

## **TWG 8: Pedagogical reasoning and reflective practice: a framework for teaching in a digital age**

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Pedagogical reasoning and reflective practice are important means for teachers to continually professionalize and improve their teaching. These concepts also help us to understand why, how and with what results practising and prospective teachers use technology in their teaching. This emancipative form of professional development taps into teacher agency for digital technologies and resources. It is also critical for bringing new teachers into the practice, and enhancing the technological pedagogical skills, knowledge and action through the joint lens' of TPACK (Technological Pedagogical Content Knowledge) and PR&A (Technological Pedagogical Reasoning and Action). This is particularly important when considering the transition from novice to expert educator using technologies.

### **Members of the group:**

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### **Issues**

TWG 8 identified three themes relevant to PR&A in relation to new alignments for learners and their learning contexts, namely:

1. How might we better connect understandings of teachers' knowledge to their classroom practices in technological-rich contexts?
2. What new ethical challenges are presented to teachers' decision-making when educational technologies are used in classrooms?
3. How does the PR&A of pre- and in-service teachers differ? How might we better develop the decisions of all teachers?

### **Identified Current Misalignments**

1. Connecting knowledge and action in technological-rich contexts
  - We currently have models of teacher knowledge and of teacher decision-making; however, these models are currently seen to be separate from one another. **TWG 8 sees the separation of knowledge and decision-making as a misalignment.**
  - We do not have an integrated model that considers teachers' attitudes, beliefs and dispositions together with teachers' knowledge to better understand their decision-making processes. **TWG 8 sees the lack of a more comprehensive model as a misalignment.**
2. Ethical decision-making based on PR&A
  - Teachers are increasingly required to make classroom decisions based on the data provided by software developed by third party commercial companies. The algorithms that generate these data are not transparent creating challenges for teachers to make effective decisions. **TWG 8 sees a lack of transparency in third-party software as a misalignment.**
  - The increased prevalence of learning analytics software, often imposed upon teachers by system or school leaders, threatens to automate many classroom decisions and reduce teachers to managers rather than active, professional decision-makers. **TWG 8 sees PR&A as a hallmark of professional teachers and the automation of their decisions as a misalignment.**
3. PR&A of pre- and in-service teachers
  - In many contexts there is a lack of practical-authentic experience for preservice teachers resulting in limited opportunities for decision-making and self-reflection opportunities. **TWG 8 see the lack of guided professional experience for pre-service teachers as a misalignment.**

- In-service teachers are often isolated in terms of exposure to different practices which can limit their decision-making repertoire. **TWG 8 sees the lack of ongoing, shared classroom experiences as a misalignment.**

### **Emerging New Alignments**

#### 1. Connecting knowledge and action in technological-rich contexts

Representations of teachers' epistemic frames provide new opportunities to connect teachers' knowledge, attitudes, beliefs and dispositions with their decision-making processes allowing for reflective opportunities and a more comprehensive model of PR&A.

#### 2. Ethical decision-making based on PR&A

A code of conduct developed by policy makers that requires software developers to detail decision-making algorithms in plain language. This would allow teachers to understand the basis for software recommendations and to be able to make autonomous decisions regarding the appropriateness of software recommendations for their classroom practice.

#### 3. PR&A of pre- and in-service teachers

Collaborative shared classroom experiences, digital simulations or text-based scenarios involving teams of in-service and pre-service teachers provide opportunities to enhance the repertoire of decisions available to teachers. This approach will also develop an evidence base while making explicit new opportunities and processes for pre-service teachers.

### **Strategies and Actions for:**

#### **Policy makers**

- Individual teacher PR&A is an essential aspect of effective, sustainable educational technology integration and enhanced learning outcomes;
- PR&A must be an individual consideration rather than a systemic endeavor. Teachers should be able to develop their personal reflective and decision-making processes for their particular context. Time needs to be allocated to allow for teacher professional development to engage in these progressions;
- A code of conduct should be developed that requires software developers to detail decision-making algorithms in plain language allowing teachers to make autonomous decisions about the appropriateness of their use in classrooms.

#### **Practitioners**

- Take advantage of a range of professional development opportunities (including digital simulations and augmentations). PR&A about technology integration could be undertaken collaboratively or individually;
- Teacher educators should explicitly develop, model and discuss PR&A about educational technology integration with their students
- Encourage leadership within the teaching community to develop a culture of PR&A, that will in turn impact learning and learning outcomes.

#### **Researchers**

- Extant literature in related fields provides opportunities to connect aspects of epistemic frames to conceptualisations of teacher knowledge and their connection to action;
- Broaden the use of developing software to examine the correlations between elements of teachers' epistemic frames;
- Co-explore the current reasoning with practitioners to develop a nuanced understanding of the aspects of knowledge, beliefs and attitudes that underpin practice in different contexts

For more detailed information, please refer to the forthcoming documents, as well as the [International Handbook of Information Technology in Primary and Secondary Education](#).