Teaching the subject Applied Chemistry using flipped classroom method

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Abstract

In 2022, we innovated the content of the subject Applied chemistry to STEM concept. We also changed the way of teaching this subject to flipped classroom method (Lage et al., 2000; Lage and Platt, 2000). In the article we write about our experience with this change.

We compare the results of teaching classical way in 2018 and by flipped classroom in 2022. The number of students involved was 15 in 2022 and 21 in 2018. We compare five pointers:

- Personal statements of the students at the end of the semester: they were only positive.

- Exam grades at the end of the semester: The usual exam grades A-E were converted to numerical values in this way: A = 1, B = 1.5, C = 2, D = 2.5, E = 3 and the arithmetic mean was calculated. The average exam grade in 2018 was 1.9; in 2022 it was 1.1.

- Personal statements of both teachers of the subject (they agreed that the new approach was more time-consuming for them, but their overall impression of the new teaching approach was good).

- Monitoring students` absences (attendance in the course of Applied Chemistry is not mandatory): In 2018: 5-10 % absences per lesson, in 2022 only 0-7 % absences per lesson.

- Students` answers to a voluntary anonymous survey at the end of the semester were not so much positive. Some students wrote that they perceived flipped classroom as less prepared in comparison with other lessons. This result agrees with already published data (O'Flaherty and Phillips, 2015; Yeung and O'Malley, 2014).

Our results are only of qualitative nature because of small number of students. Our work confirmed that flipped classroom method can be accepted differently by different students. If also revealed, that the students may accept their duty of home preparation before the lecture as a lack of work of their teacher.

References

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Keywords

Education, Chemistry, Flipped Classroom, STEM