FLIPPED CLASSROOM TRENDS IN UNIVERSITY EDUCATION IN SLOVAKIA[1]

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Abstract: *Flipped classroom method is a pedagogical approach in which the traditional concept of classroom-based learning process changes, students are already familiar with the teaching material before the lesson, so they can spend classroom time by activities and tasks facilitated and managed by the lecturer. The aim of the study is to present the results of a questionnaire survey mapping the application of the flipped classroom method in university education in Slovakia. The questions of the questionnaire used in the research on the one hand research to what extent the flipped classroom method is known and applied in the practice of university education, and on the other hand to find out what the experiences and feedback of the lecturers during the implementation of the method.*

Keywords: *Flipped classroom method, questionnaire survey, implementation, experiences, university education, teacher training.*

Introduction:

As an innovative active learning method, flipped learning provides students with several opportunities. Today's students, who are digital natives, have to be equipped with relevant competencies to respond to the demands of the modern world. For this reason, innovations in teaching–learning processes and instructional environments, which are essential to meet the needs of these learners, have brought active-learning pedagogy to the forefront of education. The implementation of a flipped learning approach can take advantage of the increased occasions for constructivist teaching and learning that technology provides (Koohddang et al. 2009). Flipped learning has many potential benefits including more one-on-one interaction time between teacher and students, active learning and cooperation, and self-paced learning. Also, it provides students with flexibility in the event that they miss some lectures. In addition, flipped learning can be considered complimentary to the traditional classroom setting because it encourages classroom time to be arranged more toward active and collaborative learning (Roach 2014).

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Defining the flipped classroom:

Flipped classroom (FC) is a pedagogical approach in which the conventional notion of classroom-based learning is inverted, so that students are introduced to the learning material before class, with classroom time then being used to deepen understanding through discussion with peers and problem-solving activities facilitated by teachers (Bodnár, Csilliko, Daruka, Sass 2017). Although using FC methods has multiple benefits and is growing popularity, researchers and practitioners indicate that among impediments of widespread usage of FC methods are the additional time and technological support in relation to development of flipped learning activities. The flipped approach often involves the investment of significant time and energy on the part of instructors (e.g., recording video lectures; designing additional in-class activities). It is therefore recommended for teachers flipping their courses in team. By working in team, teachers can share their experiences of implementing flipped classrooms as well as their teaching resources (McLaughlin et al., 2014).

Flipped method in practice:

The name of the method also refers to the acronym for the expression of its four basic pillars: F – flexible environment, L – learning culture, I – intentional content, P – professional educator. The flipped class is characterized by online and offline sections. Passive learning, gaining knowledge takes place in combination with active learning sections outside the classroom, in the online space. The methods of the inverted class are as follows (Ollé, Ruszkai, Hülber, 2017):

1. The teacher makes available material in the form of a video (usually his own), which students can watch at home. An important aspect is that students are able to engage in contact work in the classroom only if they already have preliminary, pre-acquired knowledge of the topic.
2. The elaboration of the curriculum follows in the form of a group form of active contact work in the classroom, where the teacher participates as a facilitator, supports the work of students taking into account their individual abilities and educational needs. With this method, students become equally responsible for the acquired knowledge and skills. The teacher can answer students' questions not only during the contact lesson, but can also share professional materials, resources, multimedia material, e-books or videos for homework.
3. The next contact lesson can take the form of a discussion, interview or workshop. The teacher present in the class can support, lead, and thus contribute to the creation of a real product or the achievement of a result (Hamden et al., 2013). Conversely, difficulties such as fatigue or loss of motivation, mistakes, or misunderstood details can occur during independent work at home.
4. The last stage of the method is the productive phase, in which students present their own results, solutions, or elaboration of the curriculum, for example in the form of a presentation or other, and then evaluate and reflect together on their own creative work.

Methodology of the Research:

Methods:

This survey was conducted between May and November in 2021. An email was sent to every higher education in Slovakia, exactly to eleven institutions. All respondents represented higher education in Slovakia. The survey was anonymous and applied by Google Forms, featured 18 questions in total, including both qualitative and quantitative formats (multiple choice, rating by Likert scale and open-ended questions), four

questions where focused to background data to characterize the sample, two questions where focused to map willingness to share individual experiences by personal interview. The questionnaire is divided into several parts, sections, in which entering each answer automatically determines the next section. This solution greatly aided the processing of the data. The data's was processed with programs MS Excel and SPSS. The questionnaire used in this survey is the translation of the English version of questionnaire of *Faculty Focus* (USA) from 2014[2]. The purpose of this study is to evaluate some selected question in order to verify the defined hypotheses.

Sample:

A total of 95 people completed the questionnaire. All respondents are lectures at university in Slovakia in various fields but mostly we involved lectures of Faculties of Education. As it is illustrated at the next table (Table 1), the most of respondents have signed field of Education (45) and Social Sciences (11):

	Number
Education	**45**
Social sciences	**11**
Visual and performing arts	6
Psychology	5
Religious studies	4
Business, management, marketing, and related disciplines	4
Biological and biomedical sciences	4
English language/literature	4
Foreign language	3
Computer and information sciences	3
Mathematics and statistics	2
Health professions and related programs	1
Physical sciences	0
Support services	0
Communications, journalism, and related programs	0
Liberal arts	0
Legal professions	0
History	0
Philosophy	0
Engineering technologies	0
Other	3
Total	*95*

Table 1: Which of these best fits your field or discipline?

[2] Available at: https://www.facultyfocus.com/wp-content/uploads/2015/08/Flipped-Classroom-Trends_FF-Report-2015.pdf

Their length of pedagogical practice and occupied job position is also diversified. Most of respondents are in Assistant Professor (49) and Associate Professor (20) position. The length of pedagogical practice shows varied results, as it is visible in table (Table 2) below:

Fewer than 5 years	**19**
6-10 years	11
11-15 years	18
16-20 years	19
More than 20 years	26
Not entered	2
Total	95

Table 2: How many years have you worked in higher education?

Hypotheses

- ***H1: We hypothesize that more than 60% of the university lecturers surveyed used/will use the flipped classroom during their pedagogical practice.***
- ***H2: We hypothesize that more than 60% of university lecturers using the method evaluate their experience with the flipped classroom method positively.***

We base our assumptions on the research results mentioned above, is a large-sample survey (1,089 respondents) called Flipped Classroom Trends: The Survey of College Faculty, conducted in 2014, involved U.S. and Canadian university lecturers[3]. Based on the results of the research, 69.9% of the instructors surveyed answered *yes* to the question whether they use the flipped classroom method in their pedagogical practice, another 5.49% have already used it, but do not plan to use it in future and 14.15% did not apply the method yet, but plans in the future. Based on the results, 75.39% of respondents already have experience with application of the flipped classroom method. Based on this, we assume that the method is also present in university education in Slovakia, and the lecturers use to apply flipped classroom method. We also formulated our second hypothesis based on the mentioned research results. Based on that, 70.34% of the respondents evaluated their experience in applying the method from their own point of view and 64.83% from the point of view of the students too. This result indicated to premise, that application in Slovakia will show also positive evaluation for lectures and students.

Results and evaluation of hypotheses:

The main target of our research is to find out if the lecturers have any experiences with flipped classroom method, if they use this method in their practice. In the questionnaire the third question focused to map this information:

Have you tried flipping an activity, class period, or course?

We offered our own definition of flipped classroom method in the following statement: *For the purposes of the remainder of this survey, we will refer to this*

[3] Research was also mentioned in Methods, available at: https://www.facultyfocus.com/wp-content/uploads/2015/08/Flipped-Classroom-Trends_FF-Report-2015.pdf

definition: „A student-centered learning approach that involves reversing the design of the learning environment, allowing students to engage in activities, apply concepts, and focus on higher level learning outcomes during class time." The definition was formulated in this question in order to make sure that the respondents have uniform interpretation of the flipped class method to response about its application. The aim of the question (which was answered by total 95 respondents) was to find out what proportion of the respondents have already used the method in their own pedagogical practice. The results are illustrated in Table 3:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	**Yes**	**40**	**42,1**	**42,1**	**42,1**
	I tried it, but i do not plan to do it again	**2**	**2,1**	**2,1**	**44,2**
	No, but I plan to flip in the next year	**26**	**27,4**	**27,4**	**71,6**
	No, I don't intend to flip my class	27	28,4	28,4	100,0
	Total	95	100,0	100,0	

Table 3: Have you tried flipping an activity, class period, or course?

The majority of respondents (40) said they had tried flipping some element of instruction. Other two respondents indicated that they tried it, but would not do it again. Another 26 of respondents had not yet tried flipping but intended to do so. Next 27 of respondents had not tried it and did not intend to try it. In this question was allowed to choose option „other", in which respondents could add their own answers. Four respondents indicated the „other" option, this answers could be classified into the defined categories (Answer „I don't use it, but it seems interesting" we categorized into the choice „No, I don't intend to flip my class" despite it is difficult to deduce from this answer whether the respondent plans to try this method. Or answer „No, but I will use it in the future" we classified into the choice „No, but I plan to flip in the next year" despite of that this answer does not specify when exactly in future. The other two answers suggest that the respondent applies in their teaching practice the main elements of the flipped class method intuitively not even knowing it is called flipped classroom method, this answers we classified into choice „Yes").

Evaluation of H1: ***We hypothesize that more than 60% of the university lecturers surveyed used/will use the flipped classroom during their pedagogical practice.***

From the answers to the question, it can be concluded that 40 respondents from 95 use flipped classroom method and other 2 respondents tried it (so already used it), altogether 42 respondents use or used to apply flipped classroom method, which means 44,2%. In our H1 hypothesis is included over above the purpose of using the method, in this interpretation we can also count choice „No, but I plan to flip in the next year". In this case we can add other 26 answers (27,4%) to 42, 68 in all. This results mean 71,6% of the total number of respondents.

*Based on these, it can be concluded that **hypothesis H1 was confirmed** – more than 60% of surveyed university lecturers, accurately 71,6% of surveyed respondents used/will use flipped classroom method.*

Further task of the research is to map the general opinion, evaluation of experiences with applying flipped classroom method in educational practice. In the questionnaire, other three questioned intended to assess this. This section of questions where allowed to answer for respondents who use/used flipped method and for those respondents who selected option „other" – therefore 46 respondents answered this question.

How would you rate the experience for you?

The vast majority (33) of surveyed respondents (46) indicated that flipping is a positive teaching and learning experience. Only 2 respondents reported that it was a negative experience. However, 5 of respondents called the experience "neutral." In this question was also given choice „other" – the individual answers could be classified into the pre-given answer option, other 2 individual answers called experiences as ambivalent (for example „Both positive and negative"; „Depends on the motivation of students, their involvement is an important factor in the success of teaching the flipped method"). The remaining 4 respondent didn't enter any answer or formulated like „I don't know" or „I cant judge", it should be noted that this respondents have given in previous question answer „other" which based on the wording we classified into the categories played role in evaluating H1. The results are demonstrated in Table 4:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not entered	4	4,2	8,7	8,7
	Positive	**33**	**34,7**	**71,7**	**80,4**
	Negative	2	2,1	4,3	84,8
	Neutral	5	5,3	10,9	95,7
	Ambivalent	2	2,1	4,3	100,0
	Total	46	48,4	100,0	
Missing	N/A	49	51,6		
Total		95	100,0		

Table 4: How would you rate the experiences for you?

How would you rate the experience for your students?

The vast majority (29) of surveyed respondents (46) indicated that flipping is a positive teaching and learning experience. Only one of the respondents reported that it was a negative experience. However, 7 of respondents called the experience „neutral." In this question was also given choice „other" – the individual answers could be classified into the pre-given answer option, other 5 individual answers called experiences as ambivalent (for example: „It is not possible to evaluate the whole in one word, some students like this approach, others are more against it, because it requires a greater degree of student participation."; „At first positive, later it was no longer lively for them ... rather for them it was a „burden"."; „They were not used to this way of working." Also the same remaining four respondents didn't enter any answer. The results are demonstrated in Table 5:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not entered	4	4,2	8,7	8,7
	Positive	**29**	**30,5**	**63,0**	**71,7**
	Negative	1	1,1	2,2	73,9
	Neutral	7	7,4	15,2	89,1
	Ambivalent	5	5,3	10,9	100,0
	Total	46	48,4	100,0	
Missing	N/A	49	51,6		
Total		95	100,0		

Table 5: How would you rate the experiences for your students?

Evaluation of H2: ***We hypothesize that more than 60% of university lecturers using the method evaluate their experience with the flipped classroom method positively.***

Question focused the evaluation the lectures experiences showed, that 33 respondents have chosen the positive evaluation option. This means 71,7% of 46 respondents in total. Question focused the evaluation the lectures experiences to their students showed, that 29 respondents have chosen the positive evaluation option. This means 63,0% of 46 respondents in total. Both values, 71,7% for own experiences and 63,1% for experiences for students, are above the assumed 60%.

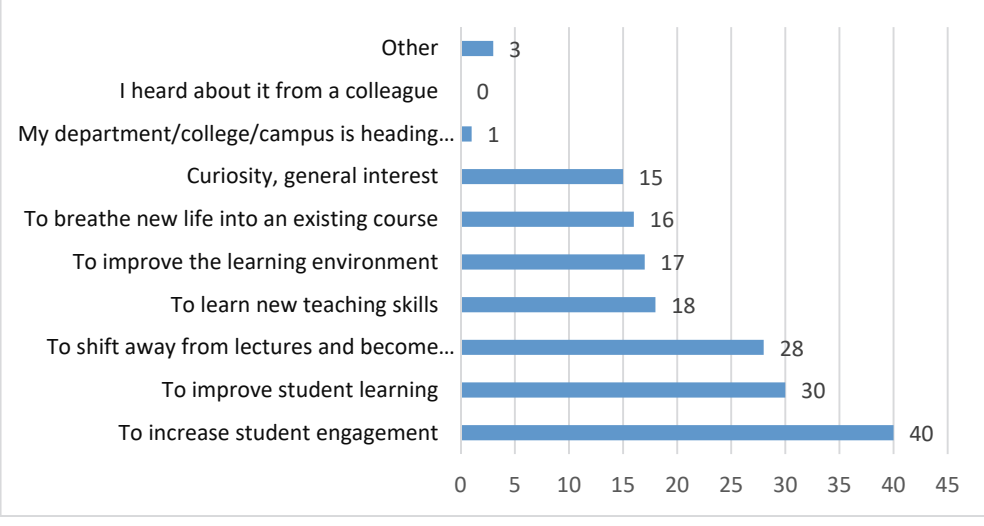
Based on these, it can be concluded that ***hypothesis H2 was confirmed –*** *more than 60% of surveyed university lecturers evaluated their experiences with the flipped classroom method positively both for themselves and for their students too, accurately 71,7% for themselves and 63,1% for their students.*

Closely related to both hypotheses is the need to map the motivation for applying the method and the reflection about the benefits in general by using flipped classroom method for respondents. To assess this where formulated next two questions of the questionnaire. This multiply choice questions were also allowed to be answered by respondents who use/used flipped method and for those respondents who selected option "other" – therefore 46 respondents answered this question. The survey offered participants 10 different choices and the option to select multiple answers.

Why did you decide to start flipping?

The survey instrument invited respondents to identify reasons for flipping, and participants would select more than one answer. 46 respondents have had given altogether 168 answers, which inferences from the numbers that one respondent have had chosen more than 3 answers on average. From this quantitative data's we can also conclude that respondents have had been motivated in implementing flipped classroom method by more preliminary expectations and pre-defined goals. The responses reveal that most survey participants (40) were driven by a desire to better engage students, the second most common answer (30) was to improve students learning and the third most common answer was to shift away from lectures and become more learner-centered (28). The three most commonly chosen options are worth to evaluate in qualitative point of view too. We can

conclude that all three are tend to increase the effectivity of the educational process by developing students' motivation, activity and learning. In option "other" respondents mentioned reasons like changed learning conditions by introduction of online education, better connecting theory and practice or motivation based of previous experiences with the method as university students. All the results with every option are demonstrated in Graph 1:



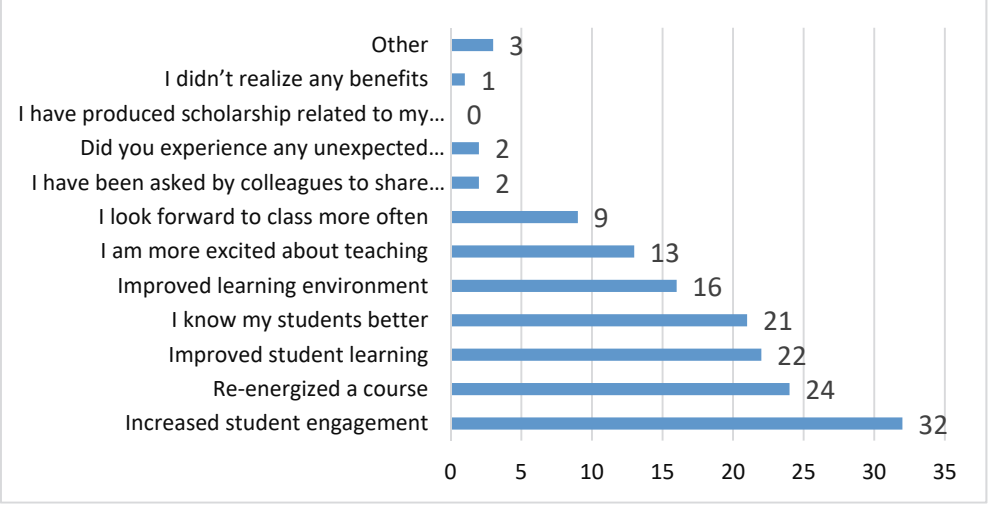
Graph 1: Why did you decide to start flipping?

What were the biggest benefits experienced from flipping?

The survey offered participants 12 different choices and the option to select multiple answers. 46 respondents have had given altogether 181 answers, which inferences from the numbers that one respondent have had chosen more than 3 answers on average[4]. From this quantitative data we can consider first of all, that respondents experienced more benefits from using the method simultaneously. Most of the respondents indicated that flipping positively influenced students' engagement (32), refreshes the course (24) and improved students learning (22). If we compare the experienced benefits wit pre-defined expectations are in correlation: The most commonly chosen motivation and the most commonly chosen benefit was „Increasing the students engagement". Other relatively frequently mentioned expectation „to improve students learning" also appears among the relatively frequently experienced benefits, furthermore correlation can be find between expectation „to shift away from lectures and became more learner-centered" with experienced benefit „re-energized course". It can be assessed as a positive and encouraging result that only one respondent marked option „I didn't realize any benefits" and in addition this respondents answer correlate with his/her previous rating, where evaluated experiences with flipped classroom method neutrally. Regarding the interpretation of the question, we consider the

[4] Exactly 3,93, which is very close to 4, but in case of processing data we have found 3 answers "other" formulated like "I don't know" and this n three respondents didn't choose any other options. Count with this where given 178 answers by 43 respondents, which is more than 4 answers for a respondent on average

indication of the following advantage in the category „other“ to be a useful answer: „Saving time to deal with practical activities.” All the results with every option are demonstrated in Graph 2:



Graph 2: What were the biggest benefits experienced from flipping?

Discussion and further suggestions:

Both hypotheses H1 and H2 of our research has been confirmed. We found that flipped method is used by more than 60% of surveyed university lecturers in Slovakia. More than 60% of those lecturers, who use ore already used flipped method has positive experiences both for themselves and for their students. In addition to the confirmation of hypothesis H2, our assumption can be supplemented with additional data. The respondents were motivated by several preliminary expectations to develop the educational process by implementing this approach. They rated their experiences mostly positively for themselves and for their students too and established several (more than 3 on average) benefits during implementation of flipping classroom method. This benefits are in correlation with their expectations which both focused on developing the effectivity of the educational process, increasing the students skills, engagement and motivation and transform the education into more learner-centered and practice oriented process.

Taking into account several limitations of this research, its findings and significance, it is necessary to carefully interpret it considering the following findings for data validity and reliability. First, a research sample of 95 university lecturers (mostly faculties of education were involved) is not considered a representative research sample. As research expands, it would be important to further increase the number of respondents and involve more fields. Furthermore, it would be important to further standardize the prior information related to the flipped classroom method to show greater unity in the data collected. In the future, the evaluation of further questions of the questionnaire, the presentation of which is limited by the scope of the present study, would also serve as a useful supplement. These data supplement the results of our present research with additional qualitative and quantitative results. A detailed analysis of the reasons and difficulties of non-application of the method,

which, despite the positives and benefits listed above, has emerged in large numbers, can provide useful information. Finally, the presentation of interviews, good practices and further inspiring practical examples and suggestions as part of the qualitative analyzes would further increase the awareness and application of the method.

Conclusion:

Taking into account all positive results obtained, the implementation of the flipped classroom method appears to be a suitable pedagogical tool in courses of university education (Knežević, Županec, Radulović, 2020, Županec, Radulović, Pribicevic, Miljanović, 2018). What is more, as a learner-centered approach, the flipped classroom method contributes to the elimination of the traditional teacher-centered approach that still proves to be dominant in higher education context and, appears as neither effective nor efficient in students' knowledge (Chen Hsieh et al., 2017). As it was already found, more time for in-class practice also increases opportunities for collaboration and interaction which in turn provides a more supportive environment for learning (Long, Porter, 1985). Changing the classroom period has positive effect on interpersonal relationships, active work increase motivation and engagement (Csehiová, Kanczné Nagy, 2019, Csehiová, Kanczné Nagy, 2021, Kanczné Nagy, Tóth, 2018). At the same time, the pre-class component of the flipped classroom method offers opportunity for personalized learning, which, apart from paying attention to the individual needs and study habits of students, also appears suitable for university classes, especially in situations when students' previous knowledge varies. In can be fit more to learning styles of students and give them opportunity to manage their own time schedule, what has positive effect on their learning effectivity and skills (Kanczné Nagy, Csehiová, 2018, Tóth, Horváth, Juhász, 2020, Horváth, Tóth, 2018). More globally perceived, the application of the flipped classroom approach, as observed by some authors (e.g., Mehring, 2015, in Leis, 2016), can also produce some indirect effects, such as more peer-evaluation, self-reflection, and the use of metacognitive strategies among students.

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