655, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10388-5.

Safadi:2014:PSV

[SY14] Rafi' Safadi and Edit Yerushalmi. Problem solving vs. troubleshooting tasks: the case of sixth-grade students studying simple electric circuits. *International Journal of Science and Mathematics Education*, 12(6):1341–1366, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9461-5.

Siani:2022:TTD

[SY22] Merav Siani and Anat Yarden. "I think that teachers do not teach evolution because it is complicated": Difficulties in teaching and learning evolution in Israel. *International Journal of Science and Mathematics Education*, 20(3):481–501, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-021-10179-w`.

Shin:2005:CSC

[SYOL05] Myeong-Kyeong Shin, Robert E. Yager, Phil Seok Oh, and Mee-Kyeoung Lee. Changes in science classrooms after experiencing an international professional staff development program. *International Journal of Science and Mathematics Education*, 1(4):505–522, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-3354-1`. See erratum [SYOL07].

Shin:2007:ESM

[SYOL07] Myeong-Kyeong Shin, Robert E. Yager, Phil Seok Oh, and Mee-Kyeoung Lee. Erratum: Shin, M.-K., Yager, R. E., Oh, Ph. S. & Lee, M.-K. (2005). Changes in science classrooms after experiencing an international professional staff development program. *International Journal of Science and Mathematics Education* **1**, 505–522. *International Journal of Science and Mathematics Education*, 5(4):767, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9079-6`; `http://link.springer.com/content/pdf/10.1007/s10763-007-9079-6.pdf`. See [SYOL05].

So:2018:ASA

[SZCL18] Winnie Wing Mui So, Ying Zhan, Stephen Cheuk Fai Chow, and Chi Fai Leung. Analysis of STEM activities in primary students' science projects in an informal learning environment. *International Journal of Science and Mathematics Education*, 16(6):1003–1023, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9828-0`.

Tytler:2015:ETD

[TA15] Russell Tytler and George Aranda. Expert teachers' discursive moves in science classroom interactive talk. *International Journal of Science and Mathematics Education*, 13(2):425–446, April 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9617-6`.

Tas:2019:EDB

[TAC19] Yasemin Tas, Gökhan Aksoy, and Ekrem Cengiz. Effectiveness of design-based science on students' learning in electrical energy and metacognitive self-regulation. *International Journal of Science and Mathematics Education*, 17(6):1109–1128, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9923-x`.

Tang:2011:RCC

[Tan11] Kok-Sing Tang. Reassembling curricular concepts: a multimodal approach to the study of curriculum and instruction. *International Journal of Science and Mathematics Education*, 9(1):109–135, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9222-7`.

Taylan:2018:RBP

[Tay18] Rukiye Didem Taylan. The relationship between pre-service mathematics teachers' focus on student thinking in lesson analysis and lesson planning tasks. *International Journal of Science and Mathematics Education*, 16(2):337–356, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9778-y`.

Taskin:2017:STK

[TBP17] Vahide Taskin, Sascha Bernholt, and Ilka Parchmann. Student teachers' knowledge about chemical representations. *International Journal of Science and Mathematics Education*, 15(1):39–55, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9672-z`.

Tabach:2010:VJI

[TBT+10] Michal Tabach, Ruthi Barkai, Pessia Tsamir, Dina Tirosh, Tommy Dreyfus, and Esther Levenson. Verbal justification — is it a proof? Secondary school teachers' perceptions. *International Journal of Science and Mathematics Education*, 8(6):1071–1090, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9230-7.

Taylor:2007:NSW

[TC07] Neil Taylor and Gerry Corrigan. New South Wales primary school teachers' perceptions of the role of ICT in the primary science curriculum — a rural and regional perspective. *International Journal of Science and Mathematics Education*, 5(1):85–109, March 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9025-4.

Tsai:2009:UCA

[TC09] Yu-Ling Tsai and Ching-Kuch Chang. Using combinatorial approach to improve students' learning of the distributive law and multiplicative identities. *International Journal of Science and Mathematics Education*, 7(3):501–531, June 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9135-x.

Treagust:2010:ESU

[TCC+10] David F. Treagust, A. L. Chandrasegaran, Julianne Crowley, Benny H. W. Yung, Irene P.-A. Cheong, and Jazilah Othman. Evaluating students' understanding of kinetic particle theory concepts relating to the states of matter, changes of state and diffusion: a cross-national study. *International Journal of Science and Mathematics Education*, 8(1):141–164, February 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9166-y.

Tay:2024:LMM

[TCC+24] Lee Yong Tay, Melvin Chan, Sau Kew Chong, Jing Yi Tan, and Thaslim Begum Aiyoob. Learning of mathematics: a metacognitive experiences perspective. *International*

Journal of Science and Mathematics Education, 22(3):561–583, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10385-8.

Tchoshanov:2017:ELS

[TCH+17] Mourat Tchoshanov, Maria D. Cruz, Karla Huereca, Kadriya Shakirova, Liliana Shakirova, and Elena N. Ibragimova. Examination of lower secondary mathematics teachers' content knowledge and its connection to students' performance. *International Journal of Science and Mathematics Education*, 15(4):683–702, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9703-9.

Tuan:2007:E

[TCTC07] Hsiao-Lin Tuan, Chi-Chin Chin, Chi-Chung Tsai, and Su-Fey Cheng. Erratum. *International Journal of Science and Mathematics Education*, 5(4):765, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9078-7; http://link.springer.com/content/pdf/10.1007/s10763-007-9078-7.pdf.

Thao-Do:2016:LEV

[TDBLY16] Thi Phuong Thao-Do, Dang Thi Bac-Ly, and Chokchai Yuenyong. Learning environment in Vietnamese physics teacher education programme through the lens of constructivism: a case study of a state university in Mekong Delta Region, Vietnam. *International Journal of Science and Mathematics Education*, 14(1s):55–79, January 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9585-2.

Tiruneh:2018:DLE

[TDE18] Dawit Tibebu Tiruneh, Mieke De Cock, and Jan Elen. Designing learning environments for critical thinking: Examining effective instructional approaches. *International Journal of Science and Mathematics Education*, 16(6):1065–1089, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9829-z; http://link.

springer.com/content/pdf/10.1007/s10763-017-9829-z.pdf.

Tiruneh:2017:MCT

[TDW+17] Dawit Tibebu Tiruneh, Mieke De Cock, Ataklti G. Weldeslassie, Jan Elen, and Rianne Janssen. Measuring critical thinking in physics: Development and validation of a critical thinking test in electricity and magnetism. *International Journal of Science and Mathematics Education*, 15(4):663–682, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9723-0; http://link.springer.com/content/pdf/10.1007/s10763-016-9723-0.pdf.

Tsai:2018:RBA

[TH18] Chun-Yen Tsai and Tai-Chu Huang. The relationship between adult self-efficacy and scientific competencies: the moderating effect of gender. *International Journal of Science and Mathematics Education*, 16(1S):91–106, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9869-4.

Tan:2019:IDD

[TH19] Cheng Yong Tan and Khe Foon Hew. The impact of digital divides on student mathematics achievement in Confucian heritage cultures: a critical examination using PISA 2012 data. *International Journal of Science and Mathematics Education*, 17(6):1213–1232, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9917-8.

Tabach:2020:FTT

[THAD20] Michal Tabach, Rina Hershkowitz, Shirly Azmon, and Tommy Dreyfus. Following the traces of teachers' talk-moves in their students' verbal and written responses. *International Journal of Science and Mathematics Education*, 18(3):509–528, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09969-0.

Thompson:2022:WRM

[Tho22] Denisse R. Thompson. What role might the textbook play in integrating reading into mathematics instruction? *International Journal of Science and Mathematics Education*, 20(S1):141–162, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10268-4.

Tuohilampi:2015:CWA

[THV+15] Laura Tuohilampi, Markku S. Hannula, Leonor Varas, Valentina Giaconi, Anu Laine, Liisa Näveri, and Laia Saló i Nevado. Challenging the Western approach to cultural comparisons: young pupils' affective structures regarding mathematics in Finland and Chile. *International Journal of Science and Mathematics Education*, 13(6):1625–1648, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9562-9.

Tighezza:2014:MRA

[Tig14] M'hamed Tighezza. Modeling relationships among learning, attitude, self-perception, and science achievement for grade 8 Saudi students. *International Journal of Science and Mathematics Education*, 12(4):721–740, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9426-8.

Tippett:2010:RTS

[Tip10] Christine D. Tippett. Refutation text in science education: a review of two decades of research. *International Journal of Science and Mathematics Education*, 8(6):951–970, December 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9203-x.

Taban:2022:DST

[TK22] Tugce Taban and Seyit Ahmet Kiray. Determination of science teacher candidates' misconceptions on liquid pressure with four–tier diagnostic test. *International Journal of Science and Mathematics Education*, 20(8):1791–1811, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10224-8`.

Thibaut:2019:TAT

[TKDD19] Lieve Thibaut, Heidi Knipprath, Wim Dehaene, and Fien Depaepe. Teachers' attitudes toward teaching integrated STEM: the impact of personal background characteristics and school context. *International Journal of Science and Mathematics Education*, 17(5):987–1007, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9898-7`.

Turner:2018:OIB

[TKS18] Ronna C. Turner, Elizabeth A. Keiffer, and Gregory J. Salamo. Observing inquiry-based learning environments using the scholastic inquiry observation instrument. *International Journal of Science and Mathematics Education*, 16(8):1455–1478, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9843-1`.

Turan:2020:IMH

[TKY20] Gurbet Yeliz Turan, Ayşe Nesibe Köklükaya, and Ezgi Güven Yıldırım. Improving matter and heat subjects learning through genuine designed educational games. *International Journal of Science and Mathematics Education*, 18(1):19–42, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09945-0`.

Tuohilampi:2016:CSF

[TLHV16a] Laura Tuohilampi, Anu Laine, Markku S. Hannula, and Leonor Varas. A comparative study of Finland and Chile: the culture-dependent significance of the individual and interindividual levels of the mathematics–related affect. *International Journal of Science and Mathematics Education*, 14(6):1093–1111, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9639-0`. See erratum [TLHV16b].

Tuohilampi:2016:ECS

[TLHV16b] Laura Tuohilampi, Anu Laine, Markku S. Hannula, and Leonor Varas. Erratum to: A comparative study of Finland and Chile: the culture-dependent significance of the individual and interindividual levels of the mathematics-related affect. *International Journal of Science and Mathematics Education*, 14(6):1197, August 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9748-4; http://link.springer.com/content/pdf/10.1007/s10763-016-9748-4.pdf. See [TLHV16a].

Tesfamariam:2017:NSD

[TLK17] Gebrekidan Mebrahtu Tesfamariam, Annette Lykknes, and Lise Kvittingen. 'Named small but doing great': An investigation of small-scale chemistry experimentation for effective undergraduate practical work. *International Journal of Science and Mathematics Education*, 15(3):393–410, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9700-z.

Tang:2022:MET

[TLK22] Kok-Sing Tang, Sheau-Wen Lin, and Berinderjeet Kaur. Mapping and extending the theoretical perspectives of reading in science and mathematics education research. *International Journal of Science and Mathematics Education*, 20 (S1):1–15, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10322-1. See correction [TLK24].

Tang:2024:CME

[TLK24] Kok-Sing Tang, Sheau-Wen Lin, and Berinderjeet Kaur. Correction to: Mapping and extending the theoretical perspectives of reading in science and mathematics education research. *International Journal of Science and Mathematics Education*, 22(6):1409, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10392-9. See [TLK22].

Tee:2021:SRM

[TLR21] Kiew Nee Tee, Kwan Eu Leong, and Suzieleez Syrene Abdul Rahim. A self-regulation model of mathematics achievement for eleventh-grade students. *International Journal of Science and Mathematics Education*, 19(3):619–637, March 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10076-8.

Tan:2021:RAH

[TLT21] Aik-Ling Tan, Jyh-Chong Liang, and Chin-Chung Tsai. Relationship among high school students' science academic hardiness, conceptions of learning science and science learning self-efficacy in Singapore. *International Journal of Science and Mathematics Education*, 19(2):313–332, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10040-1.

Tippett:2017:FPK

[TM17] Christine D. Tippett and Todd M. Milford. Findings from a pre-kindergarten classroom: Making the case for STEM in early childhood education. *International Journal of Science and Mathematics Education*, 15(1s):67–86, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9812-8.

Turner:2022:MME

[TMS22] Erin E. Turner, Amy Roth McDuffie, and James E. Smith. Mathematical modeling in the elementary grades: Developing and testing an assessment. *International Journal of Science and Mathematics Education*, 20(7):1387–1409, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10195-w.

Torres:2024:ETI

[TMVC24] María D. Torres, Antonio Moreno, Rodolfo Vergel, and María C. Cañadas. The evolution from "I think it plus three" towards "I think it is always plus three." Transition from arithmetic generalization to algebraic generalization.

International Journal of Science and Mathematics Education, 22(5):971–991, June 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10414-6.

Twohill:2023:PPT

[TNHK23] Aisling Twohill, Siún NicMhuirí, Lorraine Harbison, and Anastasios Karakolidis. Primary preservice teachers' mathematics teaching efficacy beliefs: the role played by mathematics attainment, educational level, preparedness to teach, and gender. *International Journal of Science and Mathematics Education*, 21(2):601–622, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10259-5.

Topcu:2013:PTE

[Top13] Mustafa Sami Topcu. Preservice teachers' epistemological beliefs in physics, chemistry, and biology: a mixed study. *International Journal of Science and Mathematics Education*, 11(2):433–458, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9345-0.

Tao:2012:LTO

[TOV12] Ying Tao, Mary Oliver, and Grady Venville. Long-term outcomes of early childhood science education: insights from a cross-national comparative case study on conceptual understanding of science. *International Journal of Science and Mathematics Education*, 10(6):1269–1302, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9335-2.

Tytler:2023:CRC

[TPK+23] Russell Tytler, Vaughan Prain, Melinda Kirk, Joanne Mulligan, Chris Nielsen, Chris Speldewinde, Peta White, and Lihua Xu. Characterising a representation construction pedagogy for integrating science and mathematics in the primary school. *International Journal of Science and Mathematics Education*, 21(4):1153–1175, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10284-4.

Taasoobshirazi:2019:STG

[TPM19] Gita Taasoobshirazi, Christina Puckett, and Gwen Marchand. Stereotype threat and gender differences in biology. *International Journal of Science and Mathematics Education*, 17(7):1267–1282, October 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9926-7`.

Triantafillou:2021:TEA

[TPS21] Chrissavgi Triantafillou, Giorgos Psycharis, and Vasiliki Spiliotopoulou. Teacher educators' activity aiming to support inquiry through mathematics and science teacher collaboration. *International Journal of Science and Mathematics Education*, 19(S1):21–37, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10153-6`.

Tang:2021:RME

[TR21] Kok-Sing Tang and Natasha Anne Rappa. The role of metalanguage in an explicit literacy instruction on scientific explanation. *International Journal of Science and Mathematics Education*, 19(7):1311–1331, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10121-6`.

Treagust:2004:E

[Tre04] David F. Treagust. Editorial. *International Journal of Science and Mathematics Education*, 1(3):255–257, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/content/pdf/10.1023/B%3AIJMA.0000039916.32188.d5.pdf`.

Tsatsaroni:2005:SRS

[TRF05] Anna Tsatsaroni, Konstantinos Ravanis, and Anna Falaga. Studying the recontextualisation of science in pre-school classrooms: Drawing on Bernstein's insights into teaching and learning practices. *International Journal of Science and Mathematics Education*, 1(4):385–417, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-1049-2`.

Tzur:2004:DTS

[TS04] Ron Tzur and Marty Simon. Distinguishing two stages of mathematics conceptual learning. *International Journal of Science and Mathematics Education*, 2(2):287–304, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-7479-4`.

Takeuchi:2020:CLS

[TS20] Haruka Takeuchi and Yusuke Shinno. Comparing the lower secondary textbooks of Japan and England: a praxeological analysis of symmetry and transformations in geometry. *International Journal of Science and Mathematics Education*, 18(4):791–810, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09982-3`; `http://link.springer.com/content/pdf/10.1007/s10763-019-09982-3.pdf`.

Tsatsaroni:2006:MSE

[Tsa06] Anna Tsatsaroni. Mathematics and science education research against the audit culture. *International Journal of Science and Mathematics Education*, 4(2):187–193, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9042-y`.

Tan-Sisman:2012:LMT

[TSA12] Gulcin Tan-Sisman and Meral Aksu. The length measurement in the Turkish mathematics curriculum: its potential to contribute to students' learning. *International Journal of Science and Mathematics Education*, 10(2):363–385, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9304-1`.

Tsai:2013:ECP

[Tsa13] Meng-Jung Tsai. Erratum to: Call for papers. *International Journal of Science and Mathematics Education*, 11(2):527, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9408-x`; `http://link.springer.com/content/pdf/10.1007/s10763-013-9408-x.pdf`.

Tytler:2017:CSC

[TSC17] Russell Tytler, David Symington, and John Cripps Clark. Community-school collaborations in science: Towards improved outcomes through better understanding of boundary issues. *International Journal of Science and Mathematics Education*, 15(4):643–661, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9711-9.

Tekin-Sitrava:2022:DPT

[TSKIB22] Reyhan Tekin-Sitrava, Gabriele Kaiser, and Mine Işıksal-Bostan. Development of prospective teachers' noticing skills within initial teacher education. *International Journal of Science and Mathematics Education*, 20(7):1611–1634, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10211-z.

Theyssen:2016:OPL

[TSMW16] Heike Theyßen, Sarah Struzyna, Elliot Mylott, and Ralf Widenhorn. Online physics lab exercises — a binational study on the transfer of teaching resources. *International Journal of Science and Mathematics Education*, 14(5):865–883, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9613-2.

Tas:2016:DVS

[TSO16] Yasemin Tas, Semra Sungur, and Ceren Oztekin. Development and validation of science homework scale for middle-school students. *International Journal of Science and Mathematics Education*, 14(3):417–444, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9582-5.

Tekin-Sitrava:2025:HDO

[TSÖIBYK25] Reyhan Tekin-Sitrava, Zeynep Özel, Mine Işıksal-Bostan, and Seçil Yemen-Karpuzcu. How does online professional development program enriched with collaborative discussion develop teachers' noticing skills? *International Journal of Science and Mathematics Education*, 23(1):71–96, January

2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10461-7.

Tsitsipis:2012:PMS

[TSP12] Georgios Tsitsipis, Dimitrios Stamovlasis, and George Papageorgiou. A probabilistic model for students' errors and misconceptions on the structure of matter in relation to three cognitive variables. *International Journal of Science and Mathematics Education*, 10(4):777–802, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9288-x.

Triantafillou:2016:NAS

[TSP16] Chrissavgi Triantafillou, Vasiliki Spiliotopoulou, and Despina Potari. The nature of argumentation in school mathematics and physics texts: The case of periodicity. *International Journal of Science and Mathematics Education*, 14(4):681–699, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9609-y.

Thacker:2025:DDH

[TSSMG25] Ian Thacker, Rebecca Schroeder, Sara Shields-Menard, and Nickolas Goforth. Dirt don't hurt: How relevant soil data can support learning and motivation at a Hispanic serving institution. *International Journal of Science and Mathematics Education*, 23(3):803–826, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10491-1.

Taber:2007:ELC

[TT07] Keith S. Taber and Kim Chwee Daniel Tan. Exploring learners' conceptual resources: Singapore A Level students' explanations in the topic of ionisation energy. *International Journal of Science and Mathematics Education*, 5(3):375–392, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9044-9.

Tobin:2014:PPB

[TT14] Ruthanne Tobin and Christine D. Tippett. Possibilities and potential barriers: learning to plan for differentiated instruction in elementary science. *International Journal of Science and Mathematics Education*, 12(2):423–443, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9414-z.

Tran:2018:EBD

[TT18] Dung Tran and James E. Tarr. Examination of bivariate data tasks in US high school textbooks through the statistical investigation and cognitive demands frameworks. *International Journal of Science and Mathematics Education*, 16(8):1581–1603, November 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9851-1.

Tirosh:2022:MMC

[TT22] Dina Tirosh and Pessia Tsamir. Missing and mis-in concept images of parallelograms: the case of Tal. *International Journal of Science and Mathematics Education*, 20(5):981–997, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10175-0.

Tsamir:2023:WSA

[TT23] Pessia Tsamir and Dina Tirosh. What is a solution of an algebraic equation? *International Journal of Science and Mathematics Education*, 21(8):2303–2323, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10342-x.

Tirosh:2025:MME

[TT25] Dina Tirosh and Pessia Tsamir. Mis-out and mis-in examples: The case of rational numbers. *International Journal of Science and Mathematics Education*, 23(3):617–637, March 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10479-x.

Tsamir:2025:WWE

[TTO25] Pessia Tsamir, Dina Tirosh, and Regina Ovodenko. What are and what are not extrema points? Examining definitions and examples. *International Journal of Science and Mathematics Education*, 23(1):121–142, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10458-2.

Turgut:2022:RGL

[Tur22] Melih Turgut. Reinventing geometric linear transformations in a dynamic geometry environment: Multimodal analysis of student reasoning. *International Journal of Science and Mathematics Education*, 20(6):1203–1223, August 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10185-y.

Taylor:2003:ECC

[TVC03] Neil Taylor, Barend Vlaardingerbroek, and Richard K. Coll. Exploiting curriculum commonality in small island states: Some strategies for primary science curriculum development in the South Pacific. *International Journal of Science and Mathematics Education*, 1(2):157–174, June 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Tang:2016:ISM

[TWC+16] Kai-Yu Tang, Chia-Yu Wang, Hsin-Yi Chang, Sufen Chen, Hao-Chang Lo, and Chin-Chung Tsai. The intellectual structure of metacognitive scaffolding in science education: A co-citation network analysis. *International Journal of Science and Mathematics Education*, 14(2):249–262, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9696-4.

Timothy:2023:FPT

[TWS+23] Venance Timothy, Bianca Watzka, Matthias Stadler, Raimund Girwidz, and Frank Fischer. Fostering preservice teachers' diagnostic competence in identifying students' misconceptions in physics. *International Journal of Science and Mathematics Education*, 21(5):1685–1702, June 2023.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10311-4.

Taslidere:2023:ECC

[TY23] Erdal Taslidere and Bilgetürk Yıldırım. Effect of conceptual change-oriented instruction on students' conceptual understanding and attitudes towards simple electricity. *International Journal of Science and Mathematics Education*, 21(5):1567–1589, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10319-w.

Tuan:2017:IIM

[TYC17] Hsiao-Lin Tuan, Chung-Chieh Yu, and Chi-Chin Chin. Investigating the influence of a mixed face-to-face and Website professional development course on the inquiry-based conceptions of high school science and mathematics teachers. *International Journal of Science and Mathematics Education*, 15(8):1385–1401, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9747-5.

Tho:2017:SRR

[TYW+17] Siew Wei Tho, Yau Yuen Yeung, Rui Wei, Ka Wing Chan, and Winnie Wing mui So. A systematic review of remote laboratory work in science education with the support of visualizing its structure through the HistCite and CiteSpace software. *International Journal of Science and Mathematics Education*, 15(7):1217–1236, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9740-z.

Urhan:2018:ANG

[UD18] Selin Urhan and Şenol Dost. Analysis of ninth grade mathematics course book activities based on model-eliciting principles. *International Journal of Science and Mathematics Education*, 16(5):985–1002, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9808-4.

Ubuz:2019:EPM

[UE19] Behiye Ubuz and Beril Erdoğan. Effects of physical manipulative instructions with or without explicit metacognitive questions on geometrical knowledge acquisition. *International Journal of Science and Mathematics Education*, 17 (1):129–151, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9852-0`.

Uribe-Florez:2017:MUE

[UFW17] Lida J. Uribe-Flórez and Jesse L. M. Wilkins. Manipulative use and elementary school students' mathematics learning. *International Journal of Science and Mathematics Education*, 15(8):1541–1557, December 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9757-3`.

Uitto:2014:IAS

[Uit14] Anna Uitto. Interest, attitudes and self-efficacy beliefs explaining upper-secondary school students' orientation towards biology–related careers. *International Journal of Science and Mathematics Education*, 12(6):1425–1444, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9516-2`.

Urhahne:2011:CNS

[UKM11] Detlef Urhahne, Kerstin Kremer, and Juergen Mayer. Conceptions of the nature of science — are they general or context specific? *International Journal of Science and Mathematics Education*, 9(3):707–730, June 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9233-4`.

Ulusoy:2021:PEC

[Ulu21] Fadime Ulusoy. Prospective early childhood and elementary school mathematics teachers' concept images and concept definitions of triangles. *International Journal of Science and Mathematics Education*, 19(5):1057–1078, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-020-10105-6.

Uchida:2018:DTF

[UM18] Akitoshi Uchida and Kazuo Mori. Detection and treatment of fake math — dislikes among Japanese junior high school students. *International Journal of Science and Mathematics Education*, 16(6):1115–1126, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9825-3.

vonAufschnaiter:2006:PBI

[vA06] Claudia von Aufschnaiter. Process based investigations of conceptual development: an explorative study. *International Journal of Science and Mathematics Education*, 4(4):689–725, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9018-3.

Venkat:2021:DSA

[VA21] Hamsa Venkat and Mike Askew. Development in South African primary mathematics teacher educators' work with in-service teachers. *International Journal of Science and Mathematics Education*, 19(S1):39–58, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10161-6.

Velayutham:2012:GDS

[VAF12] Sunitadevi Velayutham, Jill M. Aldridge, and Barry Fraser. Gender differences in student motivation and self-regulation in science learning: a multi-group structural equation modeling analysis. *International Journal of Science and Mathematics Education*, 10(6):1347–1368, December 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9339-y.

Vallera:2020:ISA

[VB20] Farah L. Vallera and Alec M. Bodzin. Integrating STEM with AgLIT (Agricultural Literacy Through Innovative Technology): The efficacy of a project-based curriculum for upper-primary students. *International Journal of Science and Mathematics Education*, 18(3):419–439, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09979-y`.

Vesga-Bravo:2022:BAM

[VBACCG22] Grace-Judith Vesga-Bravo, Zaida-Mabel Angel-Cuervo, and Gerardo-Antonio Chacón-Guerrero. Beliefs about mathematics, its teaching, and learning: Contrast between preservice and in-service teachers. *International Journal of Science and Mathematics Education*, 20(4):769–791, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10164-3`.

VanRooy:2017:MRS

[VC17] Wilhelmina Sabina Van Rooy and Eveline Chan. Multimodal representations in senior biology assessments: A case study of NSW Australia. *International Journal of Science and Mathematics Education*, 15(7):1237–1256, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9741-y`.

Vo:2023:EIR

[VC23] De Van Vo and Benő Csapó. Exploring inductive reasoning, scientific reasoning and science motivation, and their role in predicting STEM achievement across grade levels. *International Journal of Science and Mathematics Education*, 21(8):2375–2398, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10349-4`.

Vilhunen:2023:EEO

[VCSA+23] Elisa Vilhunen, Mei-Hung Chiu, Katariina Salmela-Aro, Jari Lavonen, and Kalle Juuti. Epistemic emotions and observations are intertwined in scientific sensemaking: a study among upper secondary physics students. *International Journal of Science and Mathematics Education*, 21(5):1545–1566, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10310-5`.

Vale:2020:TAS

[VCSW20] Colleen Vale, Coral Campbell, Christopher Speldewinde, and Pennie White. Teaching across subject boundaries in STEM: Continuities in beliefs about learning and teaching. *International Journal of Science and Mathematics Education*, 18(3): 463–483, March 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09983-2.

vanDijke-Droogers:2022:ISI

[vDDDB22] Marianne van Dijke-Droogers, Paul Drijvers, and Arthur Bakker. Introducing statistical inference: Design of a theoretically and empirically based learning trajectory. *International Journal of Science and Mathematics Education*, 20 (8):1743–1766, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10208-8.

Vandenbroeck:2024:LAE

[VDJ24] Margo Vandenbroeck, Jonas Dockx, and Rianne Janssen. Learning aids' effect on mathematics performance of grade 8 students in vocational education in Flanders (Belgium). *International Journal of Science and Mathematics Education*, 22(8):1783–1808, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10450-w.

vanderWal:2017:WTM

[vdWBD17] Nathalie J. van der Wal, Arthur Bakker, and Paul Drijvers. Which techno-mathematical literacies are essential for future engineers? *International Journal of Science and Mathematics Education*, 15(1s):87–104, May 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9810-x; http://link.springer.com/content/pdf/10.1007/s10763-017-9810-x.pdf.

VandenEynde:2023:RGB

[VGDD23] Sofie Van den Eynde, Martin Goedhart, Johan Deprez, and Mieke De Cock. Role of graphs in blending physical and mathematical meaning of partial derivatives in the context of the heat equation. *International Journal of*

Science and Mathematics Education, 21(1):25–47, January 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10237-3.

Velasco:2022:EAS

[VHM22] Richard Carlos L. Velasco, Rebecca Hite, and Jeff Milbourne. Exploring advocacy self-efficacy among K-12 STEM teacher leaders. *International Journal of Science and Mathematics Education*, 20(3):435–457, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10176-z; http://link.springer.com/content/pdf/10.1007/s10763-021-10176-z.pdf.

Vidic:2015:FYS

[Vid15] Andreja Drobnic Vidic. First-year students' beliefs about context problems in mathematics in university science programmes. *International Journal of Science and Mathematics Education*, 13(5):1161–1187, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9533-1.

Veal:2006:DPS

[VJ06] William R. Veal and Zachary Jackson. Developing a primary science methods classroom. *International Journal of Science and Mathematics Education*, 4(2):195–213, October 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9000-0.

vonKotzebue:2022:DSE

[vKF22] Lena von Kotzebue and Christian Förtsch. Dealing with student errors in whole-class discussions of biology lessons at German secondary schools. *International Journal of Science and Mathematics Education*, 20(3):459–480, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-021-10171-4; http://link.springer.com/content/pdf/10.1007/s10763-021-10171-4.pdf.

Voyer:2011:PMP

[Voy11] Dominic Voyer. Performance in mathematical problem solving as a function of comprehension and arithmetic skills. *International Journal of Science and Mathematics Education*, 9(5):1073–1092, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-010-9239-y`.

Vitale:2012:UDS

[VR12] Michael R. Vitale and Nancy R. Romance. Using in-depth science instruction to accelerate student achievement in science and reading comprehension in grades 1–2. *International Journal of Science and Mathematics Education*, 10(2):457–472, April 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9326-8`.

Vitale:2023:DTE

[VR23] Michael R. Vitale and Nancy Romance. Direct and transfer effects of an interdisciplinary model integrating science and reading in grades 1–3: Results and policy implications. *International Journal of Science and Mathematics Education*, 21(8):2203–2214, December 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10289-z`.

Vallejo-Ruiz:2008:HSM

[VRFCT+08] Mónica Vallejo-Ruiz, Antonio Fernández-Cano, Manuel Torralbo, Alexander Maz, and Luis Rico. History of Spanish mathematics education focusing on PhD theses. *International Journal of Science and Mathematics Education*, 6(2):313–327, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9073-z`.

Venville:2005:SUA

[VRW05] Grady Venville, Léonie Rennie, and John Wallace. Student understanding and application of science concepts in the context of an integrated curriculum setting. *International Journal of Science and Mathematics Education*, 1(4):449–475, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-2838-3`.

Vo:2025:ASI

[VS25] De Van Vo and Geraldine Mooney Simmie. Assessing scientific inquiry: a systematic literature review of tasks, tools and techniques. *International Journal of Science and Mathematics Education*, 23(4):871–906, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10498-8.

Vlaardingerbroek:2007:EVB

[VT07a] Barend Vlaardingerbroek and T. G. Neil Taylor. Erratum: Vlaardingerbroek, B. & Taylor, T. G. N. (2007). Upper secondary school physical science curricula in New Zealand after the national qualifications framework reforms. *International Journal of Science and Mathematics Education*, **5**, 263–280. *International Journal of Science and Mathematics Education*, 5(4):761–764, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9076-9; http://link.springer.com/content/pdf/10.1007/s10763-007-9076-9.pdf. See [VT07b].

Vlaardingerbroek:2007:USS

[VT07b] Barend Vlaardingerbroek and T. G. Neil Taylor. Upper secondary school physical science curricula in New Zealand after the national qualifications framework reforms. *International Journal of Science and Mathematics Education*, 5(2):263–280, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9032-0. See erratum [VT07a].

Verhoef:2014:CLS

[VTCvS14] Nellie Verhoef, David Tall, Fer Coenders, and Daan van Smaalen. The complexities of a lesson study in a Dutch situation: mathematics teacher learning. *International Journal of Science and Mathematics Education*, 12(4):859–881, August 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9436-6.

Vieira:2016:FSL

[VTV16] Rui Marques Vieira and Celina Tenreiro-Vieira. Fostering scientific literacy and critical thinking in elementary science education. *International Journal of Science and Mathematics Education*, 14(4):659–680, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9605-2.

vanVelzen:2016:EGH

[vV16] Joke H. van Velzen. Eleventh-grade high school students' accounts of mathematical metacognitive knowledge: Explicitness and systematicity. *International Journal of Science and Mathematics Education*, 14(2):319–333, March 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9689-3.

Vallejo-Vargas:2024:IVM

[VVR24] Estela A. Vallejo-Vargas and David A. Reid. Influences of a virtual manipulatives context on argumentation about integers. *International Journal of Science and Mathematics Education*, 22(3):585–608, March 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10386-7.

Vale:2017:MVC

[VWH+17] Colleen Vale, Wanty Widjaja, Sandra Herbert, Leicha A. Bragg, and Esther Yoon-Kin Loong. Mapping variation in children's mathematical reasoning: The case of 'what else belongs?'. *International Journal of Science and Mathematics Education*, 15(5):873–894, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9725-y.

Waight:2014:TKH

[Wai14] Noemi Waight. Technology knowledge: high school science teachers' conceptions of the nature of technology. *International Journal of Science and Mathematics Education*, 12 (5):1143–1168, October 2014. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9452-6.

Weissman:2023:UTC

[WAL23] Shula Weissman, Michal Ayalon, and Roza Leikin. Unravelling tutors' conceptions of teaching mathematics in virtual school using a goal-action model. *International Journal of Science and Mathematics Education*, 21(5):1521–1543, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10300-7. See correction [WAL24].

Weissman:2024:CUT

[WAL24] Shula Weissman, Michal Ayalon, and Roza Leikin. Correction to: Unravelling tutors' conceptions of teaching mathematics in virtual school using a goal–action model. *International Journal of Science and Mathematics Education*, 22(6):1405–1406, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10329-8. See [WAL23].

Wang:2004:DVT

[Wan04] Jing-Ru Wang. Development and validation of a two-tier instrument to examine understanding of internal transport in plants and the human circulatory system. *International Journal of Science and Mathematics Education*, 2(2):131–157, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-004-9323-2.

Wang:2007:STA

[Wan07] Jing-Ru Wang. Students' thinking and alternative conceptions of transport systems in plants: A follow-up study. *International Journal of Science and Mathematics Education*, 5(2):307–328, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9038-7.

Wang:2020:CIB

[Wan20] Jianlan Wang. Compare inquiry-based pedagogical instruction with direct instruction for pre-service science teacher education. *International Journal of Science and Mathematics Education*, 18(6):1063–1083, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10010-7`.

Watson:2017:LSS

[Wat17] Jane M. Watson. Linking science and statistics: Curriculum expectations in three countries. *International Journal of Science and Mathematics Education*, 15(6):1057–1073, August 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9673-y`.

Wan:2020:WMS

[WB20] Yanlan Wan and Hualin Bi. What major "Socio-Scientific topics" should the science curriculum focused on? A Delphi study of the expert community in China. *International Journal of Science and Mathematics Education*, 18(1):61–77, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-09947-y`.

Wang:2017:ULF

[WBB17] Yuqian Wang, Patrick Barmby, and David Bolden. Understanding linear function: a comparison of selected textbooks from England and Shanghai. *International Journal of Science and Mathematics Education*, 15(1):131–153, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9674-x`.

Weinberg:2021:PGI

[WBM21] Andrea E. Weinberg, Meena M. Balgopal, and Laura B. Sample McMeeking. Professional growth and identity development of STEM teacher educators in a community of practice. *International Journal of Science and Mathematics Education*, 19(S1):99–120, May 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10148-9`.

Wang:2016:DVO

[WC16] Jing-Ru Wang and Shin-Feng Chen. Development and validation of an online dynamic assessment for raising students' comprehension of science text. *International Journal of Science and Mathematics Education*, 14(3):373–389, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9575-4`.

Wong:2023:PPP

[WCB23] Billy Wong and Meggie Copsey-Blake. Pragmatic, persistent, and precarious: The pathways of three minority ethnic women in STEM higher education. *International Journal of Science and Mathematics Education*, 21(7):2123–2142, October 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10337-8`.

Wei:2019:ISS

[WCC19] Bing Wei, Sitong Chen, and Bo Chen. An investigation of sources of science teachers' practical knowledge of teaching with practical work. *International Journal of Science and Mathematics Education*, 17(4):723–738, April 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-018-9886-y`.

Wu:2009:DIT

[WCG09] Weishen Wu, Huey-Por Chang, and Chorng-Jee Guo. The development of an instrument for a technology-integrated science learning environment. *International Journal of Science and Mathematics Education*, 7(1):207–233, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9116-5`.

Wells:2025:IPU

[WCK+25] Ryan S. Wells, Ling Chen, Ezekiel Kimball, Betty Annan, Scott M. Auerbach, and Justin T. Fermann. Improving the perceived utility value of teamwork and collaboration among STEM undergraduates. *International Journal of Science and Mathematics Education*, 23(2):515–536, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10471-5`.

Wang:2012:DTA

[WCT+12] Jing-Ru Wang, Shin-Feng Chen, Reuy-Fen Tsay, Ching-Ting Chou, Sheau-Wen Lin, and Huey-Lien Kao. Developing a test for assessing elementary students' comprehension of science texts. *International Journal of Science and Mathematics Education*, 10(4):955–973, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9307-y`.

Wong:2016:ACD

[WCY16] Chee Leong Wong, Hye-Eun Chu, and Kueh Chin Yap. Are alternative conceptions dependent on researchers' methodology and definition?: a review of empirical studies related to concepts of heat. *International Journal of Science and Mathematics Education*, 14(3):499–526, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9577-2`.

Watson:2012:LCM

[WD12] Anne Watson and Els De Geest. Learning coherent mathematics through sequences of microtasks: making a difference for secondary learners. *International Journal of Science and Mathematics Education*, 10(1):213–235, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-011-9290-3`.

Webb:2013:XIK

[Web13] Paul Webb. Xhosa indigenous knowledge: stakeholder awareness, value, and choice. *International Journal of Science and Mathematics Education*, 11(1):89–110, February 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9370-z`.

Weldeana:2015:GPH

[Wel15] Hailu Nigus Weldeana. Gender positions and high school students' attainment in local geometry. *International Journal of Science and Mathematics Education*, 13(6):1331–1354, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9548-7; http://link.springer.com/content/pdf/10.1007/s10763-014-9548-7.pdf.

Wan:2023:SIP

[WESS23] Zhi Hong Wan, Lyn English, Winnie Wing Mui So, and Karen Skilling. STEM integration in primary schools: Theory, implementation and impact. *International Journal of Science and Mathematics Education*, 21(S1):1–9, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10401-x.

Wright:2016:BTP

[WFK+16] Katherine Landau Wright, Amanda D. Franks, Li-Jen Kuo, Erin M. McTigue, and Jiniva Serrano. Both theory and practice: Science literacy instruction and theories of reading. *International Journal of Science and Mathematics Education*, 14(7):1275–1292, October 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9661-2.

Weiss:2004:ICI

[WFPC04] Tarin H. Weiss, Allan Feldman, Dolly E. Pedevillano, and Brenda Capobianco. The implications of culture and identity: A professor's engagement with a reform collaborative. *International Journal of Science and Mathematics Education*, 1(3):333–356, September 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Watson:2023:CWW

[WFWK23] Jane Watson, Noleine Fitzallen, Suzie Wright, and Ben Kelly. Characterizing the ways in which young students recognise, describe, explain, and employ variation when analysing data in a STEM context. *International Journal of Science and Mathematics Education*, 21(3):943–968, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-022-10281-7.

Weiland:2014:PFA

[WHA14] Ingrid S. Weiland, Rick A. Hudson, and Julie M. Amador. Preservice formative assessment interviews: the development of competent questioning. *International Journal of Science and Mathematics Education*, 12(2):329–352, April 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9402-3.

Wu:2017:BMT

[WHC17] Yingkang Wu, Stephen Hwang, and Jinfa Cai. Being a mathematics teacher educator in China: Challenges and strategic responses. *International Journal of Science and Mathematics Education*, 15(7):1365–1384, October 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9752-8.

Wu:2008:FAT

[WHH08] Hsin-Kai Wu, Ying-Shao Hsu, and Fu-Kwun Hwang. Factors affecting teachers' adoption of technology in classrooms: Does school size matter? *International Journal of Science and Mathematics Education*, 6(1):63–85, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9061-8.

Wang:2024:RBO

[WHSK24] Xuran Wang, Richard T. Houang, William H. Schmidt, and Kimberly S. Kelly. Relationship between opportunity to learn, mathematics self-efficacy, and math performance: Evidence from PISA 2012 in 63 countries and economies. *International Journal of Science and Mathematics Education*, 22(8):1683–1708, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10446-6.

Wilkie:2020:ISA

[Wil20a] Karina J. Wilkie. Investigating students' attention to covariation features of their constructed graphs in a figural pattern generalisation context. *International Journal of Science and Mathematics Education*, 18(2):315–336, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774

(electronic). URL http://link.springer.com/article/10.1007/s10763-019-09955-6.

Wille:2020:ASS

[Wil20b] Annika M. Wille. Activity with signs and speaking about it: Exploring students' mathematical lines of thought regarding the derivative. *International Journal of Science and Mathematics Education*, 18(8):1587–1611, December 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10024-1; http://link.springer.com/content/pdf/10.1007/s10763-019-10024-1.pdf.

Wilson:2021:ECE

[Wil21] Kimberley Wilson. Exploring the challenges and enablers of implementing a STEM project-based learning programme in a diverse junior secondary context. *International Journal of Science and Mathematics Education*, 19(5):881–897, June 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10103-8.

Walter:2007:LIS

[WJ07] Janet Walter and Christine Johnson. Linguistic invention and semantic warrant production: Elementary teachers' interpretation of graphs. *International Journal of Science and Mathematics Education*, 5(4):705–727, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9094-7.

Watson:2008:SRV

[WK08] Jane M. Watson and Ben A. Kelly. Sample, random and variation: The vocabulary of statistical literacy. *International Journal of Science and Mathematics Education*, 6(4):741–767, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9083-x.

Watson:2009:DSU

[WK09] Jane M. Watson and Ben A. Kelly. Development of student understanding of outcomes involving two or more dice.

International Journal of Science and Mathematics Education, 7(1):25–54, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9071-1`.

Westaway:2020:WDS

[WKG20] Lise Westaway, Gabriele Kaiser, and Mellony Graven. What does social realism have to offer for research on teacher identity in mathematics education? *International Journal of Science and Mathematics Education*, 18(7):1229–1247, October 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10021-4; http://link.springer.com/content/pdf/10.1007/s10763-019-10021-4.pdf`.

Wang:2023:WDE

[WKL23] Faming Wang, Ronnel B. King, and Shing On Leung. Why do East Asian students do so well in mathematics? A machine learning study. *International Journal of Science and Mathematics Education*, 21(3):691–711, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10262-w`.

Wang:2008:ERT

[WL08] Jing-Ru Wang and Sheau-Wen Lin. Examining reflective thinking: A study of changes in methods students' conceptions and understandings of inquiry teaching. *International Journal of Science and Mathematics Education*, 6(3):459–479, September 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9085-8`.

Wang:2018:PMB

[WL18] Cheng-Lung Wang and Pey-Yan Liou. Patterns of motivational beliefs in the science learning of total, high-, and low–achieving students: Evidence of Taiwanese TIMSS 2011 data. *International Journal of Science and Mathematics Education*, 16(4):603–618, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9797-3`.

Wan:2021:IDC

[WL21] Dongsheng Wan and Yew-Jin Lee. The intellectual demands and coherency of topics of reformed primary science curricula from three East–Asian regions. *International Journal of Science and Mathematics Education*, 19(6):1125–1144, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10115-4`.

Wan:2022:CTM

[WL22] Dongsheng Wan and Yew-Jin Lee. Coherence of topics from middle-school integrated science textbooks from Taiwan and Korea. *International Journal of Science and Mathematics Education*, 20(5):881–899, June 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10187-w`.

Wu:2018:ETP

[WlCC+18] Li-Chen Wu, Li ling Chao, Pi-Yun Cheng, Hsiao-Lin Tuan, and Chorng-Jee Guo. Elementary teachers' perceptions of their professional teaching competencies: Differences between teachers of math/science majors and non-math/science majors in Taiwan. *International Journal of Science and Mathematics Education*, 16(5):877–890, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9821-7`.

Wei:2014:URM

[WLJ14] Silin Wei, Xiufeng Liu, and Yuane Jia. Using Rasch measurement to validate the instrument of students' understanding of models in science (sums). *International Journal of Science and Mathematics Education*, 12(5):1067–1082, October 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9459-z`.

Wong:2009:EMZ

[WLSC09] Ngai-Ying Wong, Chi-Chung Lam, XuHua Sun, and Anna Mei Yan Chan. From "exploring the middle zone" to "constructing a bridge": experimenting in the spiral bianshi mathematics curriculum. *International Journal of Sci-*

ence and Mathematics Education, 7(2):363–382, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9145-8.

Waisman:2014:BAA

[WLSL14] Ilana Waisman, Mark Leikin, Shelley Shaul, and Roza Leikin. Brain activity associated with translation between graphical and symbolic representations of functions in generally gifted and excelling in mathematics adolescents. *International Journal of Science and Mathematics Education*, 12(3): 669–696, June 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9513-5.

Wadouh:2014:EKL

[WLSN14] Julia Wadouh, Ning Liu, Angela Sandmann, and Birgit J. Neuhaus. The effect of knowledge linking levels in biology lessons upon students' knowledge structure. *International Journal of Science and Mathematics Education*, 12(1):25–47, February 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9390-8.

Waller:2017:MTP

[WM17] Patrice Parker Waller and Kori L. H. Maxwell. Mathematics teachers' perceptions of resources and curriculum availability in post-apartheid schooling. *International Journal of Science and Mathematics Education*, 15(4):741–757, April 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9713-2.

Wang:2019:CMW

[WM19] Zhaoyun Wang and Douglas McDougall. Curriculum matters: What we teach and what students gain. *International Journal of Science and Mathematics Education*, 17(6):1129–1149, August 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9915-x.

Wood:2012:USV

[WMP+12] Leigh N. Wood, Glyn Mather, Peter Petocz, Anna Reid, Johann Engelbrecht, Ansie Harding, Ken Houston, Geoff H.

Smith, and Gillian Perrett. University students' views of the role of mathematics in their future. *International Journal of Science and Mathematics Education*, 10(1):99–119, February 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9279-y.

Wilhelm:2013:IPT

[WMS13] Jennifer Wilhelm, Shirley Matteson, and Xiaobo She. Investigating preservice teachers' understanding of balance concepts utilizing a clinical interview method and a virtual tool. *International Journal of Science and Mathematics Education*, 11(5):1209–1231, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-012-9371-y.

Wild:2025:LSM

[WN25] Steffen Wild and Christoph Neef. Learning strategies in mathematics for related study programs focusing on cooperative education in Germany — viewed from the perspectives of the academic disciplines, economics and engineering, as well as gender. *International Journal of Science and Mathematics Education*, 23(5):1237–1258, June 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10513-y.

Wei:2019:CAJ

[WO19] Bing Wei and Yitong Ou. A comparative analysis of junior high school science curriculum standards in Mainland China, Taiwan, Hong Kong, and Macao: Based on revised Bloom's taxonomy. *International Journal of Science and Mathematics Education*, 17(8):1459–1474, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9935-6.

Wang:2012:BMA

[WOB12] Ze Wang, Steven J. Osterlind, and David A. Bergin. Building mathematics achievement models in four countries using TIMSS 2003. *International Journal of Science and Mathematics Education*, 10(5):1215–1242, October 2012. CO-

DEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9328-6.

Waldrip:2012:DUI

[WP12] Bruce Waldrip and Vaughan Prain. Developing an understanding of ions in junior secondary school chemistry. *International Journal of Science and Mathematics Education*, 10 (5):1191–1213, October 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9327-7.

Wasserman:2017:EFC

[WQNC17] Nicholas H. Wasserman, Christa Quint, Scott A. Norris, and Thomas Carr. Exploring flipped classroom instruction in calculus III. *International Journal of Science and Mathematics Education*, 15(3):545–568, March 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9704-8.

Wilcox:2025:WDE

[WRW25] Jesse Wilcox, Molly Ella Ramker, and Kiran Willis. Why do effective science teachers persist?: Exploring post-induction effective science teachers' experiences through a collective case study. *International Journal of Science and Mathematics Education*, 23(6):1545–1572, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10525-8.

Whitacre:2016:HSG

[WS16] Michelle P. Whitacre and E. Wendy Saul. High school girls' interpretations of science graphs: Exploring complex visual and natural language hybrid text. *International Journal of Science and Mathematics Education*, 14(8):1387–1406, December 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9677-7.

Wiebe:2007:EES

[WSA07] Eric N. Wiebe, David A. Slykhuis, and Leonard A. Annetta. Evaluating the effectiveness of scientific visualization in two PowerPoint delivery strategies on science learning for preservice science teachers. *International Journal of Science and Mathematics Education*, 5(2):329–348, June 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-006-9041-z.

Wang:2022:ICT

[WSC22] Changzhao Wang, Ji Shen, and Jie Chao. Integrating computational thinking in STEM education: A literature review. *International Journal of Science and Mathematics Education*, 20(8):1949–1972, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10227-5.

Wilhelm:2008:EPS

[WSW+08] Jennifer Anne Wilhelm, Walter S. Smith, Kendra L. Walters, Sonya E. Sherrod, and Judith Mulholland. Engaging pre-service teachers in multinational, multi-campus scientific and mathematical inquiry. *International Journal of Science and Mathematics Education*, 6(1):131–162, March 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9098-3.

Wan:2023:IED

[WSZ23] Zhi Hong Wan, Wing Mui Winnie So, and Ying Zhan. Investigating the effects of design-based STEM learning on primary students' STEM creativity and epistemic beliefs. *International Journal of Science and Mathematics Education*, 21(S1):87–108, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10370-1. See correction [WSZ24].

Wan:2024:CIE

[WSZ24] Zhi Hong Wan, Winnie Wing Mui So, and Ying Zhan. Correction to: Investigating the effects of design-based STEM learning on primary students' STEM creativity and epistemic beliefs. *International Journal of Science and Mathematics Education*, 22(7):1637, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10398-3. See [WSZ23].

Wang:2013:POL

[WT13] Ting-Ying Wang and Shu-Jyh Tang. Profiles of opportunities to learn for TEDS-M future secondary mathematics teachers. *International Journal of Science and Mathematics Education*, 11(4):847–877, August 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9421-0.

Wang:2015:DTS

[WT15] Tzu-Ling Wang and Yi-Kuan Tseng. Do thinking styles matter for science achievement and attitudes toward science class in male and female elementary school students in Taiwan? *International Journal of Science and Mathematics Education*, 13(3):515–533, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-013-9503-z.

Wang:2018:CEP

[WT18] Tzu-Ling Wang and Yi-Kuan Tseng. The comparative effectiveness of physical, virtual, and virtual–physical manipulatives on third–grade students' science achievement and conceptual understanding of evaporation and condensation. *International Journal of Science and Mathematics Education*, 16(2):203–219, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9774-2.

Wang:2020:ITH

[WT20] Ya-Ling Wang and Chin-Chung Tsai. An investigation of Taiwanese high school students' basic psychological need satisfaction and frustration in science learning contexts in relation to their science learning self–efficacy. *International Journal of Science and Mathematics Education*, 18(1):43–59, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09950-x.

Wu:2025:ESC

[WTS+25] Min Wu, Peiyao Tian, Daner Sun, Dan Feng, and Ma Luo. Evaluating students' conceptual understanding of isomers based on a four-tier diagnostic tool in upper secondary schools. *International Journal of Science and Mathematics Education*, 23(4):907–947, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10494-y.

Wu:2015:IDE

[WwLD+15] Qiong Wu, Pui wa Lei, James C. DiPerna, Paul L. Morgan, and Erin E. Reid. Identifying differences in early mathematical skills among children in head start. *International Journal of Science and Mathematics Education*, 13(6):1403–1423, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9552-y.

Wang:2024:APQ

[WWM+24] Jianlan Wang, Yuanhua Wang, Yanhong Moore, Stacey Sneed, Beth Thacker, and Stephanie Hart. Analyzing the patterns of questioning chains and their intervention on student learning in science teacher preparation. *International Journal of Science and Mathematics Education*, 22(4):809–836, April 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10408-4.

Wang:2010:IEI

[WWTC10] Jing-Ru Wang, Yuh-Chao Wang, Hsin-Jung Tai, and Wen-Ju Chen. Investigating the effectiveness of inquiry-based instruction on students with different prior knowledge and reading abilities. *International Journal of Science and Mathematics Education*, 8(5):801–820, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-009-9186-7.

Wang:2025:EIA

[WZS25] Luona Wang, Qiaoping Zhang, and Daner Sun. Exploring the impact of an augmented reality–integrated mathematics curriculum on students' spatial skills in elementary school. *International Journal of Science and Mathematics Education*, 23(2):387–414, February 2025. CODEN ???? ISSN 1571-

0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10473-3`.

Xia:2025:SOS

[XBFT25] Xin Xia, Lillian R. Bentley, Xitao Fan, and Robert H. Tai. STEM outside of school: a meta-analysis of the effects of informal science education on students' interests and attitudes for STEM. *International Journal of Science and Mathematics Education*, 23(4):1153–1181, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10504-z`.

Xie:2021:TBA

[XC21] Shengying Xie and Jinfa Cai. Teachers' beliefs about mathematics, learning, teaching, students, and teachers: Perspectives from Chinese high school in-service mathematics teachers. *International Journal of Science and Mathematics Education*, 19(4):747–769, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10074-w`.

Xie:2025:OLG

[XDL25] Zhiyong Xie, Ying Deng, and Jian Liu. Opportunities to learn geometric transformation in Chinese mathematics textbook: a primary school example. *International Journal of Science and Mathematics Education*, 23(6):1677–1705, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-024-10536-5`.

Xu:2023:RSC

[XFH23] Lihua Xu, Su-Chi Fang, and Linda Hobbs. The relevance of STEM: a case study of an Australian secondary school as an arena of STEM curriculum innovation and enactment. *International Journal of Science and Mathematics Education*, 21(2):667–689, February 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10267-5`.

Xu:2021:SRA

[XFT21] Lihua Xu, Joseph Ferguson, and Russell Tytler. Student reasoning about the lever principle through multimodal representations: a socio-semiotic approach. *International Journal of Science and Mathematics Education*, 19(6):1167–1186, August 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10102-9.

Xu:2025:CSC

[XRL25] Shiyu Xu, Michael J. Reiss, and Wilton Lodge. Comprehensive scientific creativity assessment (C-SCA): a new approach for measuring scientific creativity in secondary school students. *International Journal of Science and Mathematics Education*, 23(2):293–319, February 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10469-z.

Xu:2022:TSS

[Xu22] Lihua Xu. Towards a social semiotic interpretation of the chemistry triangle: Student exploration of changes of state in an Australian secondary science classroom. *International Journal of Science and Mathematics Education*, 20(4):705–726, April 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10190-1.

Yore:2010:MPR

[YAC10] Larry D. Yore, John O. Anderson, and Mei-Hung Chiu. Moving PISA results into the policy arena: Perspectives on knowledge transfer for future considerations and preparations. *International Journal of Science and Mathematics Education*, 8(3):593–609, June 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9211-x.

Yaman:2018:ESW

[Yam18] Fatma Yaman. Effects of the science writing heuristic approach on the quality of prospective science teachers' argumentative writing and their understanding of scientific argumentation. *International Journal of Science and Mathematics Education*, 16(3):421–442, February 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9788-9.

Yang:2003:TLN

[Yan03] Der-Ching Yang. Teaching and learning number sense — an intervention study of fifth grade students in Taiwan. *International Journal of Science and Mathematics Education*, 1 (1):115–134, March 2003. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Yang:2014:EST

[Yan14] Kai-Lin Yang. An exploratory study of Taiwanese mathematics teachers' conceptions of school mathematics, school statistics, and their differences. *International Journal of Science and Mathematics Education*, 12(6):1497–1518, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9519-z`.

Yang:2019:PFG

[Yan19] Der-Ching Yang. Performance of fourth graders when judging the reasonableness of a computational result. *International Journal of Science and Mathematics Education*, 17 (1):197–215, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9862-y`.

Yuan:2023:WNB

[YC23] Yuan Yuan and Kuolong Chen. Whole number bias of students in fraction number line tasks. *International Journal of Science and Mathematics Education*, 21(5):1433–1449, June 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10315-0`.

Yip:2004:HKS

[YCH04] Din Yan Yip, Ming Ming Chiu, and Esther Sui Chu Ho. Hong Kong student achievement in OECD–PISA study: Gender differences in science content, literacy skills, and test item formats. *International Journal of Science and Mathematics Education*, 2(1):91–106, March 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic).

Yu:2004:TJH

[YCL04] Jya-Yi Wu Yu, Erh-Tsung Chin, and Chia-Jung Lin. Taiwanese junior high school students' understanding about the validity of conditional statements. *International Journal of Science and Mathematics Education*, 2(2):257–285, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-6483-z`.

Young:2024:SSB

[YDL24] Jessica D. Young, Betül Demirdöğen, and Scott E. Lewis. Students' sense of belonging in introductory chemistry: Identifying four dimensions of belonging via grounded theory. *International Journal of Science and Mathematics Education*, 22(7):1515–1535, October 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10433-3`.

Yenmez:2023:FST

[YE23] Arzu Aydoğan Yenmez and Ayhan Kürşat Erbaş. Facilitating a sustainable transformation of sociomathematical norms through mathematical modeling activities. *International Journal of Science and Mathematics Education*, 21(3):761–785, March 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10275-5`.

Yeo:2017:DFC

[Yeo17a] Joseph B. W. Yeo. Development of a framework to characterise the openness of mathematical tasks. *International Journal of Science and Mathematics Education*, 15 (1):175–191, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-015-9675-9`. See erratum [Yeo17b].

Yeo:2017:EDF

[Yeo17b] Joseph B. W. Yeo. Erratum to: Development of a framework to characterise the openness of mathematical tasks. *International Journal of Science and Mathematics Education*, 15(1):193, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9749-3`; `http://link.springer.com/content/pdf/10.1007/s10763-016-9749-3.pdf`. See [Yeo17a].

Yu:2015:ESP

[YFL15] Kuang-Chao Yu, Szu-Chun Fan, and Kuen-Yi Lin. Enhancing students' problem-solving skills through context-based learning. *International Journal of Science and Mathematics Education*, 13(6):1377–1401, December 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9567-4`.

Yang:2018:VIM

[YHL18] Yang Yang, Peng He, and Xiufeng Liu. Validation of an instrument for measuring students' understanding of interdisciplinary science in grades 4–8 over multiple semesters: a Rasch measurement study. *International Journal of Science and Mathematics Education*, 16(4):639–654, April 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9805-7`.

Yang:2016:EEB

[YHT16] Fang-Ying Yang, Rui-Ting Huang, and I-Ju Tsai. The effects of epistemic beliefs in science and gender difference on university students' science-text reading: an eye–tracking study. *International Journal of Science and Mathematics Education*, 14(3):473–498, April 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9578-1`.

Yuenyong:2008:CTN

[YJY08] Chokchai Yuenyong, Alister Jones, and Naruemon Yutakom. A comparison of Thailand and New Zealand students' ideas about energy related to technological and societal issues. *International Journal of Science and Mathematics Education*, 6(2):293–311, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9060-9`.

Yang:2021:RBC

[YKB21] Xinrong Yang, Gabriele Kaiser, and Sigrid Blömeke. Relationship between Chinese mathematics teachers' knowledge and their professional noticing. *International Journal of Science and Mathematics Education*, 19(4):815–837, April 2021.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-020-10089-3.

Yao:2018:IEM

[YKC18] Yiling Yao, Qiping Kong, and Jinfa Cai. Investigating elementary and middle school students' subjective well-being and mathematical performance in Shanghai. *International Journal of Science and Mathematics Education*, 16(1S):107–127, August 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9827-1.

Yang:2020:CTP

[YKJ20] Xinyuan Yang, Li-Jen Kuo, and Luchen Jiang. Connecting theory and practice: a systematic review of K–5 science and math literacy instruction. *International Journal of Science and Mathematics Education*, 18(2):203–219, February 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-09957-4.

Yang:2019:PNM

[YKKB19] Xinrong Yang, Gabriele Kaiser, Johannes König, and Sigrid Blömeke. Professional noticing of mathematics teachers: a comparative study between Germany and China. *International Journal of Science and Mathematics Education*, 17(5): 943–963, June 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9907-x.

Yemen-Karpuzcu:2017:PMS

[YKUIB17] Seçil Yemen-Karpuzcu, Fadime Ulusoy, and Mine Işıksal-Bostan. Prospective middle school mathematics teachers' covariational reasoning for interpreting dynamic events during peer interactions. *International Journal of Science and Mathematics Education*, 15(1):89–108, January 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-015-9668-8.

Yore:2008:MQR

[YL08] Larry D. Yore and Stephen Lerman. Metasyntheses of qualitative research studies in mathematics and science education.

International Journal of Science and Mathematics Education, 6(2):217–223, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-008-9128-9.

Yang:2018:FAR

[YL18] Kai-Lin Yang and Jian-Lin Li. A framework for assessing reading comprehension of geometric construction texts. *International Journal of Science and Mathematics Education*, 16(1):109–124, January 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-016-9770-6; http://link.springer.com/content/pdf/10.1007/s10763-016-9770-6.pdf.

Yim:2022:SUP

[YL22] Jaehoon Yim and Hyung Sook Lee. Students' use of prior conceptions of symbols in finding an equation for a horizontal translation of the graph of a function. *International Journal of Science and Mathematics Education*, 20(8):1699–1717, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10230-w.

Yeo:2021:EIW

[YLTO21] Jennifer Yeo, Eugene Lim, Kim Chwee Daniel Tan, and Yann Shiou Ong. The efficacy of an image-to-writing approach to learning abstract scientific concepts: Temperature and heat. *International Journal of Science and Mathematics Education*, 19(1):21–44, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-019-10026-z.

Yi:2025:EAK

[YLX25] Linxuan Yi, Di Liu, and Yucheng Xian. The effectiveness of AI on K–12 students' mathematics learning: a systematic review and meta-analysis. *International Journal of Science and Mathematics Education*, 23(4):1105–1126, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10499-7.

Yan:2022:AMS

[YMZ22] Xiaoheng Yan, Ofer Marmur, and Rina Zazkis. Advanced mathematics for secondary school teachers: Mathematicians' perspective. *International Journal of Science and Mathematics Education*, 20(3):553–573, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-020-10146-x`.

Yang:2008:SPG

[YnLL08] Der-Ching Yang, Mao neng Li, and Chih-I Lin. A study of the performance of 5th graders in number sense and its relationship to achievement in mathematics. *International Journal of Science and Mathematics Education*, 6(4):789–807, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9100-0`.

Yorganci:2023:PUS

[Yor23] Serpil Yorganci. Preliminary undergraduate students' understanding of mathematics in the distance education environment. *International Journal of Science and Mathematics Education*, 21(4):1219–1241, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10292-4`.

Yore:2007:IA

[YPT07a] Larry D. Yore, David Pimm, and Hsiao-Lin Tuan. Introduction and acknowledgements. *International Journal of Science and Mathematics Education*, 5(4):557–558, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9096-5`.

Yore:2007:LCM

[YPT07b] Larry D. Yore, David Pimm, and Hsiao-Lin Tuan. The literacy component of mathematical and scientific literacy. *International Journal of Science and Mathematics Education*, 5(4):559–589, December 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9089-4`.

Yang:2009:NSS

[YRR09] Der-Ching Yang, Robert E. Reys, and Barbara J. Reys. Number sense strategies used by pre-service teachers in Taiwan. *International Journal of Science and Mathematics Education*, 7(2):383–403, April 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9124-5.

Yang:2019:SGS

[YS19a] Der-Ching Yang and Iwan Andi J. Sianturi. Sixth grade students' performance, misconceptions, and confidence when judging the reasonableness of computational results. *International Journal of Science and Mathematics Education*, 17(8):1519–1540, December 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-09941-4.

Yerdelen:2019:MIS

[YS19b] Sündüs Yerdelen and Semra Sungur. Multilevel investigation of students' self-regulation processes in learning science: Classroom learning environment and teacher effectiveness. *International Journal of Science and Mathematics Education*, 17(1):89–110, January 2019. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-9921-z.

Yang:2021:SGS

[YS21] Der-Ching Yang and Iwan Andi Jonri Sianturi. Sixth grade students' performance, misconception, and confidence on a three-tier number sense test. *International Journal of Science and Mathematics Education*, 19(2):355–375, February 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10051-3.

Yeo:2023:RBE

[YSHC23] Sheunghyun Yeo, Hyejin Shim, Sunghwan Hwang, and Tye G. Campbell. Relations between elementary mathematics growth trajectories and middle school mathematics achievement: Moderating effects of student perception of teaching styles. *International Journal of Science and Mathematics Education*, 21(6):1889–1912, August 2023.

CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10332-z`.

Yip:2007:EEM

[YT07] Din Yan Yip and Wing Kwong Tsang. Evaluation of the effects of the medium of instruction on science learning of Hong Kong secondary students: Students' self-concept in science. *International Journal of Science and Mathematics Education*, 5(3):393–413, September 2007. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9043-x`.

Yeo:2020:CET

[YT20] Lian-Ming Yeo and Yuh-Tsuen Tzeng. Cognitive effect of tracing gesture in the learning from mathematics worked examples. *International Journal of Science and Mathematics Education*, 18(4):733–751, April 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-09987-y`.

Yore:2022:FIF

[YT22] Larry D. Yore and Kok-Sing Tang. Foundations, insights, and future considerations of reading in science and mathematics education. *International Journal of Science and Mathematics Education*, 20(S1):237–260, ???? 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10321-2`.

Yore:2025:CFI

[YT25] Larry D. Yore and Kok-Sing Tang. Correction to: Foundations, insights, and future considerations of reading in science and mathematics education. *International Journal of Science and Mathematics Education*, 23(1):285, January 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10393-8`.

Yeh:2022:SEL

[YTHH22] Fan-Yu Yeh, Ngoc-Huy Tran, Shih Hsun Hung, and Chin-Fei Huang. A study of environmental literacy, scientific performance, and environmental problem–solving. *International Journal of Science and Mathematics Education*, 20(8):1883–1905, December 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-021-10223-9`.

Yildirim:2024:CST

[YUG24] Leyla Yildirim, Esra Uçak, and Murat Genç. Comparing socioscientific teacher roles, communicative approaches, and discourse patterns while teaching socioscientific issues as well as standard science subjects. *International Journal of Science and Mathematics Education*, 22(6):1289–1324, August 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-023-10432-4`.

Yuksel:2014:IAB

[Yük14] Ismail Yüksel. Impact of activity-based mathematics instruction on students with different prior knowledge and reading abilities. *International Journal of Science and Mathematics Education*, 12(6):1445–1468, December 2014. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9474-0`.

Yen:2018:AMC

[YWC$^+$18] Miao-Hsuan Yen, Chia-Yu Wang, Wen-Hua Chang, Sufen Chen, Ying-Shao Hsu, and Tzu-Chien Liu. Assessing metacognitive components in self-regulated reading of science texts in e-based environments. *International Journal of Science and Mathematics Education*, 16(5):797–816, June 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-017-9818-2`.

Yu:2020:SRA

[YWF20] Kuang-Chao Yu, Pai-Hsing Wu, and Szu-Chun Fan. Structural relationships among high school students' scientific knowledge, critical thinking, engineering design process, and design product. *International Journal of Science and Mathematics Education*, 18(6):1001–1022, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10007-2`.

Yow:2021:MST

[YWG21] Jan A. Yow, Ashlye Wilkerson, and Celeste Gay. Mathematics and science teacher leadership understanding through a teacher leadership course. *International Journal of Science and Mathematics Education*, 19(4):839–862, April 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-020-10080-y`.

Yu:2013:QEP

[YY13] Shu-Mey Yu and Larry D. Yore. Quality, evolution, and positional change of university students' argumentation patterns about organic agriculture during an argument–critique–argument experience. *International Journal of Science and Mathematics Education*, 11(5):1233–1254, October 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9373-9`.

Yen:2004:ACA

[YYC04] Chiung-Fen Yen, Tsung-Wei Yao, and Yu-Chih Chiu. Alternative conceptions in animal classification focusing on amphibians and reptiles: A cross-age study. *International Journal of Science and Mathematics Education*, 2(2):159–174, June 2004. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-004-1951-z`.

Yahaya:2015:ESS

[YZK15] Jamil Mikhail Yahaya, Ahmad Nurulazam Md Zain, and Mageswary Karpudewan. The effects of socio-scientific instruction on pre-service teachers' sense of efficacy for learning and teaching controversial family health issues. *International Journal of Science and Mathematics Education*, 13(2s):467–491, May 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9537-x`.

Zwiep:2013:ETK

[ZB13] Susan Gomez Zwiep and Babette M. Benken. Exploring teachers' knowledge and perceptions across mathematics and science through content-rich learning experiences in a professional development setting. *International Journal* *of Science and Mathematics Education*, 11(2):299–324, April 2013. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-012-9334-3`.

Zhang:2022:SSC

[ZBB22] Fa Zhang, Christine L. Bae, and Michael Broda. Science self–concept, relatedness, and teaching quality: a multilevel approach to examining factors that predict science achievement. *International Journal of Science and Mathematics Education*, 20(3):503–529, March 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-021-10165-2`.

Zowada:2021:EES

[ZBE21] Christian Zowada, Nadja Belova, and Ingo Eilks. Enhancing education for sustainable development through geographical perspectives in chemistry teaching. *International Journal of Science and Mathematics Education*, 19(1):87–109, January 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10043-y`.

Zhou:2023:CGM

[ZBH23] Jiushi Zhou, Jiansheng Bao, and Ruijie He. Characteristics of good mathematics teaching in China: Findings from classroom observations. *International Journal of Science and Mathematics Education*, 21(4):1177–1196, April 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `https://link.springer.com/article/10.1007/s10763-022-10291-5`.

Zhang:2016:WPS

[ZBL+16] Qiaoping Zhang, Tasos Barkatsas, Huk-Yuen Law, Yuh-Chyn Leu, Wee Tiong Seah, and Ngai-Ying Wong. What primary students in the Chinese Mainland, Hong Kong and Taiwan value in mathematics learning: A comparative analysis. *International Journal of Science and Mathematics Education*, 14(5):907–924, June 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9615-0`.

Zhang:2015:EIT

[ZC15] Danhui Zhang and Todd Campbell. An examination of the impact of teacher quality and "opportunity gap" on student science achievement in China. *International Journal of Science and Mathematics Education*, 13(3):489–513, June 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-013-9491-z`.

Zeidan:2010:RBG

[Zei10] Afif Zeidan. The relationship between grade 11 Palestinian attitudes toward biology and their perceptions of the biology learning environment. *International Journal of Science and Mathematics Education*, 8(5):783–800, October 2010. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-009-9185-8`.

Zeidan:2015:CLE

[Zei15] Afif Zeidan. Constructivist learning environment among Palestinian science students. *International Journal of Science and Mathematics Education*, 13(5):947–964, October 2015. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-014-9527-z`.

Zhu:2006:FRP

[ZF06] Yan Zhu and Lianghuo Fan. Focus on the representation of problem types in intended curriculum: A comparison of selected mathematics textbooks from Mainland China and the United States. *International Journal of Science and Mathematics Education*, 4(4):609–626, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9036-9`.

Zohar:2008:GPM

[ZG08] Anat Zohar and Anna Gershikov. Gender and performance in mathematical tasks: Does the context make a difference? *International Journal of Science and Mathematics Education*, 6(4):677–693, December 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-007-9086-7`.

Zajkov:2017:TCM

[ZGZM17] Oliver Zajkov, Sonja Gegovska-Zajkova, and Boce Mitrevski. Textbook-caused misconceptions, inconsistencies, and experimental safety risks of a grade 8 physics textbook. *International Journal of Science and Mathematics Education*, 15(5): 837–852, June 2017. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-016-9715-0`.

Zion:2008:LFR

[Zio08] Michal Zion. On line forums as a 'rescue net' in an open inquiry process. *International Journal of Science and Mathematics Education*, 6(2):351–375, June 2008. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-006-9051-x`.

Zhu:2020:DEA

[ZK20] Yan Zhu and Gabriele Kaiser. Do East Asian migrant students perform equally well in mathematics? *International Journal of Science and Mathematics Education*, 18(6):1127–1147, August 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-019-10014-3`.

Zhang:2005:OCC

[ZKS+05] Baohui Zhang, Joseph S. Krajcik, Leeann M. Sutherland, Lei Wang, Junming Wu, and Yangyi Qian. Opportunities and challenges of China's inquiry-based education reform in middle and high schools: Perspectives of science teachers and teacher educators. *International Journal of Science and Mathematics Education*, 1(4):477–503, January 2005. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/10.1007/s10763-005-1517-8`.

Zhu:2011:MAT

[ZL11] Yan Zhu and Frederick K. S. Leung. Motivation and achievement: is there an East Asian model? *International Journal of Science and Mathematics Education*, 9(5):1189–1212, October 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL `http://link.springer.com/article/`

10.1007/s10763-010-9255-y; http://link.springer.com/content/pdf/10.1007/s10763-010-9255-y.pdf.

Zhu:2012:HMA

[ZL12] Yan Zhu and Frederick Koon Shing Leung. Homework and mathematics achievement in Hong Kong: evidence from the TIMSS 2003. *International Journal of Science and Mathematics Education*, 10(4):907–925, August 2012. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-011-9302-3.

Zhang:2025:TQP

[ZL25] Zhongyan Zhang and Martin Lamb. Teachers' questioning practices in Chinese secondary biology classrooms. *International Journal of Science and Mathematics Education*, 23(4):987–1012, April 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10500-3.

Zhang:2024:ASE

[ZML24] Yue Zhang, Zishu Meng, and Xiaomei Liu. Applying structural equation modeling to assess factors of primary school mathematics teachers' knowledge of students' misconceptions. *International Journal of Science and Mathematics Education*, 22(8):1643–1661, December 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10444-8.

Zoldosova:2006:AMO

[ZP06] Kristina Zoldosova and Pavol Prokop. Analysis of motivational orientations in science education. *International Journal of Science and Mathematics Education*, 4(4):669–688, December 2006. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-005-9019-2.

Zhou:2025:STP

[ZPA25] Xuan Zhou, Yolanda N. Padrón, and Sandra Acosta. STEM teacher professional development engagement and self-efficacy in teaching class with English learners context: a hierarchical linear modeling from TALIS 2018. *International Journal of Science and Mathematics Education*, 23

(6):1707–1728, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-024-10528-5.

Zhou:2024:HDS

[ZPW+24] Xuan Zhou, Yolanda Padrón, Hersh C. Waxman, Eunkyeng Baek, and Sandra Acosta. How do school climate and professional development in multicultural education impact job satisfaction and teaching efficacy for STEM teachers of English learners? A path-analysis. *International Journal of Science and Mathematics Education*, 22(2):447–468, February 2024. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10381-y.

Zhao:2011:WDC

[ZS11] Dacheng Zhao and Michael Singh. Why do Chinese–Australian students outperform their Australian peers in mathematics: a comparative case study. *International Journal of Science and Mathematics Education*, 9(1):69–87, February 2011. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-010-9214-7.

Zhan:2021:ITP

[ZSW+21] Xiaohong Zhan, Daner Sun, Zhi Hong Wan, Yingli Hua, and Ranran Xu. Investigating teacher perceptions of integrating engineering into science education in Mainland China. *International Journal of Science and Mathematics Education*, 19 (7):1397–1420, October 2021. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-020-10117-2.

Zhu:2023:IMS

[ZTW23] Jinxing Zhu, Saiqi Tian, and Zhiqing Wang. Integration of mathematics and science in Chinese primary schools: Current situation and challenges. *International Journal of Science and Mathematics Education*, 21(S1):159–180, ???? 2023. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-023-10356-z.

Zhao:2018:CPS

[ZVV18] Xiaoyan Zhao, Marja Van den Heuvel-Panhuizen, and Michiel Veldhuis. Chinese primary school mathematics teachers' assessment profiles: Findings from a large-scale questionnaire survey. *International Journal of Science and Mathematics Education*, 16(7):1387–1407, October 2018. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-017-9841-3; http://link.springer.com/content/pdf/10.1007/s10763-017-9841-3.pdf.

Zhong:2020:SRE

[ZX20] Baichang Zhong and Liying Xia. A systematic review on exploring the potential of educational robotics in mathematics education. *International Journal of Science and Mathematics Education*, 18(1):79–101, January 2020. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-018-09939-y.

Zhang:2025:EPT

[ZXC25] Ying Zhang, Jieting Jerry Xin, and Gaowei Chen. Enhancing preservice teachers' use of dialogic teaching and dynamic visualizations in mathematics classes: Bridging the knowing–doing gap. *International Journal of Science and Mathematics Education*, 23(6):1793–1823, September 2025. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-025-10558-7.

Zhang:2022:ECR

[ZYJ22] Shudong Zhang, Shuyuan Yu, and Ting Jiang. The effects of concrete-representational-abstract sequence instruction on fractions for Chinese elementary students with mathematics learning disabilities. *International Journal of Science and Mathematics Education*, 20(7):1481–1498, October 2022. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL https://link.springer.com/article/10.1007/s10763-021-10215-9.

Zevenbergen:2009:NBN

[ZZ09] Robyn Zevenbergen and Kelly Zevenbergen. The numeracies of boatbuilding: New numeracies shaped by work-place technologies. *International Journal of Science and Mathematics Education*, 7(1):183–206, February 2009. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-007-9104-9.

Zazkis:2016:PTC

[ZZ16] Dov Zazkis and Rina Zazkis. Prospective teachers' conceptions of proof comprehension: Revisiting a proof of the Pythagorean Theorem. *International Journal of Science and Mathematics Education*, 14(4):777–803, May 2016. CODEN ???? ISSN 1571-0068 (print), 1573-1774 (electronic). URL http://link.springer.com/article/10.1007/s10763-014-9595-0.