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Methodological Potential of the Flipped Classroom Model in Science and Social Studies Classes

Extended summary

In the last few years, the concept of a flipped classroom has become relevant and it is increasingly being used as a teaching model which is the result of pedagogical and technological achievements. The flipping refers to students' first introduction to teaching materials taking place at his/her own home, instead of school. Students learn about new teaching contents at home, using materials (prepared by teachers) adapted for independent learning (Bergmann et al., 2013). Students learn at their own pace, at a time that suits them best and as many times as needed. Consequently, students come to school (somewhat) prepared, with a certain amount of knowledge and questions to ask their teachers. Depending on the level of mastering the teaching material, teaching units are further elaborated through activities aimed at resolving confusion, implementing the acquired knowledge, discussion, or practicing specific skills (Bergmann et al., 2013; Ahmed, 2016; Missildine et al., 2013; Bergmann, 2017). There is more teaching time for a more in-depth interpretation of teaching content, practice and testing the level of acquisition of specific skills. Several studies have shown that flipped classroom encourages dialogue and exchange of ideas in the classroom– through direct communication or virtually, by means of distance learning (Kim et al., 2014; McLaughlin et al., 2013; Hung, 2015). More time for teacher-student communication gives room for a more frequent and personalized student feedback, resulting in better student achievement (Kim et al., 2014). Student self-efficacy and autonomy in learning, including time-management strategies, play an important role as well.

The aim of the conducted empirical research was to look at primary school teachers' awareness of the flipped classroom model, their attitudes about the possibilities of applying this

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way of working in teaching Science and Social Studies, as well as teachers' self-assessment of their competencies for applying this model. The aim was accomplished through an analysis of three segments – teachers' familiarity with this model and their experience in applying it with students; evaluation of the methodological efficacy of this model (based on the lesson scenario) and teachers' evaluation of their own competencies for using the model in the first cicle of elementary education.

The central part of the questionnaire consisted of six statements and two open-ended questions by means of which the teachers evaluated the methodological potential of this model (motivation for learning and better class communication, contribution to understanding the teaching content and knowledge retention, as well as the possibility of teaching individualization), as well as their own preparedness for this type of work, taking into consideration the presented flipped classroom lesson scenario and their teaching experience. The research sample consisted of 105 primary school teachers from 45 schools in Serbia.

The obtained results indicate that teachers are not fully informed about the flipped classroom model, given that only over one-fifth of primary school teachers know about the basic characteristics of the model, and nearly 60% of teachers cannot define this pedagogical concept. Given that this model has been developed relatively recently, and that it has been mentioned in the academic courses for pre-service primary school teachers only in the last couple of years, we expected that recently emplyed teachers would be better informed about the flipped classroom model, compared to their older colleagues. However, the calculated $\chi 2$ ($\chi 2=5.101$, $df=4$, $p=.277$) indicates that there is no statistically significant difference between these two variables. The lack of information about this model entailed its rare use in teaching, regardless of teachers' pedagogical experience.

In the second part of the questionnaire the teachers were asked to show their level of agreement with the advantages of this model determined in empirical and theoretical papers. Teachers expressed the highest level of trust regarding the impact of the flipped classroom model on student motivation for learning Science and Social Studies, the possibility of lesson individualization, and better student-teacher communication. Teachers tend to trust this model less in terms of its impact on students' better understanding of the teaching content as well as their deeper knowledge of the content. As teachers had an opportunity to state other advantages of the flipped classroom model, some statements show other important dimensions of teaching and learning process– positive effects on students' learning independence ($f=31$), their more active role in learning ($f=20$), opportunities for research activities ($f=13$), and more time for school work ($f=9$). Apart from the mentioned positive aspects, teachers also indicated the limitations of the flipped classroom model. The largest number of teachers ($f=34$) stated that the unavailability of the prepared content for (all) students due to technical problems (no computers/smart phones, no Internet access, etc.) could be the biggest problem. Given the advantages and disadvantages, and relying on their own experience and/or explanations and examples provided in the questionnaire, teachers assessed the methodological efficacy of the model on the scale from 1 to 10. Their responses indicate that the majority have a positive opinion about the flipped classroom model in teaching Science and Social Studies, as illustrated by

the data that 73,33% of the respondents gave a grade from 8 to 10, while only 8,57% of the respondents gave the grades from 1 to 5.

The third segment of the analysis, related to the teachers' self-evaluation on their methodological competence for using this model in teaching, shows that over two-thirds of the primary school teachers (nearly 70%) agree that the flipped classroom model requires additional professional training. The obtained results can be linked to the results referring to teachers' level of familiarity with this teaching strategy– teachers are aware of their lack of knowledge and therefore they feel the need for additional professional training for using this model in the first cycle of primary education. Their dilemmas and doubts regarding their competence come from the fact that the concept of flipped classroom is still new in our education system, resulting in the insufficient use of such content in teachers' initial education and later on, in their professional training. Furthermore, Bergman and Sams (Bergman & Sams, 2012) stress that there is not just one way of flipping a classroom, no unified methodology to apply, and no list of steps leading to a guaranteed success. This is the reason why teachers need additional training, as well as to learn about this model from direct experience in order to use it more frequently in practice in the future.

Keywords: flipped classroom model, Science and Social Studies teaching, primary school teachers

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