By Agnes Simon (Masaryk University)
Gabriela Pleschová (University of Economics in Bratislava)

The impact of the course Learning-centred and Reflective Teaching: from Theory to Good Practice on its participants

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Output O2-a: Evaluation of the outcomes of the newly designed course at the individual level.

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By Agnes Simon (Masaryk University) and Gabriela Pleschová (University of Economics in Bratislava)

Introduction

The overall aim of the project, Extending and Reinforcing Good Practice in Teacher Development was to bring a new approach to teaching in Central European higher education. University-level teaching has been dominantly teaching-centered in this region: frontal lecturing is a frequently used teaching method; students are put into the role of passive recipients of knowledge; and teachers may deliver the same lectures for many years over. However, student-centered education that prioritizes the students' needs and uses a variety of active-learning methods, has been shown to be more effective than teacher-centered education (O'Neill and McMahon, 2005: 36). Thus, it was the shifting of the teachers' pedagogic conceptions and practice from a teaching- to a student-centered approach that this project concentrated on.

To realize this goal, the project relied on a bottom-up approach focusing on training individual doctoral students. We designed the educational development course for PhD students, entitled Learning-centred and Reflective Teaching: from Theory to Good Practice, and tested it in two partner institutions, the University of Economics including its Bratislava (EUBA) and Košice (EUKE) campuses in Slovakia[1], and Masaryk University (MUNI) in Brno, Czech Republic. These institutions were chosen due to very similar learning environment and historical heritage so that the course could be run in both institutions in the exact same format.

The learning objectives of this course were threefold: (1) **student-centeredness** as explained above, (2) **critical and reflective attitude to teaching** which is important for the understanding if changes introduced into one's teaching are effective and crucial for one's development as a teacher, and (3) **using** pedagogic **theory** in changing and evaluating one's teaching practice. The first section offers a description of the course showing the educational elements specifically designed to achieve the three learning objectives. After describing our methods and data, we turn our attention to course participants including the issues of recruitment and retention. It is

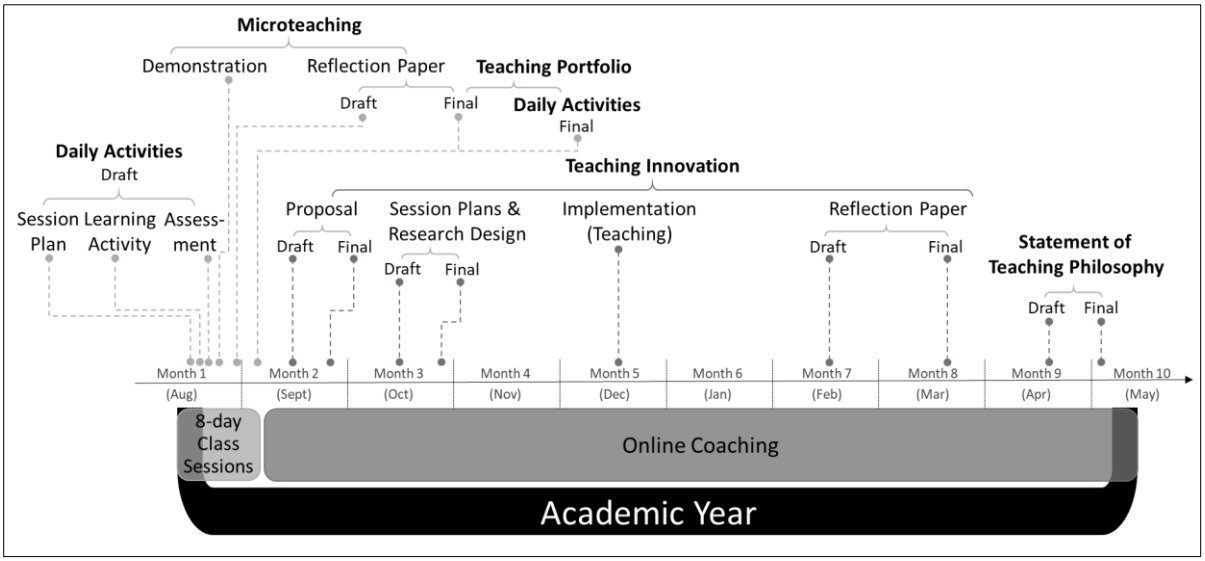
[1] Unless otherwise noted, when speaking of EUBA we refer to both the Bratislava and Košice campus of the University of Economics.

followed by a thorough examination of the extent that the three intended learning outcomes were met, the impact of support activities, and then a discussion of the anticipated but untargeted outcomes of the course. We conclude this report with a summary of the findings, changes introduced for the second cohort, and a few remarks on the future of the course.

The course[2]

The one-academic-year-long course, Learning-centred and Reflective Teaching: from Theory to Good Practice consists of two major parts: an 8-day summer school at the beginning and a two-semester-long online coaching (for course structure see figure 1).

Figure 1. Course structure marking deadlines for compulsory assignments of the course, Learning-centered and Reflective Teaching: from Theory to Good Practice



The course curriculum was prepared by an international team of experts from Central European University, Lund University, University of Tartu, Staff and Educational Development Association (SEDA) and the two universities mentioned above. Overall, the course has been designed with a strong focus on the scholarship of teaching and learning (SoTL) that can accommodate all three

[2] For a detailed course description see the participant handbook in the '01 Curriculum of a new course on HE pedagogy' project outcomes.

learning objectives organically. The course was accredited at the local level by University of Economics, which awarded all graduates 10 ECTS credits upon successful completion. At the international level the course was accredited by SEDA, and thus, each graduate received an internationally recognized certificate.

Table 1. The incorporation of the learning objectives into taught sessions and independent assignments in the summer school segment of the educational development course, Learning-centered and Reflective Teaching: from Theory to Good Practice

Learning objectives	**Sessions**	**Assignments, activities**
Student-centeredness	Student-centered learning; Student-centeredness and institutional context; Technology enhanced learning	Daily activity: course design; Daily activity: learning activity; Daily activity: assessment
Reflection and critical thinking	Morning feedback: course design and session planning; Morning feedback: learning activities; Morning feedback: assessment activities; Using feedback to enhance teaching; Becoming a reflective practitioner; Challenges and how to deal with them	Peer feedback on microteaching; Microteaching reflection paper; Revision of all assignment based on feedback
Use of theory	Course design; Session planning; Learning activities for small groups; Learning activities for large groups; Assessment 1-2; Supervision	Microteaching presentation

Regarding summer school, its goal was to give a foundation for students for the coaching segment of the course in student-centeredness, reflective and critical thinking, and familiarity with foundational teaching and learning theory. This has been realized through a series of interactive sessions, three daily assignments with peer feedback, a microteaching presentation with peer and teacher feedback and a reflection paper on that presentation. Thus, although the focus was primarily on expanding the participants' conceptual and methodological knowledge of teaching and learning, the summer school also had a practice-oriented aspect through microteaching, which allowed course participants to transform themselves from the consumers of the SoTL into actively engaging in writing a brief SoTL-type paper. Table 1 above depicts how individual

summer school sessions and assignments targeted the three learning objectives—although all sessions and assignments were in some ways related to student-centeredness, they appear under the learning objective they have primarily targeted.

The online coaching section took a more holistic approach by having participants focus on only two major assignments: a teaching innovation reflection paper and a statement of teaching philosophy. Teaching innovation reflection paper took up most of the participants' efforts and was realized in several steps. Hence, in the fall, they put forward (1) a proposal on what they planned to innovate in their teaching and how they want to measure its impact, (2) a research design that focused on the details of evaluating the teaching innovation, and (3) session plans for the innovation-related sessions. Then, participants taught their course (or a series of course sessions) and collected data to evaluate the outcomes of the innovations. In the spring, building on fall-semester activities, participants presented their findings in a SoTL paper, which demonstrated how they could meet all three course goals: student-centeredness, critical thinking and reflection, and the use of pedagogic theory while designing, conducting and evaluating teaching. During the course each participant worked with a coach, who provided them with formative feedback on all first drafts, which then they used to revise the final versions of their assignments. Table 2 shows what learning objective was targeted by which assignment/activity.

Table 2. The incorporation of the learning objectives into compulsory assignments during the online coaching segment of the educational development course, Learning-centered and Reflective Teaching: from Theory to Good Practice

Learning objectives	**Assignments, activities**
Student-centeredness	Session plans Implementation of teaching Teaching innovation reflection paper
Reflection and critical thinking	Teaching innovation reflection paper Statement of teaching philosophy Revision of all written work based on coach feedback
Use of theory	Teaching innovation reflection paper Proposal Research design

The course has also incorporated a few support activities, which were optional for participants given that the goal was to facilitate a (more) favorable environment for course participants, not to increase their workload. Earlier experience showed that isolation is an important factor in why educational development courses/programs do not impact their participants' teaching practice extensively or lastingly (Wenger 1999).[3] This prompted our attempts to bring participants together forming a community of practice within each participating institution. To this end, we have encouraged participants to visit each other's classroom and discuss their observations on teaching; organized coffee and cake meetings for participants in both Brno and Bratislava.

Data and methods

Table 3. Overview of data sources

Course documents		**Data specifically collected for course impact evaluation**			
Four assignments by participants*	Coach assessment of four participant assignments*	Three surveys with participants*	Interviews with graduating participants*	Interviews with coaches†	Anecdotal evidence

* n=12; † n=5

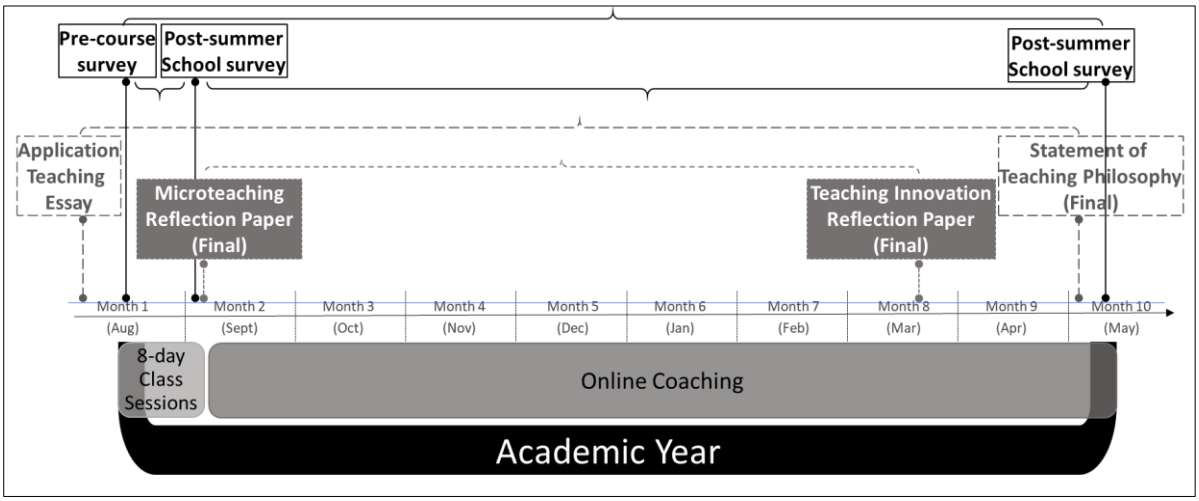
In evaluating the impact of the course, we aimed at a comprehensive understanding and triangulated our data and methods, which enhances the credibility of findings (Marshall and Rossman 1995: 81; Creswell 2003: 196; Perlesz and Lindsay 2003: 27). This report includes data with regards to the first cohort of participants (academic year 2017/2018), and with the exception of analyzing the cohort's profile and retention rate in the next section, the analyses are limited to those twelve who finished the course. We continue data collection with the second,

[3] For an in-depth discussion of this phenomenon see the two other studies on the impact of teacher development courses on mezzo level written under this project: Impact from Pedagogical Courses in Relation to Conversations about Teaching and Learning in Local Work-contexts in Higher Education (by Torgny Roxå, Maria Alwén, Jennifer Löfgreen, Mari Karm and Triinu Soomere; output O3-a) and The Role of Trusting Relationships in Facilitating Change in Teaching Practices at the University Level (by Eszter Simon and Gabriela Pleschová; output O3-b).

2018/2019 cohort and will reanalyze the data at a later time. We collected both qualitative and quantitative data from a number of sources (for an overview see table 3 above).

In the first set of analyses, we used pretest-posttest designs analyzing survey data and course assignments (see figure 2). As for the former, participants were asked to assess their teaching at three different points in time: at the beginning of the course, after the summer school, and after graduation. The advantage of collecting data both after the summer school and the end of the course is that the impact of the 8-day intensive summer school and the subsequent one-year online coaching element of the course could be separately studied as well. Where the questions were amenable to such an approach, responses were recorded on a Likert-scale and analyzed using one-sided, paired t-test since our expectations were unidirectional: participants were to achieve the learning objectives, i.e. we expected a positive change.

Figure 2. Data used in pre-post design



We have also collected qualitative data, which were used in two ways: on the one hand, we have aggregated and transformed these into quantitative data and used descriptive statistics—frequencies and percentage—to analyze them. On the other hand, qualitative survey data provides a richer understanding behind and illustrate well the findings in numerical data.

As for the data that come from assignments completed by participants during the course, we included the teaching essay submitted as part of the application and the final versions of key assignments during the course, the microteaching reflection paper that were completed during the summer school, the teaching innovation reflection paper written in the spring semester, and a statement of teaching philosophy as the last assignment of the course. We paired up assignments of similar nature: (1) the two assignments on how they think about teaching and (2) the two reflections papers. In the analyses, we primarily relied on the five coaches' assessment of assignments during the course while the application teaching essays were coded by one of the authors (Pleschová). In order to understand whether or not the lack of statistical results and its contradiction with coaches' remarks in their end-of-the-course interview, we enlisted two independent experts from the University of Economics in Bratislava of teaching and learning and asked them to code participants' assignments.[4] All coders used the same rubrics (see table 4, next page) to evaluate how far participants came in achieving the three learning objectives during these assignments. The level of progress was measured on a 4-point scale (0=none, 1=low level reflection, 2=mid-level reflection, 3=high-level reflection) developed in the past by one of the authors (see Pleschová and McAlpine 2016). For the statistical analyses, the chi-square was used to compare these categorical data. Results were evaluated against a significance level of p=0.10 rather than the customary p=0.05 because of the rather small sample size.

In the second set of analyses, we have used a variety of data collected at a single point in time. This includes data from the participants' application documents and surveys in order to illustrate who our participants were and how they assessed the course and their own improvement. In addition, we have conducted exit interviews with all of those participants that finished the course as well as with the five coaches. Finally, we have also used evidence that emerged through personal conversations and email exchanges with participants.

[4] The two independent coders—Jaromír Novák and Ladislav Pasiar—have coded the assignments individually and then compared their coding and agreed on the final value assigned.

Table 4. Rubric for the evaluation of the course objective of reflective and critical attitude to teaching

Categories	Coding	Definitions
Student-centeredness		
High-level	3	Teacher pays a lot of attention to who his/her students are and how they learn, so that good learning can occur. Teacher has embraced student-centeredness in a complex way, and there are not any parts where teacher contradicts herself using statements that demonstrate teacher-centred approach.
Mid-level	2	Teacher only pays some attention to who his/her students are and how they learn, so that good learning can occur. Teacher has embraced some elements of student-centeredness; there are no parts where teacher contradicts herself using statements that demonstrate teacher-centred approach.
Low-level	1	Teacher pays little attention to who his/her students are and how they learn. Teacher has only embraced one or two elements of student-centeredness; there are parts where teacher contradicts herself using statements that demonstrate teacher-centred approach.
No	0	No evidence at all
Reflective and critical attitude to teaching		
High-level	3	Teacher demonstrates that he/she has thought about the reasons of why good/poor quality learning occurs at his/her students; these reasons are summarized in a clear and comprehensive way and seem realistic. Teacher can identify not only positive but also negative/problematic aspects/outcomes of own teaching and assumed reasons for them. Teacher may also demonstrate the connections he/she can see between own research and teaching. Based on this understanding, teacher can suggest changes for the future teaching and their expected effects on student learning.
Mid-level	2	Teacher demonstrates that he/she has thought about the reasons of why good/poor quality learning occurs at his/her students. Teacher analyses negative aspects/outcomes of own teaching and their reasons only to a small extent. Teacher can suggest some changes for the future teaching but cannot explain well their expected effects on student learning. Reflection and critical attitude is demonstrated throughout the text but only relates to some of the following: planning, implementing and evaluating own teaching.
Low-level	1	Teacher demonstrates that he/she has thought about the reasons of why good/poor quality learning occurs at his/her students, but he/she could not summarize them in a clear and comprehensive way, they are only outlined and/or do not seem realistic. Teacher cannot identify negative aspects/outcomes of own teaching and assumed reasons for them: the evaluation of the effects of own teaching is uncritically positive. Based on this, teacher cannot suggest changes for the future teaching and explain their expected effects on student learning. Reflection and critical attitude is demonstrated in a few parts of the text, these are disconnected and related only to only some stages of teaching (planning, implementing and evaluating own teaching).
No	0	No evidence at all

Use of theory		
High-level	3	Teacher can properly and correctly define one or several concepts/theories or principles related to teaching and learning in higher education (i.e. using own words). Theory is used to design (a new way of) learning for the students. The teacher uses the chosen concept, theory or principle to explain the outcomes of student learning.
Mid-level	2	Teacher demonstrates familiarity with one or several concepts/theories or principles related to teaching and learning in higher education. These are properly and correctly defined (i.e. using own words). Theory is used to design learning for the students. The teacher, however pays little attention to how the described concept, theory or principle can explain the outcomes of student learning.
Low-level	1	Teacher demonstrates familiarity with one or several concepts/theories or principles related to teaching and learning in higher education. These are not properly defined (i.e. using own words) or the definition reveals misunderstandings. The teacher does not use the chosen concept, theory or principle to explain the outcomes of student learning.
No	0	No evidence at all

Participant characteristics, recruitment and retention

Although efforts to recruit participants were made through numerous channels, this has proved challenging, because of structural reasons. At MUNI, our target was the Faculty of Social Sciences and at EUBA we have recruited university-wide. It seems that our course not being an integral part of the PhD curriculum and being a newly introduced course in both participating universities have made recruiting participants more difficult. The fact that the course was accredited at EUBA but not at MUNI did not make a difference in this regard as we have received more applications from doctoral students at Masaryk University. The latter explains why our original plan to have equal number of participants from the two institutions did not work out. We pursued a personal recruitment strategy by reaching out to deans and department heads asking them to propagate the course. This was useful to some extent as many of these university officials forwarded the information to their PhD students. Nonetheless, this strategy augmented with using university websites, faculty/university wide list serves accessible to our target audience and personal

persuasion has resulted in the sufficient number of applicants to run the first test run of the course.

Table 5. Characteristics of all and graduating participants including retention rate in each category

	All course participants			**Graduating participants**			**Retention rate in category**
	MUNI	**EUBA***	**Total**	**MUNI**	**EUBA**	**Total**	
Total	12	6	18	10	2	12	66.67%
Gender distribution							
Men	4	3	7	4	1	5	71.43%
Women	8	3	11	6	1	7	63.64%
Year of PhD studies							
1st	0	1	1	0	0	0	0%
2nd	6	3	9	4	1	5	55.56%
3rd	2	0	2	2	0	2	100%
4th	2	2	4	2	1	3	75%
5th	1	0	1	1	0	1	100%
6th	1	0	1	1	1	1	100%
Previous teaching experience at university							
Yes	11	4	15	9	2	11	73.33%
No	1	2	3	1	0	1	33.33%
Previous teacher training							
Yes	3	4	7	3	0	3	42.86%
No	9	2	11	7	2	9	81.82%

* Includes participants from both the Bratislava and Košice campuses of the University of Economics.

Eighteen participants started the course by attending and completing the summer school (table 5 above). Twelve of them came from Masaryk University, three from EUBA and another three from the Košice campus of the University of Economics. Sixty-one per cent of summer school participants were female (n=11) and 39 per cent male, with MUNI participants being responsible for the gender gap. The course was designed primarily for PhD students in their second year of study because we assumed that they would have bigger capacity to devote to the course than first-year students who are new to their PhD. program and third-year students who are pressed to finalize their dissertation, and half of the participants just started their second year at the beginning of the project. One participant was only in her first year of study, while two in their

third, four in their fourth and one each in their fifth and sixth year.[5] Because all showed high motivation to take part in the course, we have admitted them. Regarding teaching preparedness, eighty-three per cent of the participants had taught before (n=15), while thirty-nine per cent has participated in some teacher training mostly in the form of workshops.

Of the above participants, twelve has completed the course.[6] This is a retention rate of sixty-seven per cent, which is far from ideal even if we consider that the course was voluntary and has added to the already busy schedule—of often also working—PhD students. Yet, while this retention rate may seem small compared to similar courses in Western Europe, it is not different from the retention rate of non-compulsory student-centered teaching and learning courses—for either faculty or PhD students—under comparable teaching-centered institutions in the region (Vanderziel et. al 2019; Duschinská and High 2018). At the same time, completion rate is significantly higher than under the past project we implemented for the Slovak Academy of Sciences where only 39 per cent of participants graduated from a similar one-year course (Pleschová and McAlpine 2016).

For the effectiveness of this grant project, it is more telling that of the twelve MUNI participants ten completed the course (83 per cent) while only two of six the EUBA participants (33 per cent) finished the course and both of them were from the Bratislava campus.[7] It appears that the location of the course participants' campus was an influential factor in completion case of University of Economics participants: all three course participants from the Košice campus dropped out from the course, which might be because of lacking personal contact with the members of the course team, who were available to meet only in Bratislava and Brno.

The reasons that participants cited for leaving the course ranged from being too busy with doctoral dissertation to unforeseen difficulties in personal life. Nonetheless, coaches felt that at

[5] Some of the upper-year participants were part-time PhD students, hence them not finishing in three years.
[6] An additional participant graduated with the second cohort.
[7] The person who finished with the second cohort was also from EUBA.

least in three cases participants lacked the research or English-language skills to complete the SoTL project with reasonable effort. Looking at how advanced PhD students were in their studies support the latter: half of those PhD students (n=5) who were in their first or second year of their doctoral studies did not complete the course, while only one dropped out of the more advanced PhD students and this was the person that graduated from the course in the following year. Thus, being in the first two years of one's doctoral studies seems to have increased the possibility that one would not finish the course.

Previous teaching experience also seems to be influential. While seventy-three per cent of those who taught before at the university level completed the course, only thirty-three per cent of those who had no teaching experience prior to the course finished all their assignments. Contrary to this, attending a training prior to this course, did not make course completion more likely, suggesting that these workshops may had limited usefulness: approximately forty-three per cent of those who had participated in some form of teacher training earlier finished the course, while eighty-one per cent of those did not take a teacher training course before graduated. Indeed, it might have even been beneficial to come to the course with no training at all.

Results: learning objectives

Before looking at how participants in general responded to the course, we establish if participants themselves see a change in their attitude to teaching and learning without which we cannot expect reaching any of the three learning objectives. Course participants were asked both after the summer school and again after the course if there was a change in their attitude (table 6 below), and in both cases nine (75%) participants said that their attitude had indeed changed.

However, change in attitude is often too little to have a lasting impact, so we also measured if there were a shift in participants' practice (table 6). After the summer school, we asked them about their future plans regarding teaching as after 8-days and a 15-minute microteaching

presentation, it was not realistic to speak about changes in their post-summer school practice. All participants who had taught before (n=11) said that they would like to change some aspect of their teaching, mostly by incorporating new learning activities into their classroom practice. At the end of the course participants were asked if a change occurred in their teaching practice compared to how they taught, if at all, before the course. All but one said yes. Given the requirement to introduce something new to their classroom practice, it is not surprising that during the year of the course almost every participant's practice was impacted—although likely to a different degree.[8] Thus, participants' self-assessment of their practice and skills demonstrate that the course have reached its goal of effecting a change in how they think about and carry out their teaching. Below, we analyze to what extent this change occurred in the three learning objectives of the course.

Table 6. Change in attitude and practice of participants after the summer school and the end of the course based on survey responses

	Change			**Areas of change by learning objectives***				
	N	No	Yes	N	Student-centeredness	Reflective and critical thinking	Theory	Other
Change in attitude								
Post-summer school (actual)	12	3	9	9	8	1	3	0
Post-course (actual)	12	3	9	8†	6	1	3	0
Change in practice#								
Post-summer school (planned)	11#	0	11	11	15	0	2	1
Post-course (actual)	11#	1	10	9†	17	1	2	1

* Participants could name as many areas of change as they wished.
† One participant who said his conception of teaching changed did not explain the nature of this change.
# One participant has not taught before taking the course and thus could not compare her pre- and post-summer school/course teaching practice.

[8] We are uncertain what led the one participant say that her practice did not change.

Student-centeredness

Participants themselves thought that they improved most regarding this learning objective. First, in the surveys we did not only ask whether or not though that their attitude toward and practice of teaching and learning changes, but also to describe the nature of these changes. Their answers were grouped into four categories: the three learning objectives and one for other responses. In this, many mentioned a change toward student-centeredness both after the summer school and graduation from the one-year course (table 6). We have also made a count of how often they mentioned the three learning objectives in their post-course interviews: student-centered and its synonyms (e.g. learner-centered, learning-centered, student-focused) was mentioned by the most participants and mentioned the second most often. It was also brought up in responding to different questions (rather than being mentioned many times in responding to a single question. See table 7).

Table 7. Explicit mentions of learning objectives in post-course interviews by participants

	Student-centeredness	**Reflective and critical thinking**	**Use of theory**
Number of times objective was mentioned	8	2	10
Number of participants mentioned objective	8	1	7
Number of questions to which participants included the objective	5	1	4

When using the more objective assessment of participants' performance on assignments, the results regarding student-centeredness are somewhat more complex. To measure the differences in the participant's general view of teaching, we compared the participants' application teaching essay with the final version of their statement of teaching philosophy completed at the end of the course. In this we found no statistical evidence of increase in student-centeredness (χ^2=3.273; df=2; p=0.195). Whereas in examining how participants' thinking about a particular teaching episode, we contrasted their microteaching reflection papers with the teaching innovation

reflection paper and found a statistically significant improvement in this area (χ^2=7.2; df=2; p=0.027). These contradictory results could be explained by the fact that those who applied to our course were already predisposed to student-centered teaching and learning—as a couple of the coaches suggested during our discussions with them—and thus, had little room for improvement. A similar phenomenon was uncovered during the implementation of the earlier course for the Slovak Academy of Sciences (Pleschová and McAlpine 2016). Nonetheless, it is clear that when participants had to apply student-centeredness in the analysis of results from their teaching innovation, they have improved greatly over time. Hence, it is fair to conclude that the course has succeeded in moving participants from teacher- toward student-centeredness.

Reflective and critical thinking

Although there is some evidence for course participants becoming more reflective by the end of the course, of the three learning objectives they have demonstrated the least progress in this area. First, when speaking about the nature of change in their attitude toward teaching and learning, this was the least frequently mentioned learning objective: only one participant brought it up both the summer-school and the end of the course. Similarly, when explaining the shift in their practice, becoming more reflective was only mentioned after the course and only by one participant (table 6). Reflectiveness was also explicitly mentioned the fewest times in the post-course interviews by far and both mentions belonged to the same participant (table 7).

The pre-post evaluation of participants' course assignments by their coaches tells a similar story. Comparing the participants' application teaching essay with their statement of teaching philosophy submitted at the end of the course, we could not find any significant differences between the levels of the pre-course and end of course reflections (χ^2=4.0; df=3; p=0.261). The microteaching and teaching innovation reflection papers allowed participants to reflect on their own teaching practice, but this has not resulted in a statistically significant change from the end of the summer school to the end of the course either (χ^2=0.444; df=2; p=0.801). However, in the

post-course interviews coaches added an interesting perspective: some saw clear improvement in how their coachees reflected initially and at the end of the course. They argued that participants may not have reflected more or used more types of reflection by the end of the course—as we expected—but learnt to express their reflective thinking more explicitly and richly. Indeed, those participants who had the opportunity to revise their paper for publication in the book (Pleschová and Simon 2018), which also required enhancement of their reflective skills showed further improvement in this aspect.

We asked two teaching and learning experts to code participants assignments in order to see if their independent perspective can resolve some of the contradictions above. Partly it did: the analysis of their coding showed that course participants did improve significantly in reflecting on their practice when comparing their microteaching and teaching innovation reflection papers (χ^2=8.444; df=2; p=0.015). However, no statistically significant difference was found when it comes to comparing their early and end-of-course view of teaching (χ^2=5.300; df=6; 0.506). We found something very similar under our past project and ascribed this to the fact that changing general conceptions on learning and teaching usually takes more time than advancing reflections on specific learning and teaching-related issues (Pleschová and McAlpine 2016).

Reflection was the most complex of the three learning objectives and one needs to consider that education in Central Europe puts little emphasis on critical thinking and does not encourage (and sometimes even discourages) reflectiveness. In short, even if doctoral students are likely to be able to think critically more than their peers, it is not realistic to expect them to gain advanced reflection skills rapidly or in every aspects of reflection. The ability to reflect increases with experience of which participants, on average, had relatively little both as teachers and scholars. Hence, the somewhat contradictory evidence for impact in this course goal may not simply result from participants' limited ability to reflect but rather form their underdeveloped academic writing skills, which we discuss below.

Use of theories of teaching and learning

In survey responses, understanding of theories of teaching and learning were the second most often mentioned area of change regarding both how participants think about teaching and how they actually teach (table 6). In the surveys, we also asked participants to assess their knowledge of pedagogic theory and their responses show great advancement in this area. Compared to the beginning of the course participants reported a statistically significant increase after the summer school and upon graduation (table 8). However, the increase of in their knowledge of pedagogic theory during the online element of the course failed to reach statistical significance, which was expected. First, it was the summer school that primarily focused on giving participant the conceptual foundation, whereas the online element was designed to reinforce and deepen that knowledge and help participants to integrate knowledge with their teaching practice. Indeed, while teaching participants put into practice the concepts with which they had become familiar and gained new and/or deeper insight especially into the concepts that their innovation and the subsequent teaching innovation reflection paper applied.

Table 8. Comparing the participants' level of knowledge about teaching and learning before the course, after the summer school and after graduation on a 10-point Likert-scale (1=very little; '10'=a lot

	N	Mean	SD	Difference of Means	t-test	df	p-value	Sig.
Pre-course	12	4.67	1.88	1.67	-3.58	11	0.002	Yes
Post-summer school	12	6.33	2.31					
Post-summer school	12	6.33	2.31	.067	-1.23	11	0.122	No
Post-course	12	7.00	1.95					
Pre-course	12	4.67	1.88	2.33	-4.31	11	0.001	Yes
Post-course	12	7.00	1.95					

Tests: Paired t-test, one-tailed.

The strong impact of the course on the use of theory by participants has been also supported by the comparison of the course assignments. We have uncovered a statistically significant impact when contrasting the teaching essays written before and at the end of the course (χ^2=8.40; df=4; p=0.078) and when comparing the application of teaching and learning concepts in their early

microteaching reflection papers with their teaching innovation reflection papers (χ^2=7.556; df=3; p=0.056). Participants also mentioned theoretical advancement frequently in their post-course interviews: it even appeared slightly more often than student-centeredness, although it came from only four participants (table 7). We can therefore conclude that this learning objective has been fulfilled.

Results: support activities

Community of practice

Data we collected signal that with our course we have achieved to create foundations of a community of practice (Lave and Wenger 1991) among course participants. It was a unique endeavor in that building a community of practice between course participants is usually attempted in face-to-face, online and blended courses, where participants regularly meet and interact with each other in some format in person or online. Participants of this course met intensively during the summer school but were not required to communicate during the online course segment. Instead, they worked closely with their coach. Therefore, camaraderie could not be built lastingly in the classroom during the early intensive meetings and regular contacts that are often done in form of group projects or group discussions in online courses were not required.

Indeed, as outlined above, community of practice building activities were voluntary assignments within a voluntary course and it was prioritized by participants accordingly. Scheduling conflicts also negatively impacted participation in these activities. For example, only a couple of participants have visited another participant's teaching session to observe and subsequently discuss their observations.[9] The coffee and cake meetings were more successful in this regard as the meeting in Brno was attended by seven participants (not all of whom completed the course),

[9] A few other participants had peers or faculty members from their PhD program observing their class, which is notable for building connections in their local institutions but does not contribute to the emergence of community of practice among course participants.

and five in Bratislava. These led to interesting dialogues and the sharing of teaching and other course-related experiences among participants and rekindling the relationship between those who did not meet on a daily basis. Having a meeting at each institution rather than one big meeting for all participants was useful in maximizing the number of attendees, but not in strengthening the dialogue between participants of the two institutions (and three campuses).

We learnt from our communication with course participants that our course achieved to sow the seeds of a community of practice among participants. Some discussed student learning beyond completing the tasks assigned during the course and others said that the course inspired them to discuss student learning with, for example, a colleague from the same office. However, the fact that only few participants were from the same department and many travelled abroad for the purpose of finishing their dissertation did not allow to form a proper community of practice among the course participants

Results: untargeted outcomes

There are two areas that our participants have showed significant improvement despite the fact that these were not among the learning objectives of the course. None of these—the increase in confidence and improvement in academic writing skills—came as a surprise as these go hand in hand with becoming better teachers and scholars as a result of participating in a SoTL-focused educational development course.

Confidence

The simplest measure of one's growth as a teacher is a growth in confidence and outside of the classroom. Participants have done very well in this area as shown by their survey and interview responses. They were asked to evaluate the levels of their confidence as teachers at three different points in time—the beginning of the course, after the summer school, and after

graduation—to allow for comparison. Answers were reported on 10-point Likert scales where '1' indicated very little and '10' a lot. When comparing against their *a priori* confidence ($mean_{PRE}$=5.33; SD_{PRE}=2.43), there is a statistically significant increase both after the summer school ($mean_{SSCHOOL}$=6.33, $SD_{SSCHOOL}$=2.02; $means_{DIFF}$=1.00, t=-3.07, df=11, p=0.005) and after graduation ($mean_{POST}$=7.17, SD_{POST}=1.90; $means_{DIFF}$=1.83, t=-3.12, df=11, p=0.005). However, although barely, but participants' confidence failed to increase to a significant level during the online segment of the course ($means_{DIFF}$=0.83, t=-1.70, df=11, p=0.058). This result is more unexpected as we had originally thought that if participants would experience a boost in confidence it would come from their teaching practice and most of their teaching was conducted during the online phase of the course. We believe that we likely underestimated the impact of the microteaching presentation during the summer school. Participants did not only perform well on this exercise but the feedback they received from their peers and the session leader focused both on what required improvements and what went well—the latter of which is not very common in Central Europe. It is just as likely that when participants moved from the rather secure environment of the summer school to the actual university classroom, they were subject to other influences. Even if they became more confident in planning and running class sessions, reactions from students who did not always welcome student-centered learning, lack of faculty support at their university, limitations on what they can do, and so on might have limited their growth in confidence.

Interestingly, when compared with survey results, the post-course interviews uncovered that participants' confidence has grown. During the post-course interview seven out of twelve participants spontaneously brought up that they felt more confident either in general or in their teaching-oriented discussions with their peers or professors. A common theme was that they have linked this growth in confidence to an increase in their knowledge about teaching and learning, in the words of one of the participants 'I also feel more confident because I have some new knowledge that I can apply'. Indeed, when directly asked about the impact of the course in

the post-course interview, the only issue mentioned—albeit only once—next to the three course objectives were increase in confidence. Finally and in line with the above, when talking about their coachees' progress, coaches have often mentioned a growth in confidence.

Academic writing

While we have not collected hard data about academic writing skills, writing a SoTL paper about their teaching innovation have had a strong positive impact on participants' skills as academic researchers. It is partly because despite being PhD students their academic preparedness to design, carry out, and analyze a research varied greatly and with the exception of a couple of participants were not at the level that we have expected from second-year and more advanced PhD students. For example, only one participant has already published a study with a reputed academic publisher. In general, perhaps because during their doctoral research participants have worked mostly with readily available secondary sources—for example speeches, government documents, datasets accessible to the public—for most of them planning, for example, a quasi-experimental research or developing relevant survey questions to assess the impact of their teaching innovation was challenging, as drafts of their assignments showed. Indeed, sometimes their early lesson plan drafts were of higher quality than their early research-related efforts—reinforcing that the summer school sessions devoted to course design/lesson planning and small and large group teaching activities have been useful in this regard. It must be no coincidence that these were also among the top four sessions that participants found most useful for their development of teaching (table 9). Nonetheless, as a result of coach feedback, participants have shown rapid progress from the first draft of their assignments—especially in the proposal and research design—to the final version.

Table 9. Summary of the top three summer school sessions/topics that participants (n=12) named as most beneficial to the development of their teaching

Session Title	Number of mentions
Course Design/Session plans	8
Assessment I-II.	7
Learning Activities for Small and Large Groups	7
Microteaching presentation	7
Morning Feedback Sessions on daily assignments	2
Supervision	2
Student-centeredness*	2
Using Feedback to Enhance Teaching	1

* There were two sessions on student-centeredness: (1) Student-Centered Learning and (2) Student-Centeredness and Institutional Context

The other difficulty participants faced came from writing in English. Most participants, despite having excellent English-language skills had not done much academic work in English. More importantly, English academia has different conventions when it comes to the structuring and argumentation of a scholarly paper than Czech or Slovak academia. That meeting these challenges were possible with the necessary effort and coach advice is best demonstrated by participants' SoTL-based teaching innovation reflection paper. Those whose papers were selected to be published in the book Early Career Academics' Reflections on Learning to Teach in Central Europe (Pleschová and Simon 2018) under the auspices of this grant project, had additional opportunities to advance their academic writing skills and bring their course paper to publication quality.

Overall participant satisfaction

During the post-course interviews participants were asked if they would recommend the course to others and all but one[10] of the twelve participants did so. They listed various justifications for

[10] The reasons for not recommending the course were, as the participant explained in the interviews, that the participant's department did not acknowledge the 10 ECTS credits offered by the course, she felt that her field was too close to pedagogy and therefore she learnt relatively little, and she did not see how the teaching innovation reflection paper improved her teaching skills. It is important to note that she was also the participant who came to the course with already having taken a course based on student-centered approaches.

this that highlights the benefits of the course as they saw it: the course changed their approach to teaching, improved their teaching practice, helped them to acquire new teaching-related knowledge, increased their confidence as teachers, and offered an opportunity to exchange ideas about teaching with peers and more experienced educators. Even more impressively, four participants said they had already recommended the course to their peer.[11]

Despite their overwhelmingly positive answer about the course, participants were divided when asked if the course should be made compulsory. Those who favored making the course compulsory (n=6) reasoned that PhD students have to teach but do not know how and often feel left alone with their struggles and fears, and said that the course contributed to their 'personal and academic growth' alike. Those who argued against making the course compulsory (n=6) justified their position by saying that only those should take the course who are interested in teaching. More importantly, four of the six thought that this course should be on offer in their doctoral program as optional or elective course, while one suggested that some educational development course should be available to doctoral students even if not this particular one, or not this one alone, because of the current course's very specific focus on student-centeredness. The one participant who did not think the course should be part of the PhD curricula at all justified her position by saying that the course was too time-consuming.

Indeed, in the post-course interviews a common theme emerged about the most challenging part of the course, namely, that it was rather time-consuming and labor-intensive. We agree with this assessment: the course required complex work from its participants and investment of about three hours per week, which was unevenly distributed throughout the course. The Fall semester was especially strenuous with a very tight schedule, but ultimately participants who organized their time well and faced no extraordinary hurdle in their academic and personal life had no problem completing the requirements. In this, the flexibility of coaches to accept assignment a

[11] Through personal discussions we have also learnt that a few of second cohort participants were encouraged to take the course by former (i.e. first cohort) participants.

few days early or late to navigate around the other commitments of the participants has been also most helpful.

Participants highly valued the coaching component of the course. When asked to rate their coaching experience on a 10-point Likert scale in the post-course survey, where 1 stood for entirely negative and 10 for entirely positive, resulting in a mean score of 9.5 (SD=0.78). Accordingly, when asked to select the negative sides of the coaching relationship from a list of eight options, only five respondents actually chose something and (1) blamed themselves for not having enough time (2) or having limited teaching competencies to fully benefit from the relationship. Two participants thought that the online nature of the coaching experience was unfavorable. The rest of the participants selected 'other' and in the free response rubric they indicated that they had found no drawbacks to the coaching experience. When they could express their opinion to an open-ended question, who those decided to answer (n=7) talked of the relationship with their coach in the highest terms both in terms of the human ('It was really professional and human at the same time. Very consistent and motivating') and professional ('Being coached gave me confidence that I can consult and ask for guidance for my teaching problems') side of the relationship. One person said that the coaching experience has impacted of how she sees her relationship with her students citing that experience as an example to follow. Participants' opinion in the post-course interviews reiterated their positive opinion of the coach-coachee relationship.

Conclusions

The course, Learning-centred and Reflective Teaching: from Theory to Good Practice was designed to increase the teaching competencies of doctoral students in Central Europe and tested in two institutions, Masaryk University in Brno and the University of Economics in Bratislava. Results show that the course has performed excellently in achieving two of its learning objectives: participants' view and practice of teaching has been shifted toward student-centeredness and

their knowledge and use of theories and concepts of teaching and learning has significantly advanced. Although participants improved only little with regards to reflective and critical thinking, they have learnt the importance and method of reflection and with further teaching experience and practice of reflection they have the potential to do well in the future. To assist second cohort participants in this, we made a modification to the program by adding an explicitly research-oriented session, Writing a Researched Reflection Paper to the summer school.

Participants has also benefited from the course in areas that were expected although not targeted. As their knowledge of teaching and learning increased so did their confidence in and out of the classroom. They have also learnt the trade of English-language academic writing and thus has grown not only as teachers but also scholars. Nonetheless, it would be worth paying more attention to this aspect and adding a workshop in academic writing to the course. It would not only make the course more attractive to otherwise heavily research-focused institutions but also assist participants' in fulfilling their course obligation, and thus, potentially increase retention rate.

When participants are coming from different university units—and in our case two different institutions—a community of practice could help them both academically and mentally to succeed in the course. More importantly, such a community could offer support to its members after course completion. This is particularly important when participants are not from the same department—i.e. they do not meet frequently—and/or when their support structure—i.e. their coaches—are not (or no longer) located in their institutions. A potentially useful tool catalyzing integration of knowledge from educational development courses emerged from our research into course outcomes on the mezzo level, namely, the support for academic conversations on teaching and learning among members of the same work group or institution.[12] In this case, during the

[12] This phenomenon is discussed in more detail in our studies entitled Impact from Pedagogical Courses in Relation to Conversations about Teaching and Learning in Local Work-contexts in Higher Education (by Torgny Roxå, Maria Alwén, Jennifer Löfgreen, Mari Karm and Triinu Soomere; output O3-a) and The Role of Trusting Relationships in Facilitating Change in Teaching Practices at the University Level (by Eszter Simon and Gabriela Pleschová; output O3-b).

online segment of the course this aspect could be emphasized further by, for example, either making classroom observations compulsory or introducing some group work element or presentation of the teaching innovation reflection paper with peer review that brings participants together and fosters their working and personal contacts. However, in effecting these changes, it is important not to increase demands toward participants significantly because they already had difficulties to reconcile their course demands with their other university duties and work.

All in all, the course has met its goal of advancing the teaching-related thinking and skills of its participants and provided extra benefits for them as scholars. Therefore, we believe that this course offers a model that universities in Central Europe—and possibly also at other institutions elsewhere than Europe —can adopt, with adjustment to the local institutional context.

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