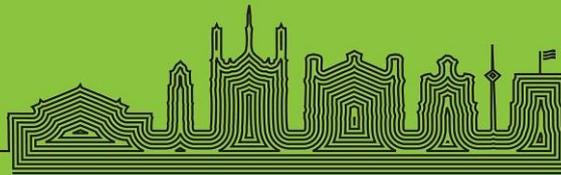




Constructionism 2018

Constructionism, computational thinking
and educational innovation

Vilnius, Lithuania, August 21 to 25



Working group

Developing Constructionism, or a New Learning Concept, Across the Ages

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Curricula in many countries are adopting, or have recently adopted, computing as a subject or discipline (such as the national curriculum for computing in England, 2013). Computing learning practices in these 'new' curricula can involve pupils from 5 years of age, perhaps within a discrete subject, or perhaps integrated into other subject topics across the curriculum. The learning concept, framework or theory that such curricula are based on, and therefore which can underpin practices and outcomes across the age span of learners, is not clear in curriculum documentation, however.

Our curriculum concepts of learning progression are largely based on Piaget's research (1936), who described learning as a form of cognitive constructivism, developing over the age span of young people, and progressing through a series of stages or phases: sensorimotor; preoperational; concrete operational; and formal operational. The new computing curriculum and teaching and learning practices could well be considered and placed within this broad conceptual framework. However, Vygotsky's research (1978) added a more social dimension of learning, a concept of social constructivism. The social constructivist approach to learning may be important to consider also when implementing a computing curriculum. With the advent of digital and computing-based resources, further concepts of learning have been developed. From the perspective of computing, the most significant of these is perhaps the concept of constructionism developed from Papert's research (1991). In summary, over the previous 80 years, as digital resources have continued to be developed and used in education, so our concepts of learning have been reconsidered - from a cognitive individual perspective, to a social perspective with others (including teachers and peers), and then with digital resources (Passey, 2013). Our current contexts, however, are different from those previous times when researchers developed their learning concepts or theories.

This working group will consider this issue: what learning concept, framework or theory should underpin computing curricula to ensure that practices and outcomes are as effective as possible across the age span of that curriculum.

Research questions:

- So, can a concept such as constructionism still be reliably adopted and developed across the age range from 5 to 18 years?
- Do we need a new conception of learning that accommodates our current context?
- Is this concept or theory something that we can create from a research perspective, or can we do it from practical know-how and experience?
- What should we do in the future to underpin learning development in computing?

References:

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