

Table S1. Included Studies After Second-Level Disciplinary Appraisal (n = 17)

Code	Author(s)	Year	Journal / Source	Educational Context	Study Type	Inclusion Rationale
C1	Ramadhani et al.	2024	<i>Chemistry Teacher International</i>	Chemistry learning (COVID transition)	Empirical	Examines affective engagement and emotional responses in chemistry learning contexts
C2	Agustian et al.	2025	<i>Science Education</i>	Undergraduate chemistry laboratory	Empirical	Explicit analysis of epistemic affect during chemistry inquiry
C3	Dori et al.	2018	<i>International Journal of Science Education</i>	Context-based chemistry learning	Empirical	Links representational reasoning with metacognitive and affective processes
C4	Galloway & Bretz	2015	<i>Journal of Chemical Education</i>	Undergraduate chemistry laboratory	Empirical	Investigates affective experiences and meaningful learning in chemistry labs
C5	Galloway et al.	2016	<i>Journal of Chemical Education</i>	Undergraduate chemistry laboratory	Empirical	Examines students' emotional responsibility, control, and regulation
C6	Kynnäräinen et al.	2024	<i>International Journal of Science Education</i>	Chemistry laboratory	Empirical	Captures situational engagement and affect during experimental failure
C7	Yonai & Blonder	2022	<i>Journal of Chemical Education</i>	Inquiry-based chemistry (remote SEM)	Empirical	Focuses on emotional dimensions of inquiry practices
C8	Avargil & Piorko	2022	<i>International Journal of Science Education</i>	Secondary chemistry	Empirical	Addresses affective challenges in representational reasoning
S1	Zembylas	2023	<i>Educational Philosophy and Theory</i>	Science education (theoretical)	Conceptual	Provides sociocultural and affective theory relevant to EI
S2	Sinatra et al.	2014	<i>Educational Psychologist</i>	Science learning	Review	Theorises epistemic emotions and conceptual change
S3	Muis et al.	2018	<i>Contemporary Educational Psychology</i>	Conceptual change learning	Empirical	Analyses epistemic emotions and regulation
S4	Pekrun &	2014	<i>International</i>	Cross-disciplinary	Handbook	Foundational framework

	Linnenbrink-Garcia		<i>Handbook of Emotions in Education</i>			on epistemic emotions
S5	Jaber & Hammer	2016	<i>Journal of the Learning Sciences</i>	Science learning	Empirical	Examines affective engagement in disciplinary participation
S6	Schindler et al.	2017	<i>IJETHE</i>	Higher education	Review	Provides methodological insight on engagement and affect
S7	Tang	2016	<i>International Journal of Science Education</i>	Science classroom discourse	Empirical	Connects discourse, representations, and affect
S8	Bellocchi	2019	<i>Journal of Research in Science Teaching</i>	Science teaching	Empirical	Focuses on emotion regulation and social bonds
S9	Tyng et al.	2017	<i>Frontiers in Psychology</i>	Neuroscience & learning	Review	Explains affect–cognition interaction relevant to EI

Table S2. Excluded Studies After Eligibility and Disciplinary Appraisal (n = 15)

No.	Article title	Reason for exclusion
E1	A brainstorming flipped classroom approach for improving students' learning performance, motivation, teacher–student interaction and creativity in a civics education class	Non-STEM discipline; no chemistry or science inquiry context
E2	A Model for Emotional Intelligence in Biology Education Research	Focused on biology education; lacks chemistry-specific epistemic practices
E3	A study on mindful agency's influence on college students' engagement	General higher education context; no chemistry or science learning focus
E4	Anxiety in science education	Broad science education review; not situated in chemistry or chemistry-related practices
E5	Emotional intelligence of elementary scholar: Instructional strategy and personality tendency	Elementary-level general education; no disciplinary chemistry context
E6	Evaluating the instructional efficacies of conceptual change models on students' conceptual change achievement in physics	Physics education focus; excluded to maintain chemistry disciplinary specificity
E7	Fostering self-regulation and...	General self-regulated learning study; chemistry context not explicit
E8	Identifying what social emotional support first-year engineering students need to overcome setbacks in lab settings	Engineering education context; laboratory practices not chemistry-specific
E9	Linking COVID-19-related awareness and anxiety among teachers in Ghana	Teacher wellbeing study; no chemistry learning or student epistemic focus
E10	Psychological capital relates with teacher enjoyment	Teacher affect study; not related to chemistry instruction or learning
E11	Resilience and psychological distress in the transition to university	General student wellbeing; lacks chemistry disciplinary framing
E12	Transformative impact of dramatic arts for Grade 12 academic excellence	Arts-based intervention; no relevance to chemistry education
E13	Unpacking the mediating role of classroom interaction among EFL learners	Language education context; excluded for disciplinary misalignment
E14	Identifying what social emotional support first-year engineering students need to overcome setbacks in lab settings	Identifying what social emotional support first-year engineering students need to overcome setbacks in lab settings
E15	The Effect of Problem Based Learning (PBL) Instruction on Students' Motivation and Problem Solving Skills of Physics	The Effect of Problem Based Learning (PBL) Instruction on Students' Motivation and Problem Solving Skills of Physics