

Call For Papers

Science & Education

Special Issue

The Future of Knowledge: Conversations about Artificial Intelligence and Epistemic Insight

Special Issue Guest Editors

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In a few decades society has been transformed by artificial intelligence (AI) and digital technologies which can store, share, search and increasingly create knowledge at a pace and scale that was unimagined when schools and universities were designed.

The significance of these changes for science have been highlighted by Klinova (2021) in a paper for the OECD which states that *"Spurred by advances in machine learning and fed by vast realms of scientific data, AI is being adopted across most stages and fields of science and in revolutionary ways"* (Klinova, 2021). There are parallel conversations to have about what it means to learn and what it means to work scientifically in a digital age. These include explorations of the potential for AI to help us towards discoveries and advances in science and education that can open our minds to new possibilities and benefit humanity. These conversations are likely to draw on ideas about optimising the relationships between people and machines and to quote Klinova (2021) again, *“What are the domains of human activity that will not or should not be taken on by smart machines and algorithms? When many productive skills will be replaced by computers, which areas will remain 'human'? How should we redesign what students learn in an AI driven world so that they blossom and flourish?"*

Science, education and artificial intelligence are stakeholders in the future of knowledge and there are cycles of influence between them. The practices and beliefs that we cultivate in our students today play a critical role in shaping the commitments and practices of the next generation of scholars. In parallel the nature of science as it is understood and practised by scientists influences pedagogies and materials in education. Central to both of these is an understanding of the human as learner, scientist and/or citizen and the significance of interdependences between AI and how we understand ourselves. In a second paper - on education - the OECD posits that "AI is forcing us to redefine what is human about human learning and development. Understanding better the complementarity between the capabilities of computers and humans will have major consequences for deciding what learners should learn" (OECD, 2021 p. 14).

These papers indicate that there is a significant discussion to be had about what it means to work scientifically in a digital age and what it means to teach and learn in a time of machine learning and the impacts of technology on human participation. There are many constructs and tools available to researchers and authors including some that we highlight here. One is epistemic insight, a construct which means ‘knowledge about knowledge’. This construct facilitates conversations about pressures and barriers that persist in education and halls of scholarship. Barriers such as disciplinary silos can limit dialogue about what it means to be a person and how knowledge works (Billingsley et al, 2018, 2021; Zeidler, 2016). The UNESCO (2020) framework for Human Flourishing and Education facilitates discussion about interventions in education which may variously be to help students achieve their optimal potential and/or respond to hardships they are experiencing now. Thirdly there are frameworks that articulate principles for developing artificial intelligence such as those by the OECD (see https://oecd.ai/en/ai-principles).

This special edition is intended to create dialogue about the future of knowledge in an increasingly scientific and digital world. We hope to incentivise new enquiries and activity where required in our educational and scientific institutions.

Some example themes include:

* *How do scientists understand what it means to 'work scientifically' when they are collaborating with AI?*
* *How do teachers make scientific knowledge meaningful - when students can go to the internet whenever they have a question?*
* *To what extent should higher education courses provide times when students in the sciences and humanities work together e.g., do they gain new insights and produce novel epistemic goods? What might such an arrangement entail?*
* *What does philosophy say about human-centred views of knowledge and what is the future for humanity as epistemic agents in a shared and multifaceted world?*
* *How should we redesign what students learn, how they are assessed and what scientists do in an increasingly digital world so that they blossom and flourish?"*
* *How can science, engineering and education create the knowledge and innovation we need to address common challenges and help us towards futures that are socially inclusive, economically just, and environmentally sustainable?*

**About the Journal**

*Science & Education* publishes research using historical, philosophical, and sociological approaches in order to improve teaching, learning, and curricula in science and mathematics. In addition, the journal disseminates accounts of lessons, units of work, and programs at all levels of science and mathematics that have successfully utilized history and philosophy. The journal promotes the inclusion of history and philosophy of science and mathematics courses in science and mathematics teacher education programs. Moreover, it promotes the discussion of the philosophy and purpose of science and mathematics education and their place in and contribution to the intellectual and ethical development of individuals and cultures. To achieve its goals, *Science & Education* fosters collaboration among an interdisciplinary group of scholars including scientists, mathematicians, historians, philosophers, cognitive psychologists, sociologists, science and mathematics educators, and school and university teachers.

**Timeline**

Deadline for submission of papers: **January 15th, 2023**

**Submission procedure**

Instructions for the preparation and submission of manuscripts can be accessed at the following website:

*https://www.springer.com/education+%26+language/science+education/journal/11191?detailsPage=pltci\_ 1060572*

**References**

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