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PLENARY SPEAKER

Id-307

Adolescent health: from individual risk behaviours to wellbeing ecosystems: learning from the paradigm shift

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Abstract: Recent years have seen a plateauing of the most common health risk behaviours initiated during adolescence, and an increase in mental health issues and social isolation. In parallel, there has been a shift from a focus on adolescents' risk behaviour management to whole-school-based well-being interventions. This project charts these shifts in order to better inform future interventions. Taking a realist approach, the study incorporates evidence from 116 published articles with qualitative data from 28 young people, 22 school nurses and 6 education professionals. The findings highlight the importance of school ethos, relationships, community and culture. Leadership needs to centre care and nurture positive attitudes, interactions and support networks. Secure attachments belonging and safety are vital for adolescent health and well-being, with schools able to act as a buffer where other attachments may be impaired. Young people's distinct and intersectional identities should inform programme development. Our study draws on decades of evidence in health-promoting interventions, to highlight the importance of the relational aspects of education. Too often underutilised in school settings, caring pedagogies highlight the need for care, reciprocity, attentiveness, trust and acceptance. Educators must deliver on both good health and academic success. Ambidextrous organisational theory may help get this balance right.

Keywords: Adolescent Well-being, School-Based Health Promotion, Caring Pedagogies, Mental Health.

PLENARY SPEAKER

Id-309

Eye-Tracking as a Research and Diagnostic Tool in Science Gifted Education: A Decade of Evidence

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Abstract: Education of gifted students brings special chalenges for teachers. This education is related to partial elements appearing repeatedly in the educational process. The teachers can offer a way to follow the gifted student's talents and his creativity, but the approach to this challenge is mainly up to the student's decision. One modern methodological tool with a great potential in identification of studying steps of gifted students in natural-scientific background is the eye-tracking technology. Eye-tracking has found a practical use inside of academia. Eye Tracking is a modern diagnostic method which is based on observing human eye movement, monitoring a spot an eye is focused on, its distance, or the time duration of such focus. I will present our researches which used the Gazepoint device to visualise the practices and strategies that students used to creative solve tasks in natural science disciplines. The goal of our research was:

- to analyse the way students worked with the text;
- details like whether they returned to certain spots;
- how many times they did it within one line or one page;
- how many times they returned to specific words before arriving at the correct solution;
- and how pupil diameter changed during cognitive processing.

The content of the presentation will include introduction to giftedness, concepts of talent and giftedness, typology of gifted students, research background and objectives, Eye-Tracking technology, research in physics education, research in chemistry education, research in mathematics education, studies with young gifted children, implications for identification and support of gifted students, activities and support for gifted students, international cooperation and projects and conclusions and recommendations.

In general: the aim of the studies was to find out how the students had proceeded in monitoring tasks displayed on the screen and how they had worked with them. We use the Eye-tracker technology, because we have

to work with an emphasizes the uniqueness of each student, supports their autonomy and perceives learning as a path of discovery, growth and self-knowledge.

Keywords: Eye-Tracking Technology, Research, Science, Giftedness.

Acknowledgment: This presentation is the result of a eye-tracking study at the Centre for Research on Natural Science Education and Talent-Management, Faculty of Science of the University of Ostrava, Czechia. I express gratitude to RNDr. Jana Slezáková, Ph.D., Mgr. Stanislav Popelka, Ph.D. and PhDr. Věra Olšáková for useful comments.

PLENARY SPEAKER

Id-316

Teacher Expertise in the Age of AI: Which Parts of Expert Teaching Can Be Supported—and Which Can Never Be Delegated?

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Abstract: This keynote proposes a practical framework for determining what AI should and should not do in education by applying evidence-based principles of teaching and learning. Its central message is that excellent teaching has never depended on technological innovation alone, but on a carefully developed repertoire of evidence-based instructional strategies. The keynote asks how teachers can design learning environments that preserve essential cognitive processes in the age of AI. Artificial Intelligence is rapidly changing education. Students increasingly rely on AI to answer questions, solve problems, and generate written work. While these technologies offer remarkable opportunities, they also raise an important question: How can teachers ensure that AI strengthens rather than replaces students' thinking and their capacity for critical reasoning? This keynote argues that the answer does not primarily lie in new technologies but in evidence-informed teaching. AI enhances learning only when it is embedded within evidence-informed instructional design that preserves the cognitive work students need to perform themselves. Drawing on research from cognitive science and educational psychology, the keynote presents seven evidence-informed principles of effective instruction—including cognitive load management, retrieval practice, guided practice, formative assessment, and explicit classroom routines—and demonstrates how each provides a lens for evaluating the educational value of AI. Rather than evaluating AI by what it can generate, the keynote evaluates it by what students must learn. Each teaching principle becomes a lens for distinguishing between productive cognitive support and harmful cognitive substitution. The keynote concludes that the future of education will not be determined by artificial intelligence alone, but by teachers who understand when technology amplifies learning—and when it replaces the very thinking students need to develop. AI represents another powerful tool within that repertoire, but it cannot replace the teachers' pedagogical judgement required to cultivate deep understanding, critical thinking, and intellectual independence.

Participants will leave with a practical framework for deciding when AI genuinely enhances learning, when it merely increases efficiency, and when it risks replacing the very thinking students need to develop. Rather than asking what AI can do, the keynote asks what students must still learn to do themselves.

Keywords: Artificial Intelligence in Education, Evidence-Informed Teaching, Cognitive Learning Processes, Critical Thinking.

PLENARY SPEAKER

Id-320

Transforming Nursing Education Through Problem-Based Learning: Preparing Future-Ready Nurses

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Abstract: The rapidly evolving healthcare landscape, characterised by increasing complexity of patient needs, advances in healthcare knowledge, and changing professional expectations, requires a transformation in nursing education. Contemporary nursing graduates must possess not only theoretical knowledge but also critical thinking, clinical reasoning, problem-solving abilities, and the capacity for lifelong learning. Traditional teacher-centred approaches, while valuable for knowledge acquisition, may not sufficiently prepare students to apply knowledge effectively in complex clinical situations. Problem-Based Learning (PBL) has emerged as an innovative, student-centred pedagogical approach that facilitates active engagement, promotes deeper learning, and supports the development of competencies required for future nursing practice.

This plenary lecture aims to explore the transformative potential of Problem-Based Learning in nursing education and demonstrate how evidence-informed pedagogical innovation can contribute to preparing future-ready nurses. The presentation will examine the educational principles underpinning PBL, its role in fostering critical thinking and clinical reasoning, and its contribution to creating active, self-directed, and reflective learners. The lecture will also highlight the journey from research evidence to educational practice, demonstrating how PBL can be effectively integrated within nursing curricula.

Drawing upon over three decades of experience in nursing education, academic leadership, curriculum development, and educational research, the lecture will present evidence from the speaker's sustained engagement with PBL. The foundation of this work originated from doctoral research investigating the effectiveness of Problem-Based Learning compared with the lecture method in enhancing critical thinking skills and problem-solving abilities among nursing students.

Building upon this evidence, subsequent educational practice and action research explored the application of PBL in teaching pharmacology, a subject often perceived as challenging by nursing students. Findings from this work demonstrated improvements in student engagement, active participation, self-directed learning, and the ability to apply pharmacological knowledge to clinical contexts. These experiences highlight the importance of moving beyond knowledge transmission towards learning approaches that encourage students to analyse problems, collaborate, reflect, and develop confidence in clinical decision-making.

The lecture will further discuss practical considerations in implementing PBL within nursing education, including curriculum design, facilitation approaches, learner preparation, assessment strategies, and challenges encountered during implementation. Reflections from students and insights gained through

years of educational practice will illustrate how PBL influences not only academic achievement but also students' perceptions of learning, professional development, and readiness for clinical practice.

The presentation will conclude by emphasising that educational transformation requires more than adopting new teaching methods; it requires a shift in educational philosophy towards creating meaningful, learner-centred environments where students actively construct knowledge and develop the competencies needed for an evolving healthcare system. By positioning Problem-Based Learning as a catalyst for transforming nursing education, this plenary lecture will provide educators with evidence-based insights and practical strategies to inspire innovation and prepare future generations of nurses who are critical thinkers, adaptable practitioners, and lifelong learners.

Keywords: Problem-Based Learning, Nursing Education, Critical Thinking, Clinical Reasoning.

PLENARY SPEAKER

Id-325

Education for Sustainable Transformation: A New Model of Critical and Holistic Thinking

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Abstract: Sustainability is nowadays a key professional skill in students' education. It is not simply a matter of knowing the Sustainable Development Goals or addressing the issue of sustainability in a superficial way, but of learning to analyse complex problems, make informed decisions, envisage sustainable futures and act responsibly in real-world contexts. This idea gave rise to the NEMOS project (a New Educational Model of Sustainability), which has served as the basis for a paradigm shift amongst both teaching staff and students, thanks to the effective transformation of their way of thinking when it comes to tackling the challenges we face, by adopting a holistic vision and a sustainable approach.

Keywords: Education, Key Skills, New Model, Sustainability, Transformative Teaching.

PLENARY SPEAKER

Id-329

Coding and Educational Robotics as Instruments to Promote Preschool Children's Social Learning Processes

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Abstract: The Action-Research started in 2020-2021 and involved 26 Italian preschools: 3-to-6-year-old children have been introduced to experiences of coding and robotics (BeeBot, Cubetto, Lego WeDo 2.0 and i-Code) to support their social learning processes (e.g. collaboration, participation, narratives co-construction, meta-reflection, etc.). All the process has been led by an interdisciplinary team of four researchers: two of them belong to a psycho-pedagogical background (Camilla Monaco & Tiziana Ceol) and the other ones are ICT researchers (Ornella Mich & Alessandra Potrich).

From a theoretical point of view, the study aims at promoting social and discursive interaction among kids within mixed by age small group situations, in order to improve and increase their knowledge co-construction (Vygotskij, 1934; Bruner, 1990). From a methodological point of view, the research is intended as a practice based (Little, 1992; Monaco, Zucchermaglio, 2021) process that is "build" together with the participants and not on the subjects and it is always embedded into the real educational practices of the involved preschools.

The study deeply interconnects teachers' training and preschool educational practices (Monaco et al., 2024; Monaco et al., 2025). The main methodological steps are:

a) teachers' training based on the adults' practice with coding and robotics tools;

b) experiences at school with children;

c) collective reflection, within the training context, based on teachers' documentations (video, field and reflexive notes, etc.).

A crucial methodological choice regards "how to use" the different tools: both with teachers and with children, we have always used the approach "one kit-one small group".

We are going to show some initial results:

a) within a specific educational planning, coding and robotics helped teachers to organize learning contexts where children could act and improve several intelligences (Gardner, 1999). This process has always been developed within small groups situations, where children can "share and exchange" their individual intelligences and competences.

b) coding and robotics represent effective tools in order to promote discursive practices where linguistic and non-verbal dimensions complemented each other, allowing children to create increasingly rich and significant forms and levels of participation. Through the possibility to share an instrument such as BeeBot, Lego WeDo 2.0 or i-Code, kids learn to co-construct complex dialogues, made of gestures, gazes, voice tunings, speeches, also thanks to their different levels of age and competences.

Keywords: Early Childhood Education, Educational Robotics, Social Learning, Collaborative Knowledge Construction.

INVITED SPEAKER

Id-319

Self-Identified Learning Needs in Style-Bound Musical Improvisation a Qualitative, Category-Guided Analysis for Fostering Self-Directed Action

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Abstract. This qualitative study examines how students in higher music education recognise and articulate self-identified learning needs in style-bound improvisational contexts. Data were gathered through four workshops using semi-structured interviews, reflective diaries, classroom observations, video recordings, and participant feedback. Following Grounded Theory methodology, the analysis derived, using constant comparison, four overarching categories of learning needs through a systematic category-guided approach: (1) Self-Regulatory–Introspective Dimension, (2) Musical-Technical Dimension, (3) Social–Interactive Dimension, and (4) Cultural–Aesthetic Dimension. These domains reveal how learning needs act as diagnostic markers linking self-reflection, emotional regulation, and social interaction, while shaping the development of self-directed artistic development. Across data sources, learning needs became salient at moments where learners experienced breakdowns in confidence, fluency, role negotiation, or stylistic orientation and translated these difficulties into articulated targets for action. The findings suggest that addressing these needs can support psychological safety, collaborative creativity, and artistic responsibility. This model offers a transferable framework for curriculum design, teacher education, and assessment in style-bound improvisation by foregrounding learners' diagnostic competence as a central mechanism of improvisational learning, and by informing curricula that harmonise reflective practice, inclusive pedagogy, and practice-oriented learning environments across diverse cultural and stylistic contexts.

Keywords: Style-Bound Improvisation; Self-Identified Learning Needs; Self-Reflection; Intercultural Music Pedagogy; Ensemble Interaction.

INVITED SPEAKER

Id-337

Cyber-Creativity: The New Frontier For Cognitive Transformation

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Abstract: . Cognitive technologies are defined as external entities that may be used in epistemic contexts to store, manipulate, and generate epistemic content so as to afford cognitive transformations in the human mind, both individually and socially. We identify as seminal cognitive technologies the ones that, in our opinion, had the broadest impact in the course of the evolution of human culture. We pinpoint in particular twelve seminal cognitive technologies: written language; musical instruments; numbering systems; graphical representation systems; measurement instruments; telecommunications; audiovisual technologies; computers; navigation systems; the Internet; generative artificial intelligence (GenAI); agents with artificial intelligence (AI). For the first ten of these cognitive technologies, there is sufficient evidence to describe the characteristics of the cognitive transformation that occurred due to their introduction and wide take-up. In all cases, a new affordance emerged that allowed a certain cognitive function to be externalized, but only through specific constraints. This gave the possibility for cognitive offloading [1], which in general may have both positive and negative effects: it frees up cognitive resources, that may be used for higher order functions, but it may also lead to detrimental idleness and degradation. The balance depends both on individuals and on sociocultural choices, starting from the design of the education system. Now, what about GenAI and agentic AI? These technologies are too young to draw any definitive conclusions, but early evidence of negative effects has already emerged, for example on critical thinking capacity [2]. Our main message is that to avoid cognitive surrender [3], the cognitive resources made available through the use of AI should be reinvested in creativity or in cyber-creativity, defined as the collaboration between humans and machines in the creative process, with variable levels of relative autonomy [4], [5], [6]. The challenges related to cyber-creativity are discussed.

Keywords: Cognitive Technology; Cognitive Transformation; Cognitive Offloading; Creativity; Cyber-Creativity.

INVITED SPEAKER

Id-347

Managerialism and Student Outcomes: Quantifying Administrative Influence in Online Learning

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Abstract: Higher education and other public services experienced sweeping neoliberal reforms during the latter half of the 20th century. Neoliberalism promotes free markets, deregulation, privatisation and reduced state welfare. Managerialism, its operational arm, asserts that all organisations are best run by professional managers on the basis of performance measurement, standardisation of tasks, and concentration of control in management. The current study sought to quantify the influence of managerialism on grades at an open and distance learning institution. Managerialism was operationalised in terms of six administratively-controlled factors. Using linear mixed-effects modelling on 272,926 undergraduate course records spanning 14 years (2008–2021), we examined contributions of course, programme type, assessment format, registration semester, registration year, and student support centre, with random intercepts for students and course levels. The six factors collectively accounted for 19.6% of the variance in final marks (marginal R^2), with the full model explaining 63.2% (conditional R^2). Registration year explained much of the variance (41.1%), followed by course (23.1%), student support centre (10.3%), assessment format (9.6%), programme type (3.5%), and semester (1.1%). Final marks rose by approximately 1.1 marks per year - a 14-mark increase across the study period. The findings align with documented institutional responses to market pressures and shed light on the influence of managerialism on student outcomes in higher education.

Keywords: Managerialism, Administrative Factors, Open and Distance Learning, Student Outcomes, Grade Inflation, New Public Management.

INVITED SPEAKER

Id-351

From Knowledge To Action: Alki AI-Supported Digital Platform for Environmental Crisis Educatıon

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Abstract: ALKI – AI Learning and Knowledge Integration for Future-Ready Environmental Crisis Solutions (2025-1-EL01-KA220-SCH-000364988) is an Erasmus+ KA220-SCH Cooperation Partnership bringing together seven organisations from Greece, Italy, Spain and Türkiye to strengthen environmental crisis preparedness and responsible Artificial Intelligence (AI) integration in school education. The project primarily addresses students and educators through evidence-based, experiential and digitally supported learning approaches. The ALKI WP2 cross-national study, involving 587 students and 87 teachers in Greece, Spain and Türkiye, identified a clear need to move from knowledge and AI familiarity towards applied practice. Students demonstrated relatively high AI literacy but ranked AI tools last among eight preferred learning methods, while teachers reported high AI literacy and positive attitudes but lower confidence in classroom AI integration and crisis-simulation facilitation. These findings informed the pedagogical orientation of the ALKI learning environment.

This paper presents the ALKI Digital Platform and ALKI Academy, an open, multilingual, Moodle-based learning ecosystem designed to transform these identified needs into practical educational experiences. The environment integrates structured learning modules, gamified activities, interactive environmental-crisis simulations and adaptive AI-supported learning pathways. Rather than positioning AI simply as an information provider, the platform uses it to support inquiry, decision-making, problem-solving, feedback and scenario-based learning across preparedness, response and recovery phases. The learning environment also incorporates accessibility features and multilingual content to support diverse learners and educational contexts.

A further component is the project's Ethical AI Use Framework, which supports responsible and critical engagement with AI, including awareness of AI limitations, evaluation of AI-generated information, student rights, privacy and responsible educational use. The presentation introduces the platform architecture, learning modules, AI-supported functions and crisis-simulation approach, demonstrating how the ALKI ecosystem seeks to bridge the gap between environmental-crisis knowledge and learners' capacity to apply that knowledge through experiential, inclusive and ethically grounded digital learning.

Keywords: Artificial Intelligence; Environmental Crisis Education; Disaster Resilience; Crisis Simulation; Digital Learning.

POSTER PRESENTATION

Id-321

Beyond Clinical Placements: Cultivating Cultural Humility and Global Citizenship through Curricular Civic Engagement in Nursing Education

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Abstract: Background: Modern healthcare requires practitioners who can work effectively across diverse cultural and social contexts. However, traditional clinical placements often provide limited opportunities for students to engage with the wider social determinants of health and to develop a deeper understanding of global health inequalities. In response to growing student interest in international volunteering, this project introduced an innovative curriculum intervention grounded in a Glocal approach, integrating global perspectives with local relevance to enrich learning and professional development.

Aligned with the University of East London's strategic priority of becoming "The Glocal Anchor," this initiative sought to create meaningful connections between local education and global engagement. The project established partnerships with international charities to provide students with unique short-term volunteering opportunities embedded within a module. These experiences enabled students to develop cultural competence, social responsibility, and a broader understanding of health challenges across different communities.

Students had already expressed a strong desire for overseas volunteering opportunities, and this initiative transformed that aspiration into an accessible, curriculum-based learning experience. Embedding global volunteering within the programme, the project offered an inclusive approach to preparing future nurses to deliver compassionate, culturally responsive care in increasingly interconnected world.

Methodology / Innovation: This pedagogical initiative outlines the design, implementation, and evaluation of a structured global civic engagement model embedded directly within a Level 6 undergraduate nursing module at the UEL. Developed collaboratively with UEL's Global Experiences team and international charitable organisations, the project facilitates international volunteering to immerse students in authentic global community contexts, fostering experiential learning and cultural humility. The students are given a choice to volunteer either locally or internationally. The curriculum integration of international volunteering features robust safeguarding procedures, ethical partnership standards, and reflective assessment strategies to support student development. Through non-clinical volunteering, students investigate community-specific health contexts while developing core professional competencies including communication, leadership, adaptability, and teamwork.

Evaluation and Results: The impact of this model was assessed through mixed methods, including student feedback and post-participation reflections from both students and charity partners. The central research inquiry examined whether structured, non-clinical global engagement improves nursing students' emotional intelligence and readiness for modern, culturally responsive practice.

The evaluation yielded overwhelmingly positive feedback from both student testimonials and charity partners. Students reported measurable gains in cultural competence and soft skills that boost graduate employability, alongside significant professional identity growth. Charity partners highlighted the mutual benefit and ethical alignment of the student-led initiatives.

Significance and Conclusion: The significance of this project lies in its ability to transform contemporary nursing pedagogy. By embedding ethical, student-led global civic engagement within the formal "Civic Engagement" module, the curriculum successfully broadens student exposure to the social determinants of health. This provides a scalable, sustainable blueprint for modern nursing education, illustrating how institutions can dismantle educational boundaries to align clinical excellence with cultural humility, equity, and global citizenship..

Keywords: Cr_2O_3; pulsed laser ablation in liquid; 355 nm; 532 nm; optical transmittance; color measurement.

POSTER PRESENTATION

Id-330

PATTERNS OF SCIENCE LEARNERS' WRITTEN SCIENTIFIC ARGUMENTATION ON POPULATION GROWTH AND ENVIRONMENTAL IMPACT AS A SOCIO-SCIENTIFIC ISSUE

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Abstract: This study investigates the patterns of science learners' written scientific argumentation on the socio-scientific issue (SSI) of whether governments should take measures to limit population growth to reduce environmental impact. As rapid population growth intensifies pressures on natural resources, biodiversity, and climate systems, this issue presents a rich and contested context for examining how learners engage in evidence-based scientific reasoning within ethically and politically complex terrain. Guided by Toulmin's Argument Pattern (TAP) as the analytical framework, this study systematically analysed the written arguments of science learners to identify recurring structural patterns in their argumentation. The analysis focused on the presence and quality of key argumentative components, including claims, data, warrants, backings, qualifiers, and rebuttals. Results revealed that the majority of learners produced simple argument patterns characterized by claim-data linkages, while more sophisticated elements such as warrants, rebuttals, and qualifiers were notably underrepresented in their written responses. The findings further indicate that learners predominantly drew on environmental and demographic data to support their claims, yet many struggled to critically evaluate the reliability and sufficiency of their evidence. Learners demonstrated difficulty reconciling scientific evidence with ethical, socio-political, and human rights dimensions inherent in population governance debates, reflecting the multidimensional nature of SSI reasoning. These patterns suggest that science learners require explicit instructional scaffolding to move beyond basic claim-making toward constructing well-reasoned, counter-argument-aware scientific arguments. The study underscores the importance of integrating SSI-based argumentation tasks into science curricula to cultivate higher-order reasoning and informed citizenship, particularly on pressing environmental issues where science and society intersect.

Keywords: Augmentation; Environmental Impact; Socio-Scientific Issues; Toulmin's Argument Pattern.

POSTER PRESENTATION

Id-331

LEARNING TO NOTICE AND NEGOTIATE COMPETENCE: PRE-SERVICE SCIENCE TEACHERS' INTERPRETATIONS OF TEACHING IN VIDEO-BASED DISCUSSIONS

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Abstract: Video-based pedagogy has emerged as a prominent feature of initial science teacher education, offering pre-service science teachers opportunities to engage with the complexities of real-time classroom practice in structured and reflective ways. Through these videos, pre-service science teachers would be able to attend to and interpret competent science teaching. However, what counts as competent teaching in science classrooms remains contested, shaped by disciplinary norms, personal teaching philosophies, and contextual realities. In this study, we examine how pre-service science teachers construct and negotiate notions of competent teaching while discussing videos of authentic classroom lessons. Drawing from the notion of professional vision and the Pedagogical Content Knowledge (PCK) construct that foregrounds science teaching expertise, this study addresses two questions: (1) What aspects of classroom practice do pre-service science teachers attend to when evaluating competent science teaching in videos? And (2) What tensions arise in their discussions as they negotiate evidence of competent science teaching? Data were generated through small-group video discussions in a science methods course, where pre-service teachers view and discuss secondary science lessons as well as written reflections. Transcripts of discussions and written reflections are analysed using a qualitative approach that combines thematic analysis with discourse-informed analysis. Preliminary findings indicate that the pre-service science teachers attend to a range of features, including classroom management, clarity of explanations, facilitation of classroom interactions, and the use of representations. Tensions that emerged include maintaining order and fostering inquiry, covering content and supporting conceptual understanding, and teacher-led explanation versus dialogic engagement. These tensions are interpreted not as deficits but as productive spaces where professional vision and learning are actively constructed. By foregrounding tensions in video-based discussions, the study contributes to a more nuanced understanding of how teacher education can support the development of context-sensitive, disciplinary-grounded visions of competent science teaching.

Keywords: Keywords: Video-based pedagogy; Noticing; Pedagogical Content Knowledge; Tensions.

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