Constructionism 2018
Constructionism, computational thinking
and educational innovation
Vilnius, Lithuania, August 21 to 25

Working Group

Constructionist Approaches to Computational Thinking

Proposed by Gerald Futschek and Bernhard Standl TU Wien, Austria, futschek@ifs.tuwien.ac.at

Computational Thinking (CT) is widely discussed since Jeanette Wing published her article “Computational Thinking” in 2006 [1]. There are several attempts to define this concept more precisely than Wing did in her publications. It seems that this discussion converged to a handful of skills which characterize the thinking skills of CT. They are abstraction, decomposition, algorithmic thinking, generalization and evaluation, see [2, 3].

Algorithmic thinking education has a long tradition in constructionist education. Logo, Scratch and other programming tools invite to creative learning of programming and algorithmic thinking. But CT is considered very broad, it covers not only programming and algorithmic skills, but also activities like problem formulation, system modelling and solution evaluation.

Research questions could include:

- How could CT be learned in a constructionist way?
- How to teach CT in a constructionist way?
- What learning settings support constructionist learning of CT?
- What tasks are suitable for learning CT?
- What projects proofed successful learning of CT?
- What tools support learning of CT?

This working group could develop or provide proved examples of constructionist learning of CT, didactic settings and didactic tools that support learning Computational Thinking.

References:

[1] J. M. Wing: Computational Thinking, CACM 49(3), pp 33-35, 2006.

[2] C. Selby, J. Woolard: Refining an Understanding of Computational Thinking, 2014, retrieved from *http://eprints.soton.ac.uk/id/eprint/372410*.

[3] V. Dagiene, S. Sentance, G. Stupuriene: Developing a Two-Dimensional Categorization System for Educational Tasks inInformatics, Informatica, vol. 28, no. 1, pp. 23-44, 2017