

Diagnosis of substantive and didactic competences of the teachers taking post-graduate studies qualifying for teaching mathematics as another subject

Description for the general public

The aim of the Project is to diagnose substantive and didactic competences (in the field of teaching mathematics) of the teachers, who in the years 2020-2022 become students of post-graduate studies qualifying for teaching mathematics as another subject in primary and / or secondary school. In order to embed the planned diagnosis in the context of the specificity of both post-graduate studies and the profile of the candidates for mathematics teachers who choose this path to acquire the necessary qualifications, in the first year of the Project an in-depth characterization of postgraduate studies in mathematics conducted in Poland in the years 2012-2019 will be made and a statistical profile of a student taking such studies will be developed.

The motivation to address this issue were the alarming reports of pedagogues regarding irregularities in the realization of post-graduate studies, which are a popular form of education and obtaining additional qualifications, as well as doubts raised by many educators about the quality and effectiveness of education at post-graduate studies. It is becoming more and more common for teachers who teach one subject, to take post-graduate studies, in order to teach further subjects at school. In the light of the results of research conducted in Poland and abroad, invariably showing deep competence gaps (both substantive and didactic) in full-time students preparing to teach mathematics and mathematics teachers - practitioners, it is puzzling that there is no analogous research on the competence of teachers who within a time of two or three semesters, obtain the same qualifications for teaching mathematics as students for whom the period of three or five years turns out to be insufficient preparation. Thus, we have a situation that is as much disturbing as absurd. Every year, either the qualifications to teach one of the most difficult and demanding school subjects such as mathematics are obtained by people who have a poor chance of gaining real competences to perform this profession, or - if the competences are acquired to a degree comparable to the achievements of full-time students - it is necessary to verify the legitimacy of the preparation for the mathematics teacher profession by attending difficult and demanding studies in the field of higher mathematics.

Characteristics of post-graduate studies qualifying for teaching mathematics, conducted in Poland in the years 2012-2019 will be prepared and based on: numerical data on the number of candidates for these studies and the number of absolvents of these studies, results of comparative analysis of plans and programs of such post-graduate studies conducted by various universities and educational centres in Poland, and data collected in surveys (on selected aspects of education at post-graduate studies), conducted among academic teachers teaching subjects in the field of didactics of mathematics and absolvents of these studies, asked to assess their own substantive and didactic competences gained during post-graduate studies. Based on information obtained from universities and centres conducting such studies, a statistical profile of the absolvent of post-graduate studies, obtaining qualifications to teach mathematics as another subject, will be developed. Of particular interest seems to be the percentage share in this group of teachers with education in disciplines similar to mathematics (e.g., physics), as well as teachers who have been teaching completely unrelated subjects (e.g., physical education). In the first year of the Project, diagnostic tests will be developed, consulted with experts and verified in the pilot study to assess the substantive and didactic competences relevant to the teaching of mathematics in primary and (separately) secondary school. In the second and third years of the Project, these tests will be used to study the mentioned competences of teachers undertaking post-graduate studies qualifying for teaching mathematics as another subject. The tests will be carried out on a group of listeners of two subsequent cycles of postgraduate studies conducted by universities with which cooperation will be established. The first set of tests will be administered at the beginning, and the second set - at the end of each academic year. The tasks used in both tests will allow to assess the increase of students' competences within a time of about two academic semesters. In addition, final tests will be carried out on a group of students from the same universities, graduating from pedagogical studies in mathematics at the first (diagnosis of competences relevant to primary school mathematics education) or second (suitable for mathematics in a secondary school).