Creating Meaningful Experiences for Pre-Service Teachers: Thoughts and Experiences on an Elective Course

Duygu Sönmez*
Hacettepe University

Abstract
This study investigates the effectiveness of an elective course titled, "Microteaching in Teacher Education" (MiTEc) which is offered to the 3rd and 4th year pre-service science teachers. This course aims to provide pre-service teachers with meaningful experiences and prepare them for real-classroom settings. During the study, qualitative methodology was employed and face-to-face semi structured interviews and focus group discussions were used as the means of data collection with the participation of 23 pre-service science teachers. All the data was transcribed and content was analyzed to identify emerging themes. MiTEc was found to have a positive influence for pre-service teachers in improving their teaching skills, observations skills, self-confidence and self-awareness, which then also had a positive impact on other courses. The ability to connect theory with practice was one of the major benefits of the course.

Keywords: Microteaching, pre-service science teacher, teacher education, video use

* Dr. Duygu Sönmez is an Assistant Professor of Science Education at the Hacettepe University. Her research focuses on biology education, education for sustainable development and professional development of science teachers.

Correspondence: dsonmez@hacettepe.edu.tr

Introduction

In the long history of teacher education, the universal goal has been to educate teachers and teacher candidates so that they can serve as effective teachers. This is a global endeavor regardless of the subject area. Accordingly, in Turkey, teacher education programs aim to educate teachers with diverse skills who are competent in the content area as well as in culture and information technologies (YOK, 2004) and who can serve as effective teachers.

But what does 'effective teacher' means? While the meaning attributed to the term 'effective teacher' changes with time, the definition evolves with the demands created by the advancement in science and technology and changes in policies. In Turkey, the qualifications of an effective teacher are identified by the guidelines of Ministry of Education. The guidelines include general competencies as well as content specific competencies (MEB, 2008). Through these guidelines, the main purpose of teacher education is also identified. So what is needed to educate effective teachers?

In pre-service teacher education, concrete real experiences as Cruickshank (cited in Amobi & Irwin, 2009) defines, play an important role. Real classroom settings provide pre-service teachers with direct experiences and allow them to explore the relationship between theory and practice while getting the opportunity of improving their reflective and analytical skills (Feyten & Kaywell, 1994). Although the value of real classroom experiences is undeniable, in Turkey, pre-service science teachers have this opportunity only during the last year of their four year undergraduate education.

The current science teacher education program was implemented in 2006 in Turkey. The program consists of four years of coursework where students are only exposed to real school environments during the last year of their education. The first three years are comprised of theoretical coursework focusing on science content as well pedagogical content knowledge. In this case, several questions can be raised. For one; is the last year of real world experience enough for pre-service teachers to make the connection between theory and practice explicit? Another question is how effective are these real-world experiences in making the connection between theory and practice? Unfortunately, field-based teaching experiences are reported to not always serve as the best learning environments for acquiring reflective practices and connecting theory and practice (Erdman 1983, cited in Amobi & Irwin 2009). From a global perspective, literature suggest the lack of explicit understanding of the connection between theory and practice which leads to inadequately prepared pre- service teachers for teaching practice (Mergler, 2010). So, how can the benefit of real-classroom experiences be maximized for pre-service science teachers? This study was designed with these questions in mind and investigates the effectiveness of Microteaching in Teacher Education course (MiTEc).

MiTEc is an elective course and was designed to create a learning environment for pre-service science teachers where they can practice the theoretical background they are taught and develop an understanding of the connection of the theory and practice before pre-service teachers are involved in real classroom settings. Microteaching is accepted as a valuable teaching tool in teacher education. The value of microteaching strategy has also been investigated as a part of a Practice Teaching course in a previous study and found to have a positive influence on learners (Sonmez&Hakverdi-Can, 2012). This study aims to investigate the long-term impact of MiTEc on two courses that take place in a real school environment, which has not been explored. MiTEc which is subject to this study has been offered for the last two years to pre-service science teachers. While the study was exploratory in nature, it aimed to investigate the central question 'What is the impact of MiTEc on pre-service science teachers' future coursework involving teaching practice, such as the School Experience course and the Teaching Practice course. In this context the research questions investigated were:

1- How pre-service science teachers perceive MiTEc?
2- What are the contributions of the microteaching course for pre-service science teachers?
3- Are there any differences of experience in School Experience course and Practice Teaching Course among participants who took the MiTEc and who did not?

Microteaching as a Teaching Strategy

Microteaching is a teaching approach that allows pre-service teachers to have clinical experiences in their own learning environments (Amobi, 2005). With a history going back to 1960's, microteaching has been widely used with various approaches. In the traditional approach, it has been used as a teaching method to develop teaching skills among pre-service teachers. However, today, it has developed into a teaching method used to prepare pre-service teachers for real classroom settings as well as provide them with an experience of teaching a complete lesson (Amobi, 2005). While the term 'microteaching' has been widely used in literature, some of its applications even take over different names including 'peer teaching' rather than microteaching (MacLeod, 1987) regardless of the fact that the term peer teaching may also be used in different meanings.

The early applications of microteaching were used at the School of Education at Stanford University as a part of teacher intern program in 1963. Its first applications were both for training and diagnostic purposes (Allen, 1967). While microteaching allows pre-service teachers to practice teaching in a simplified environment including class size or teaching length (McLeod, 1987), it also takes place in a controlled environment where intensive feedback and discussions are provided. As of the 1970's, video feedback became the dominant feature of microteaching applications. Today videos still have a wide use in teacher education. Without subject area limitations, microteaching has a use in pre-service teacher education including science education, environmental education, physics education, language education, music education and so on (Diana 2013, Uzun, KeleŞ et al. 2013).

Linking theory and practice through field experience and the use of reflective thinking and writing are important elements in teachers' education (Amobi and Irwin, 2009). Although the value of real classroom settings is undeniable, they might not be the best learning environments for novice pre-service teachers since they may not be able to evaluate their own teaching practices. To overcome this issue, research suggests campus and university based microteaching learning environments promoting pre-service teacher development through reflective practices (Pultorak, 1996; Amobi & Irwin, 2009).

In its current use microteaching has two important components; lessons that are videotaped and feedback (Metcalf, 1993; Benton-Kupper, 2001; Butler, 2001). In a previous study, using videos to develop observation skills among novice teachers was found to be an effective teaching approach (Sonmez&Hakverdi-Can, 2012). The video applications were integrated into the School Experience course and were used to prepare pre-service science teachers for school environment.

MiTEc, subject to this study, is an elective course open to 3rd and 4th year students. The course aims to provide pre-service teachers with opportunities to practice the theory they were taught during the first couple of years in the program with microteaching practices. The second purpose of the course is to prepare pre-service teachers for fourth year courses, School Experience course and Practice Teaching course, through real world examples, video cases and discussions. The course is offered weekly for two hours. The course is divided into two sections, use of videos and teaching practices. As a part of the course, initially all students are asked to develop evaluation criteria to evaluate teaching and identify good teaching practices. Crumley & James (2009) emphasizes the importance of forms developed by participants in relation to facilitation of critical reflection on teaching (Vander Kloet and Chugh 2012). Then, students review and discuss videos recorded in actual classroom settings and discussions are held weekly focusing on different aspects of teaching. In addition to videos, students are also asked to prepare a complete lesson and teach it to their peers. All the teaching sessions are video recorded as a part of the course, and each session is followed by discussions. While the instructor observes each student and takes notes on what is going on and what are weaknesses, she does not interrupt the flow of the lesson. Her notes lead the discussions on teaching performance afterwards. In addition, each student is expected to write two reflections; one after teaching and the second one after watching their own video critiquing their own teaching. One of the downsides of having microteaching practices on campus is the audience. Since pre-service teachers teach to their own peers they might not experience the challenges of an actual classroom. To overcome this issue, classroom cases may be created with the guidance of the instructor. Classroom discussions

were also conducted led by the instructor. Thus pre-service teachers learning process is supported through both verbal and written reflections. According to Metcalf (1993) adjusted peer provided guidance may be as beneficial as instructor-guided laboratory learning environments. Through each microteaching sessions all of the students benefit from different examples and discussions.

Method

In this study, qualitative research design was the choice of methodology to investigate the central question, 'What is the impact of MiTEc on students' future teaching experiences?' In particular, individual interviews and focus group discussions were used for data collection purposes and document analysis technique was used to analyze the data.

Participants

The study was conducted with the participation of 23 undergraduate students. All of the participants were seniors enrolled in the Science Teacher Education Program at the undergraduate level at one of the major universities in Ankara. The data collection was completed during May of the spring semester, which corresponds to the final 4-5 weeks of the semester as well as the four yearlong education. The data collection timeline was set to assure that all the pre-service teachers completed the majority of the coursework of the Teaching Practice course and spend enough time at their practice schools.

Among all participants of the study, 10 of them had taken MiTEc in previous semesters and 13 have not. However, all the participants were successfully completed School Experience course during the first semester of the year and were enrolled in Practice Teaching course offered during the second semester. Seventeen of participants were female and six were male.

Data Collection and Analysis

The data collection was completed in two stages. In the first stage, face to face individual interviews were conducted with students who had taken MiTEc. The interviews were conducted in semi-structured interview format with guiding questions and all of the interviews were voice recorded with the permission of the participants. Participants were asked to comment on MiTEc and describe their experiences. Guided questions were used during the interviews when need. Some of the guiding questions were;

1. Can you evaluate MiTEc you took, how beneficial was it for you?
2. In your opinion what were the short and long term benefits of taking the course?
3. In particular can you describe the benefits in relation to the School Experience and Practice Teaching courses?
4. What kind of contributions do you think MiTEc had on your professional development?

In the second stage, focus group discussions were held. These meetings were also voice recorded. Both students who took MiTEc and those who had not, took part in each of the focus group meetings. A total of three focus group meetings were held and students chose the meeting they would attend based on their schedules and time convenience. During the meetings, participants were asked to reflect on their experience in the Practice Teaching course and discuss challenges and difficulties they had faced. Participants' perceptions on MiTEc and its benefits were also discussed. All recordings were transcribed upon completion of the interviews and focus group meetings.

Available participants were asked to provide feedback on transcripts. Content analysis was used to analyze the transcribed verbal communications. More specifically during the data analyzes all of the interviews were transcribed verbatim and the content analysis was used to analyze the transcription of the interviews and focus group discussions to identify the emerging themes and

subthemes in relation to MiTEc and its benefits and impact on the School Experience and Practice Teaching courses. An outside reviewer provided feedback on sample cases to assure validity.

Findings and Results

The very first question asked to pre-service teachers was how beneficial was MiTEc for them. All participants interviewed individually took MiTEc at least one or two semesters prior to the data collection, and were in the second semester of being in a real school environment. Thus they had enough experience to evaluate the value of the course in comparison to other courses they have taken as well as based on their experience in real school environment. One of the pre-service teachers stated, 'I believe the benefits are more obvious when student teaching is done'. This comment also supports the researcher's choice of timeline for the data collection.

Practice is an important part of pre-service teacher education and MiTEc was identified to be a valuable practice opportunity based on the interviews and groups discussions conducted. Several themes and subthemes were identified indicating the benefits of the course, which are presented in Figure1 as well as listed in Table 1 accompanied by exemplary quotes.

All of the students identified MiTEc as a good opportunity to experience the dynamics of teaching a complete lesson with the consideration of possible problems that might arise as well as solutions. Participants, who have not taken MiTEc were part of the focus group discussions. As they have reported, during both the School Experience and Practice Teaching courses, they were closely interacting with peers who have taken the MiTEc since they were immersed in the same school environment. They were facing similar issues in regards to teaching and classroom environment. As they had stated, they were communicating with each other and having conversations with peers and even getting tips on how to overcome issues they faced in relation to lesson planning, classroom management or asking questions. The pre-service teachers who were not enrolled in MiTEc in previous semesters also stated similar comments during focus group discussions. They all were aware of the MiTEc and its nature and were emphasizing the benefits of the course in an indirect manner through the experience provided by their peers.

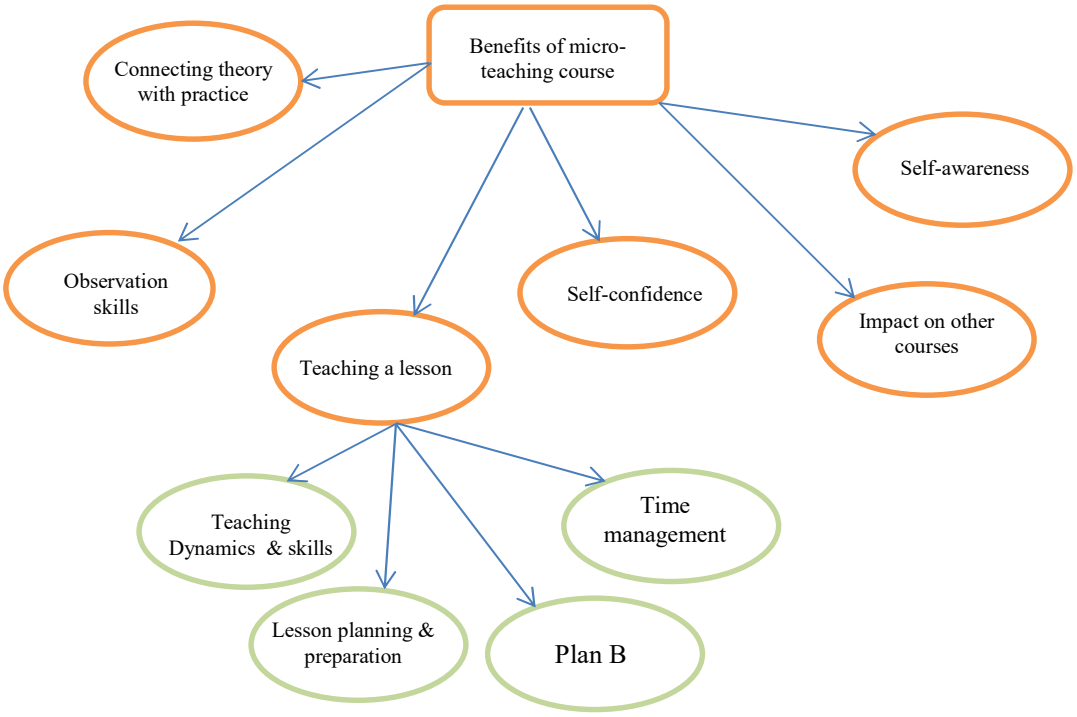

Figure 1: Identified themes and subthemes

Table 1: Summary of themes and subthemes

Theme	Subtheme	Exemplary quotes
Teaching a lesson	Lesson planning and preparation	I learned to be practical, I got a chance to practice and use what I have learned here (in microteaching)
	Teaching dynamics and skills	I used everything I learned in microteaching while I was teaching twice at the school during first term, how to call on students, how to communicate, how to use ppt in class, what to be careful about, body language, I got a chance to practice what I need to do during a whole lesson
	Time management	For me the biggest change was figuring out how to react to students and learning about timing of the lesson
	Plan B	During microteaching we talked about plan B, it happen to me at student teaching, and my original plan with videos did not work. If I didn't have a plan I would have nothing to teach and freeze
Connecting theory with practice		I learned asking questions appropriate for the purpose of the lesson, and design activities more successfully. We learn about these in other classes but it does not go beyond theory
Self-confidence		I was really scared to teach a lesson, through this course I figured if I'm prepared enough there will not be a problem, it was helpful for my self-confidence. I still watch my video ...
Self - awareness		Now I'm more relaxed and able to tell this is what I'm doing and it looks like this for other people, but before [microteaching] I didn't.…
Observation skills		I believe I'm more capable and careful watching my mentor and his/her reactions in the classroom...discussions on videos helped me in terms of concrete observations.
Impact on other courses		The assignments we prepare are more flexible now….I'm able to prepare more flexible and less utopic assignments now that consider elements such as student level…..for example during classroom management course the instructor gave us the case….and I can come up with appropriate behavior and reactions which I learned during microteaching course

Teaching a Lesson

Six main themes were identified based on the participants' responses. The comments categorized under the very first theme, *Teaching a Lesson,* were focusing on lesson planning and preparation, time management, plan B, and teaching dynamics and skills. Plan B involves foreseeing and planning for possible problems that might arise during a lesson and teaching dynamics and skills include asking questions and their quality, communication with students, teaching strategies, responding to students, choosing teaching materials, and testing teaching materials. During MiTEc, pre-service teachers were required to prepare a lesson and teach it for a given period of time such as 20 or 30 minutes. During the process they had to frame their lesson based on the grade level with the consideration of the length of the lesson and classroom environment and take necessary precautions for any complications that might arise.

Students who had not taken MiTEc identified lesson planning as challenging. For them the road from planning the lesson to actually teaching it was an arduous process. Some of the participants stated that they had not planned a complete lesson before and it was difficult and toilsome for them. For others time management, asking questions or classroom management were the issues that they found troublesome and needed to address.

According to participants, although they are expected to do presentations during their regular coursework as well, in comparison to teaching an actual lesson, the dynamics do not match. Regardless of the fact that MiTEc provided a mock middle school classroom environment and dynamics, pre-service teachers identified the teaching opportunity provided by it as beneficial for lesson planning, experiencing teaching dynamics, and self-awareness for one's teaching ability. For them, being able to practice improved their skills such as asking questions and allowed them to focus on what is necessary while planning and teaching a lesson.

For some of the pre-service teachers, pre-lesson preparation turned out to be a necessity that they had not considered in advance neither during MiTEc nor the Practice Teaching course. As some of them stated, they went ahead with their lessons without giving teaching materials and equipment for experiments a trial run. Since they had done particular experiments and activities in university courses, they were assuming that they would find similar dynamics in middle school classrooms. However, that was not the case and, as they stated, they ended up with problems and issues they had not foreseen beforehand. The outcome of such experiences for these students was, understanding the need and necessity of testing any materials they are planning to use in advance to assure success during the lesson.

As in pre-lesson preparation, another point that needed attention was having a backup plan (plan B). The necessity of having a plan B in case something goes wrong arose during pre-service teachers' microteaching experiences for three participants. This was also one of the topics discussed in class in MiTEc previously, which they identified as valuable. As one of the participants stated, during the Practice Teaching course, unexpected situations arose and she was not being able to use videos as planned due to technical problems but because she had foreseen such a possibility, she had a backup plan which allowed her to continue teaching the lesson.

Connecting Theory with Practice

The ability to put theory into practice is the second step in teacher preparation. Through practice prospective teachers can develop and master skills necessary in execution, which in turn is expected to be reflected in student achievement. In many cases making the connection from theory to practice is not as easy as expected or as natural as it would be anticipated. Connecting theory with practice appears to be a challenge for the majority of the pre-service teachers. Concrete experiences are needed to be able to make that connection. As stated, MiTEc was reported to serve as a bridge between theory and practice for pre-service science teachers by providing these needed concrete experiences. However for pre-service science teachers who did not take MiTEc and lack the opportunity to practice such skills in advance, the teaching experience course was reported to be challenging since they were having trouble making the connection between theory and practice.

Self-confidence

Pre-service teachers who took the MiTEc were found to have higher self-confidence in comparison to peers who did not take the course. They believed that they did a better job in communicating with and teaching middle school students and verbalized this belief with comments such as, '*I believe students who took microteaching are more successful in comparison to who have not..*'. During interviews they identified the outcomes of their teaching as "successful" with statements such as, '*...now I'm more successful in....'* They have stated, middle school students prefer to work and study with them during projects and other school related work rather than with their peers who did not take the microteaching course. They believed they were more successful in making the connection

between theory and practice, identifying student needs, using body language and necessary teaching skills.

In addition, they stated that they provided feedback and help to peers who had not taken MiTEc previously. For some students, although they have not taken the course, suggestions from peers were helpful to overcome some of the issues they were facing in the school environment. Statements such as '*... tried to model friends who took MiTEc'* identified the communication and interactions among students. Some of the pre-service teachers who have not taken the MiTEc associated their school experience with comments such as, '*not so great or not successful'.* They expressed a desire to have taken the course. They also stated the value of their peers' help on issues they were facing. While some stated that it was helpful overcoming their anxiety and increasing their own self-confidence, some students stated that they tried to use friends' suggestions but '*still it was not a great experience*'.

The sense of failure in practice teaching in addition to lack of experience was identified as a supplementary factor to anxiety and low self-confidence among participants based on their statements. Sadler (2013) also highlights the relation between self- confidence and teaching context since self-confidence is "reflection of person's perception of their capacity to achieve a goal" (p.158). Based on the statements of a few of the participants, it can be interpreted that the positive and negative teaching experiences and their influence on students' self-confidence may be influential and predictors of future teaching behaviors. One of the pre-service teachers who took MiTEc in previous semesters commented, referring to his future practices, stating that, '*Our teachers tell us that once we start working we would feel like fish out of a pond. But I don't think I will feel that way*'. Contrary to his view another participant who had not taken MiTEc predicts that she '*will not be able to use the theoretical stuff*' she learned in her teaching. These may be the cases for other students as well.

Self-awareness and Observations Skill

Using videos was another aspect of MiTEc, which was also identified as a useful element in this study as well as previous studies. Use of videos has two facets and the benefits were identified to be two fold, accordingly. First of all, videos that were recorded in actual classroom settings were used and found to be useful in making associations with real classroom settings. They were helpful to pre-service teachers in improving their observation skills and allowed them to familiarize themselves with real classroom environments that they were going to be in during both school experience and student teaching courses. They were especially successful teaching aids to show pre-service teachers the student profile they will face and what kind of dynamics take place in an actual classroom setting, thus helping pre-service teachers to be prepared in advance. Being able to practice what to look for in the school environment through videos also help pre-service teachers' transition to school environment during the Practice Teaching course. They were able to acclimate to the school environment faster and conduct observations more efficiently in a much shorter time period. As one of the participants stated, they '*were more successful from the beginning in (their) observations at the school compared to friends who did not take microteaching and had trouble at the beginning*'.

The second use of videos was as a self- evaluation tool, which also helped for self-awareness purposes. For this purpose students recorded their own teaching experiences during MiTEc and were asked to watch and evaluate their own videos. This exercise allowed pre-service teachers to be aware of their own physical reactions as well as abilities. During MiTEc, immediately after teaching a lesson, pre-service teachers were asked to evaluate themselves. Pre-service teachers' responses point out the fact that initially they lack the awareness of their physical and vocal reactions in a classroom during teaching. Once they watch their video recorded during teaching, they recognize what they actually have done in practice. Such experiences allow students to recognize their own abilities and skills as well as what they need to improve.

Impact on other courses

Pre-service teachers' comments emphasize that the skills they have acquired or mastered during MiTEc were also useful and carried into other coursework in addition to the School Experience and Practice Teaching courses. They have stated that the presentations they have done were much more effective and received commendation from peers and they have identified MiTEc as a beneficial opportunity. Overall, according to the participants, pre-service teachers who took MiTEc were one step ahead and had more advantage during the Practice Teaching course.

Conclusion and Recommendations

Teacher education programs should be designed and must evolve in a way that teacher candidates receive the best possible education. By doing so better educational opportunities are provided for future generations. Founded on this idea, this study was conducted to evaluate the value and success of an elective course offered to pre-service teachers majoring in science education.

The findings of the study suggest that MiTEc provides beneficial opportunities to students for other courses including the School Experience and the Practice Teaching courses, which take place in real middle school environments. The benefits of the course were emphasized by both pre-service teachers who have taken MiTEc and those who have not. Communication and interactions between these two groups allowed pre-service teachers who have not taken the course to have a valid view on the course. MiTEc was giving an opportunity to participating teachers to experience 'what it means to teach a complete lesson with all the bells and whistles' and to learn about and practice lesson planning, classroom management, student teacher interactions. It also created a valuable opportunity to pre-service teachers to become self-aware about their own teaching abilities. Through watching their own teaching videos, they were able to recognize how their body language, voice tone and other communication skills as well as their teaching abilities. In addition, they were able to view how certain teaching strategies work in a classroom environment or how successfully they can execute them. However, probably the biggest benefit of the course was the opportunity it created for students to make the connection between theory and practice. The sooner such connection is made and put into practice, the more likely pre-service teachers will experience meaningful and more successful teaching moments. Such experiences may also be a determining factor for pre-service teachers' future practices. Although it was not a focus of this study to investigate the impact of positive and negative teaching experiences on future practices, it is definitely worth investigating such relations especially for pre-service teachers once they enter the workforce.

In terms of self-confidence in relation to teaching, it is a limitation of this study that it did not focus on exploring such relationship in depth and that only participants' comments and responses were reported. However, based on the data, it can be interpreted that opportunities allowing pre-service teachers to practice teaching in a controlled environment can increase self-confidence. Additionally, both positive and negative teaching experiences and their influence on students' self-confidence may be influential and predictors of future teaching behaviors and motivation. Further studies are recommended that focus on the relationship as well as on the impact of self –confidence on future teaching behaviors.

All of the participants in this study recommended this course to other pre-service teachers with the consideration of their experience in real school environment and the coursework they took during the four-year program. Overall, through this study, the elective microteaching course was identified as a successful attempt to create meaningful learning environments for pre-service teachers that in turn would help them in the process of becoming skillful, successful and self-aware teachers.

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