

# CONSTRUCTIVIST APPROACHES IN THE MATHEMATICAL EDUCATION OF FUTURE TEACHERS

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In the traditional (and prevailing) teaching of university mathematics, teachers often try to pass as much knowledge as possible to students and present only the finished product of mathematics. In the nineties, research in mathematics education has taken into account constructivist approaches which are gradually finding their way to the teaching of mathematics at the primary and secondary schools (e.g. Hejny, Kurina, 2001, Jaworski, 1994). However, as far as we know, the instances of using the constructivist way of teaching at the university level have been rare. Moreover, we realise that when student teachers are prevented from experiencing constructivist approaches during their university study, they can hardly be expected to use them in their own teaching. Therefore, we attempted to remedy the situation and redesigned the courses on geometry for future elementary teachers and future mathematics teachers in such a way that the method of teaching became more important than the content, the question ‘Why’ became more important than ‘What?’ and the students took a more active part in their learning. The courses have been taught in this way for about six years now. They are based on the following principles:

- Mathematics is understood as a human activity and is not reduced to a series of definitions, theorems and proofs.
- The main emphasis is put on the student’s independent activity and his/her solutions to mathematical problems.
- Student – student and teacher – student communication are stressed as a vehicle for a shared construction of new knowledge.
- The teacher plays the role of a facilitator, presents students with problems, conducts class discussion and guides the students’ learning.
- Both mathematical and pedagogical education of student teachers is connected in the courses.

The poster will include examples of mathematical problems which are used to promote students’ learning in a certain geometrical area and these will be contrasted with traditional approaches. Episodes from the university classrooms will be used to illustrate our considerations as well as students’ statements as to their experience with constructivists approaches in their studies.

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## References

- Hejny, M., Kurina, F. (2001). *Dítě, škola a matematika. Konstruktivistické přístupy k vyučování*. Praha, Portál.
- Jaworski, B. (1994). *Investigating Mathematics Teaching: A Constructivist Enquiry*. London, The Falmer Press.