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# "I Want to Be a Teacher-researcher!" Self-Evaluation of Candidate Teachers Participating in the TÜBİTAK 2237 Project*

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**Abstract**

21st century skills are linked to teachers' professional development. The concept of teacher-researcher also emerged with this connection. This study is the product of a TUBITAK project that aimed to explain the concept of teacher researchers to prospective teachers. In other words, this project has been developed to better explain the concept of teacher-researchers, which supports teachers' active involvement in both teaching and research processes, to pre-service teachers and to increase their awareness of this concept. The project offered courses to prospective teachers under the titles of thinking education, scientific research methods, and skill learning. These courses were given online by expert teachers and faculty members working at various universities. The study lasted 6 days in practice and self-evaluation feedback was received twice at the end of the applications. 30 teacher candidates from different branches participated in the research voluntarily. At the end of the research, we conducted self-evaluation practices. We designed the study as a case study model to show how the program progresses. We used content analysis as the method for analysis. After the teacher candidates completed their self-evaluation, we identified 4 main themes. "Self-Evaluation, Expectation From the Project, Functionality Of the Project, and Practices In the Project". As a result, it was concluded that the project was able to reach teacher candidates who have the potential of the researcher teacher to think scientifically, democratically and critically.
**Keywords:** Teacher-Researchers, Professional Development, Self-Evaluation

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## Introduction

Researcher-teachers are defined as people who question facts and events in a collaborative manner and in accordance with scientific ethics, adopt an interdisciplinary approach to education from a holistic perspective, and adopt lifelong learning as a principle (Erdem, 2018). According to Fagundes (2016), a teacher researcher is a person who looks for the best ways to reach students in the teaching and learning process and uses different methods (cited in Akhan & Demirezen, 2020). Therefore, the teaching profession goes beyond traditional patterns in the Research TeacherTeacher-resercher Model. Teachers who learn while teaching, and use scientific research techniques therefore make their profession a lifelong learning profession (Miller, Cunha, & Allwright, 2021). In addition, teachers who conduct researches, contribute to both themselves and the students they educate through continuous professional development in their area.

In the 21st century, the teaching profession needs to be viewed holistically. A teacher must be able to do research and be eager to acquire new skills. In other words, a teacher's learning is a lifelong

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process.It is not a correct approach in the 21st century to evaluate the teaching profession and being able to conduct research in different categories. . In the 21st century, the teaching profession needs to be viewed holistically. A teacher must be able to do research and be eager to acquire new skills. In other words, a teacher's learning is a lifelong process. The idea of making such a difference would carry the risk of not being able to identify common points between researchers and teachers (Bergmark, 2020). Therefore, establishing a connection between the two professions will both strengthen cooperation and create a change in teachers' perspectives towards academy. When universities share their scientific studies with schools with a pragmatic philosophy (e.g. new methodologies, comprehensive teachings, courses that provide information that can be applied in practice, etc.), a two-way gain will emerge that benefits both teachers and researchers (Olin, Karlberg-Granlund, & Furu, 2016).

The concept of research competence has been accepted as one of the basic competences of the teaching profession (MEB, 2018).

Like in many parts of the world, significant developments are also taking place in Turkey regarding the professional development of teachers. Since 2012, the Ministry of National Education (MEB) has implemented an initiative under the theme "Teachers Making a Difference in the Profession" to recognize successful teachers. This initiative aims to highlight the qualities of teachers who have distinguished themselves in their profession, are well-known and respected in their communities, and have demonstrated exceptional achievements. The goals are to set these teachers as examples for their peers and to raise public awareness about the teaching profession. The criteria for selection include:

- Creating awareness through their professional activities,
- Developing good communication with their surroundings and being recognized and appreciated for their activities in the community,
- Training students who achieve success in national and international fields such as science, art, and sports,
- Executing successful projects that contribute to society in fields such as science, art, and sports.

Three teachers are selected from each province. Teachers are required to submit documentation of their work to the provincial directorates of national education for evaluation. The selection decision is made based on the assessments conducted by these directorates. To ensure an objective evaluation, the review committees consist of teachers, administrators, and faculty members. Teachers chosen through this process represent their provinces at official ceremonies organized by MEB on Teachers' Day. This initiative aims to honor successful teachers and serve as an example to other teachers and the public (Eroğlu & Özbek, 2020).

However, the fact that teachers read current research on their field, receive different certification training or complete postgraduate education can be perceived as an indicator that teachers have adopted this basic competence. These efforts of teachers are examples of their desire to contribute to lifelong learning and scientific developments in their professional development. Studies conducted in Turkey show that teachers' research competencies and obstacles are at a medium level, and that they conduct some research to improve teaching processes, strengthen classroom practices, and solve the problems they encounter (Yıldırım & Karadeniz, 2022). Various projects provide opportunities for teachers to conduct research. For example, the learning outcomes of TÜBİTAK 4006 science fair projects highlight the researcher teacher profile (Dogan, 2020; Selçuk, Atalmış, & Ataç, 2020). Therefore, the idea of becoming a researcher teacher is not only an option offered by the literature, but also a natural result of teachers' pursue to be integrated with the knowledge and skills of the century.

In terms of education policy, although there are some studies in Turkey, these are not yet at the desired level. Teachers are willing to learn scientific research methods and techniques for their



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personal and professional development, and they make suggestions that these trainings should be more practice-oriented and increased (Akhan & Demirezen, 2017).

When similar processes are scanned at the world level, it is seen that teacher education in America attaches importance to teacher research and other forms of practitioner inquiry. Regarding the subject, the importance of research conducted with teachers in professional development and for school reforms has emerged. It has been emphasized that universities' educational research, teacher training and the regulation of the current situation of schools should go in parallel (Cochran-Smith & Lytle, 1999). Studies on the professional development of teachers are based on university-school cooperation in Europe. For example; In the project carried out jointly by Norway, Sweden and Finland, how professional development can be structured and how the related deficiencies can be corrected were discussed and organized through a democratic and critical perspective (Olin et al., 2016).

Research has shown that traditional quantitative methods (such as teacher tests, performance scales, etc.) are not sufficient on their own to identify, organize, and address teachers' professional development needs. Looking at worldwide research, it has been identified that traditional quantitative data methods (teacher tests, performance scales, etc.) are useless in identifying, organizing and finding solutions to teachers' professional development needs. For example, it is thought that the standard assessment and tests used by Australia and England in their teacher education policies cause teachers and teacher educators to move away from the profession (Mayer & Mills, 2021). Instead, carrying out data collection, analysis and analysis processes together with teachers in cooperation with faculties and monitoring the academic, cultural and mental development of students together will support the development of both teachers and teacher trainers. For instance, in a study conducted in Canada; it has been concluded that providing training that develops educational leadership, curriculum, learning-teaching processes and mental health plays a role in ensuring the development of both teachers and students (Andrews, Murry, & Istvanffy, 2023). It is seen that the studies carried out are not limited to schools only, but also that teacher trainers are given a role from a holistic perspective. For example, it is seen that teachers' professional achievements depend on making changes in the areas of thinking, research and collaboration (Bergmark, 2023).

The concept of being a researcher-teacher is a process that requires the individual to take responsibility for their own learning. This process, called "learning to learn", can be structured by blending more than one perspective. For example, learning to learn can be achieved by sharing experiences with different people, making presentations, and trying to learn in groups. Within the scope of this project, it was expected that teacher candidates' learning would be concretized in four ways: learning to think, learning in groups, learning through experiences, and learning to acquire new skills (Davis & Davis, 2001 Cited in Erdem, 2018).

Learning to think: This type of learning helps develop thinking based on critical, creative and dialogic ways. Evaluation involves developing a verbal or written criticism on an idea. An evaluation in the form of comparing, evaluating and discussing different arguments is acceptable. Within the scope of this project, it is aimed to ensure that student teachers (candidate teachers) learn thinking skills, the importance of critical thinking and reflective thinking styles. In addition, it is aimed to ensure that they perceive their own and their friends' arguments by reflecting on the process through self-evaluation and peer evaluation.

Learning in a group: This way of learning helps students discover attitudes, ideas, beliefs of others and work collaboratively within the group. Learning some communication skills and transferring what has been learned during the time spent in the work group is important in terms of evaluating learning. Within the scope of the project, it was aimed to ensure that teacher candidates prepare lesson plans and joint activities together and that learning takes place within the group.

Learning through experiences: It is important to use all senses and the multi-channel processing abilities of the brain to learn from experience. Evaluation may be verbally directed to the question 'what did you learn from this experience?' In addition, sharing experiences written down is also an effective way of evaluation. Within the scope of the project, learning through experience was achieved by writing reflection diaries at the end of each day and discussing feelings and thoughts with the trainer (academics) teaching the course.



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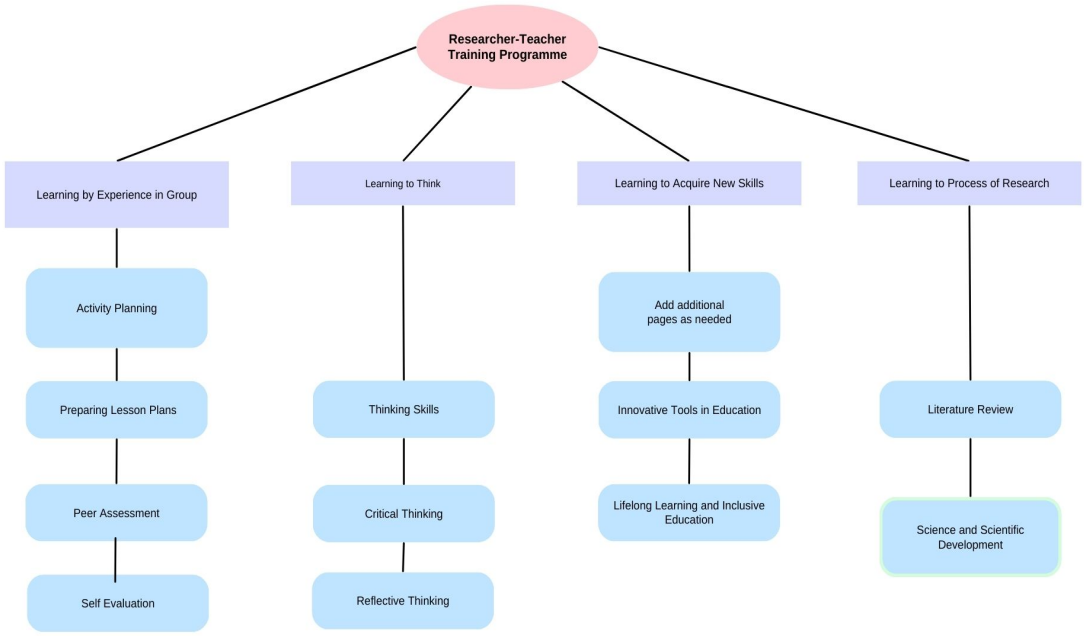
Learning to acquire new skills: This way of learning is useful in developing new skills. Evaluation can be made through observed behaviors (Erdem, 2018, pp. 71-73). Within the scope of the project, general evaluations about teacher candidates' ability to use new web tools and integrate them into their own areas were structured by the trainer (academics) teaching the course.

In this context, the project called "I want to be researcher teacher" was carried out for 7 days through online platforms, to improve skills in prospective teachers; such as; to learn through experiences, to learn to acquire new skills, to learn in a group, learn to think as can be seen in the diagram below.

Diagram 1

Researcher Teacher Training Programme




The aim of this study is to comprehensively evaluate participants' experiences and assessments regarding the project activities.

In this respect, research question of the study as follow:

For this purpose, answers were sought to the following questions about the teacher candidates participating in the project:

The Research Questions of the Study

1. What are their self-evaluations regarding the activities?

2. What are their opinions about whether the activities meet their expectations?

3. What are their opinions on the functionality of the activities?

4. What are their opinions about views regarding the functioning of the trainings (The project operation in general)?

5. What are their opinions about the project operation?



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## Method

### Research Design

This research was designed as a case study. Case study is a deep description and examination of a limited system (Merriam, 2014). On the other hand, Creswell (2007) indicated that it is a qualitative research approach to themes that depend on a case or cases identified. There are many kinds of case studies. In this study, program implementation case study was used. This kind of approach helps discern whether any implementation complies with its intent. It is also useful when implementation problems are demanded to reveal (Davey, 2019). The gains of activities in the project were evaluated concerning the participants and their views in this study. Self-evaluation forms were filled up by participants two times and then asked many questions to them by researchers to discuss further on their opinions and understand better. These questions related to the project's activities' gains. For example; "What is your opinion about the activity? ..... What does this sentence mean?" etc. So at the end of the day, researchers examined whether participants thought that their expectations of the activity were met and whether the sessions and activities were beneficial to be used in their professional life.

### Research Sample

In this study, maximum variation sampling method was used, since a mini sample was aimed to create and to gather reflections of people who can be a side of the study's problem (Yıldırım & Şimşek, 2016).

In order to ensure a widespread impact in the project, maximum diversity sampling was used. Information about the departments, classes, and grade point averages of the teacher candidates was obtained from the forms filled out by volunteer participants via Google Forms. To maintain impartiality in the selection process, participants with the highest and lowest grade point averages were randomly chosen, and as many participants as the allocated quota (5 from each university) were included.

In this project, two criteria were used for sampling; the first one is grade point average and the second one is the department of the participant. Students who had the highest and lowest grade point average were selected. Students who had the highest and lowest grade point average were selected.

While departments were identified, it paid attention to educators' departments. In other words, educators have represented the participants. Other than these two criteria, the most crucial thing was to be able to provide training sessions for volunteer candidate teachers. For this reason, the participants had to be volunteers to participate in the project. The departments of the teacher candidates who participated in the research are shown in Table 1.

**Table 1**
*Study Group*

| Department | f |
|---|---|
| Social Studies Teaching | 11 |
| Science Teaching | 6 |
| Primary School Teaching | 5 |
| Pre-School Teaching | 3 |
| Foreign Language Teaching | 2 |
| Special Education Teaching | 2 |
| Math Teaching | 1 |
| Total | 30 |

### Research Instrument and Procedures

As part of the teacher-researcher project, participants were asked to engage in various activities such as preparing lesson plans, developing reflective thinking activities, designing activities based on Toulmin's Argumentation Model, teaching for disadvantaged groups, creating mind maps, and using Web 2.0 tools to design in their own fields. At the end of the day, participants were asked to complete self-assessment forms to evaluate these activities. Through these forms, data regarding participants' feedback and experiences with the activities were collected.



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In this study, data was collected via Google Forms. Participants answered the following questions two times at the end of two different days.

1. Today's activities met my expectations because...

2. The training that was most useful to me in today's activities...

3. My self-evaluation about the activities...

4. My opinions about the project...

The questions were open-ended and prepared by researchers. Participants answered the questions online. And then researchers asked questions verbally. For instance, "What do you think about this issue? or why did you write this sentence, can you explain?" etc. In this way, researchers learned their opinions further about the process.

**Data Analysis and Process**

To explain how the data was analyzed through content analysis, the process involved several steps. Initially, the raw data was examined to identify key concepts that could explain the data in line with the research objectives. The data was then conceptualized and organized in a meaningful way. Following this, underlying themes within the data were identified to provide a deeper understanding. These themes served as the main frameworks for interpreting the data. Coding was performed to determine which theme each piece of data belonged to. Once coding was completed, codes and themes were organized logically, resulting in the identification of findings. In the final step, the findings were systematically described and interpreted. The analysis used an inductive approach, aiming to derive general conclusions from specific data points. This process followed the steps of coding, theme identification, organizing themes, and describing and interpreting findings as outlined by Yıldırım and Şimşek (2016).Data was analyzed via content analysis. It was aimed at reaching concepts that can explain the data. For this, firstly data was conceptualized and then arranged. Finally, themes that explain data were determined. Accordingly, inductive method was used in the analysis. The data analysis process plan was: coding data, finding themes, arranging codes and themes, and identification and interpretation of findings (Yıldırım & Şimşek, 2016).

**Validity and Reliability**

Validity and reliability are crucial aspects of qualitative research, and various approaches to these concepts exist. Creswell (2016) suggests creating an environment where participants and researchers are actively involved in the process to enhance validity and reliability. Providing participants with clear information about the process allows them to express their views more openly and accurately, thereby increasing the reliability of the research.

In this study, participants were given comprehensive information about the project, and a meeting was held at the project's outset. During this meeting, the project coordinator provided detailed information on the project's objectives, data collection tools, and the process. This briefing clarified the process and the participants' expectations of the project.

Miles and Huberman (1994) recommend obtaining peer views and conducting coding collaboratively among researchers in qualitative research. In this study, researchers worked synchronously during the coding phase and referred to relevant literature. Existing coding methods and themes from the literature were considered to determine and name the codes and themes for this study. By using information from the literature, the data were analyzed in a more consistent and comprehensive manner. The naming of codes and themes based on the literature allowed for a deeper evaluation of the data, thereby enhancing the study's validity and reliability.

## Findings

In writing the findings, the qualitatively obtained data were interpreted and presented by the researchers. After the questions determined during the data collection phase were asked at the end of each day, the data were analyzed in accordance with the project's objectives. In this section of the



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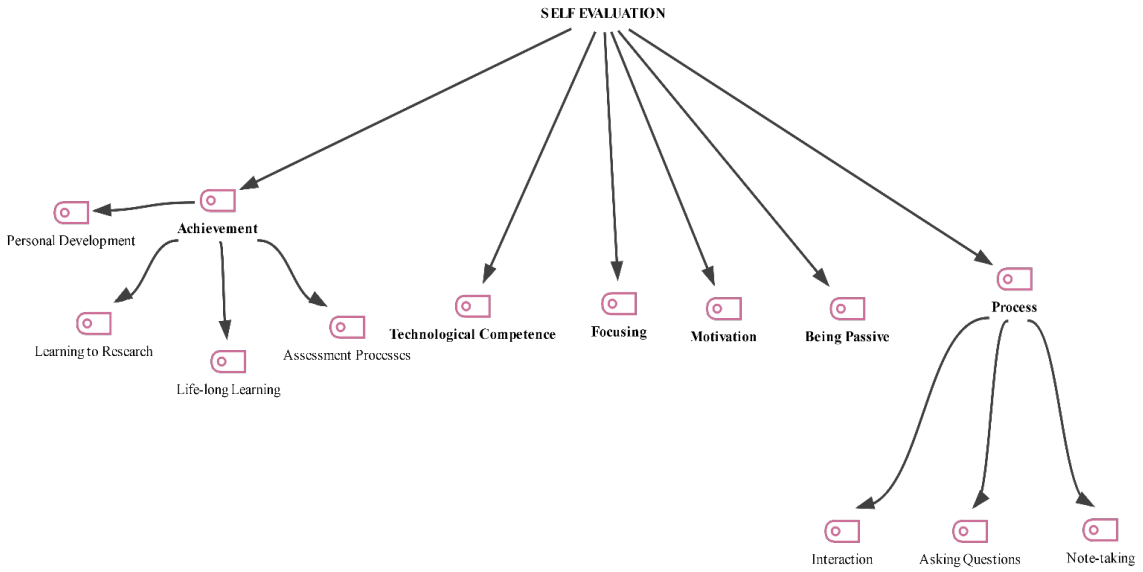
research, the participants' responses to the forms were interpreted and their quotations were included.

**Self-Evaluation**

**Figure 1**
Self Evaluation Hierarchical Code Submodel




Participants were asked at the end of each day throughout the project, "What are your self-evaluation about the activities?": The point of the question is to get them evaluate the effects of the activities on themselves. The answers to the question are combined under the theme of self-assessment

In the analysis made regarding self-evaluation, teacher candidates put forward views as; outcomes (personal development, learning to research, evaluation processes, and lifelong learning) as well as technological competence, being passive, motivation, focus, and process (interaction, asking questions, and taking notes).

The views of the participants about professional and personal development were coded as outcome

> *In general, I think the activities are useful and will provide development for a teacher candidate in terms of professional processes (O.Y)*
>
> *The event is very useful and I think I can improve a lot personally (N.P).*

The opinions of the participants about identifiying a framework for progress with a new vision and perspective are collected in the code of personal development:

> *It gave me pleasure to know things I had not knew. I learned more about the applications and activities I can use (Ö.D).*

One of the project's goals, learning to do research, also emerged in the main theme of self-evaluation:

> The activities were beneficial for both personal and professional development, as they taught me to think and research, while also making me conscious of obtaining new experiences (N.P).

The other sub-goal of the project, lifelong learning, emerged as lifelong learning in the theme of self-evaluation of this study.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> The activities were good and we learnt many useful things, especially for life-long learning, I learned that I always have to take one step further and constantly update myself. (M.C.)

Participants stated that they learned through the project assessment and evaluation methods to benefit in their professional lives. These opinions were coded as evaluation processes:

> Sessions of the project as on reflective thinking and peer evaluation will be very useful for me, I will apply them (M.C)

While making their own evaluations, the participants also evaluated the decrease in efficiency caused by connection problems during the process. The views of the participants in this respect have been coded as technological competence:

> *I could participate in the activities individually, but I think I could not convey this to the other parts caused from the internet (İ.D.)*

While making their self-evaluations, the participants also expressed their inability to be very active in class. Expressions of these changes are coded as being passive:

> *I sometimes fell into passive position during the day-long training sessions. Sometimes I lost my attention and motivation (U.A.)*

> *Since I could not provide sufficient interactive participation, I could not always feel that I was on track. I could only participate loud when the conditions were suitable for it (M.İ.)*

The performance of the participants regarding motivation throughout the process was coded as motivation:

> *Especially in the last two days, my motivation decreased. I had to get over this. Unfortunately, I succumbed to this and did not attend the classes on the last day (E.G.)*

> *At the events, I was a little worried at first that I wouldn't do it, but I got motivated as I saw that I was able to do activities (F.KA).*

The problems that participants experienced with concentrating their attention during the process were coded as to get focused:

> *After a long time, it is difficult for me to be in front of the computer for such a long time in online education. It challenges my focus. (F.K).*

> *The reason why I did not participate interactively was that I stayed in a dormitory and shared my room with 5 friends, and the noise in the room etc...(M.İ).*

They stated how and in what way the participants participated in the activities throughout all theoretical and practical courses. The participants' statements in this regard were coded as interaction, asking questions and note taking under category of the process.

In the code of interaction, participants indicated how productive the mutual dialogue with the lecturer or teacher was:

> *The procedures of the activities were completed theoretically. Having informative videos on some topics helped me concentrate on the sessions. One of our teachers' asking questions suddenly during courses attracted my attention (Z.M.T).*

> *It was productive as I actively participated in the activities (B.O).*

In this study, participants' views about being able to ask questions to academicians and teachers that carry on courses were coded as asking questions:

> *At the same time, participating in the courses interactively and asking questions helped me more (I.K.)*

> *I was able to ask whatever was on my mind without hesitation (B.O.).*



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The participants actively participated in the activities during the process and took notes that would be useful to them later. The participants' thoughts in this regard were coded as taking notes in the study:

> *Activities were prepared to contribute to us in various subjects and fields. I received information that I could use in my pre-service and in-service training. I also took notes to make them permanent (Ö.D).*

Teacher candidates evaluated their own performances during the activities of the project during the self-evaluation process. Participants generally reached conclusions and make evulations about how to learn better**.**

**Expectation From the Project**

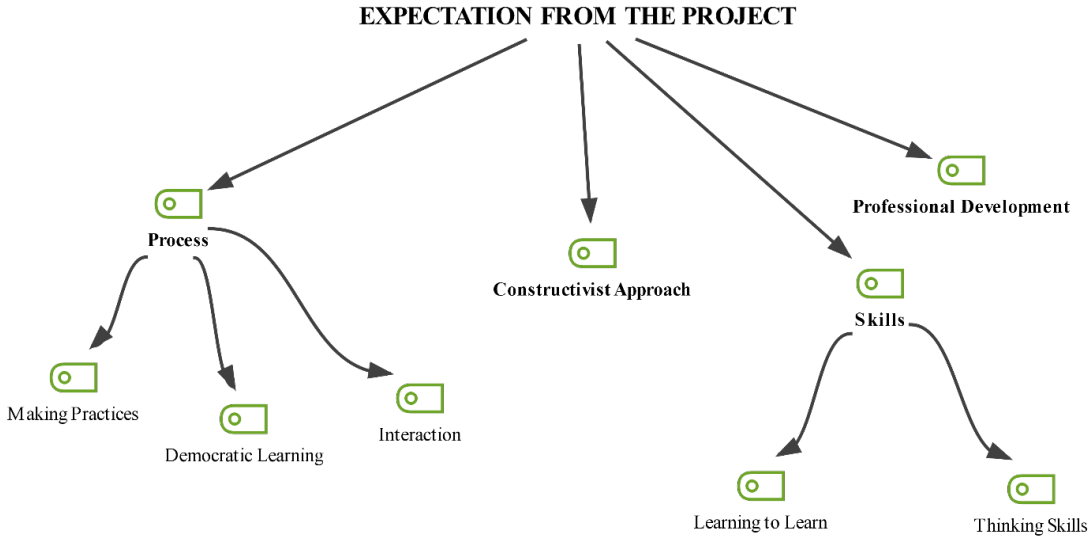


**Figure 2**

Expectation from the Project Hierarchical Code Submodel

Participants were asked at the end of each day throughout the project , "What are your self-evaluation about the activities?": The point of the question is to get them evaluate the effects of the activities on themselves. The answers to the question are combined under the theme of self-assessment

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One of the project's goals, learning to do research, also emerged in the main theme of self-evaluation:



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*Activities were prepared to contribute to us in various subjects and fields. I received information that I could use in my pre-service and in-service training. I also took notes to make them permanent (Ö.D).*

Teacher candidates evaluated their own performances during the activities of the project during the self-evaluation process. Participants generally reached conclusions and make evulations about how to learn better. At the end of the day, participants were asked: "Did the activities during the day meet your expectations?" Why?" The answers given by the participants were collected under the theme of Expectations from the Project in this study.

The participants' thoughts and demands regarding the subject are divided into categories and codes as process (making practice, democratic learning and interaction), constructivist approach, skills (learning to learn-thinking skills), professional development.

The participants' statements in which they directly conveyed their expectations during the project process were categorized as process. Their expectations regarding the activities in the process were coded as making practice, democratic learning and interaction. In the making practice code, they evaluated their thoughts about making practices regarding their own learning in the activities:

*For example, I learned a few more sites that I had not known before to search and review articles (İ.D).*

Expressions in which participants associated their professional development with learning the democratic process were coded as democratic learning:

*... I learned more about democratic education and critical thinking (F. K.).*

During the project process, importance was given to creating an applied and interactive learning environment. In parallel with this purpose, participants stated that activities of the Project were conducted in interactive learning environment. These expressions were coded as interaction in the study.

*The instructors explained the topics very clearly and interacted with us, making it a useful training (N.P).*

Participants' reinforcement of what they have learned and adding new information to what they have learned is categorized as constructivist approach in this study:

*I both learned new things and learned the details of things I already knew (B.O).*

*I gained insight into activities I did not know about (O.Y.)*

In this project, which emphasizes a comprehensive and detailed study in terms of development, the participants stated that they had an expectation that would positively reflect on their professional development.

*… I learned important information about my area (Z.M.T).*

Within the scope of the project, participants stated that their expectations were met regarding the development of their skills. These thoughts were evaluated in the study in the categories and codes of skills (learning to learn - thinking skills). The learning-to-learn code was assessed as participants applying a strategy to their own learning:

*I both learned new things and learned the details of things I already knew (B.O).*

*For example, I learned a few more sites that I had not known before to search and review articles (İ.D).*

Within the scope of the project, it was also focused on developing the thinking skills of candidate teachers. For this purpose, the participants stated that they improved their thinking skills. These expressions were coded as thinking skills in the study.

*...I learned more about democratic education and critical thinking. (F.K).*



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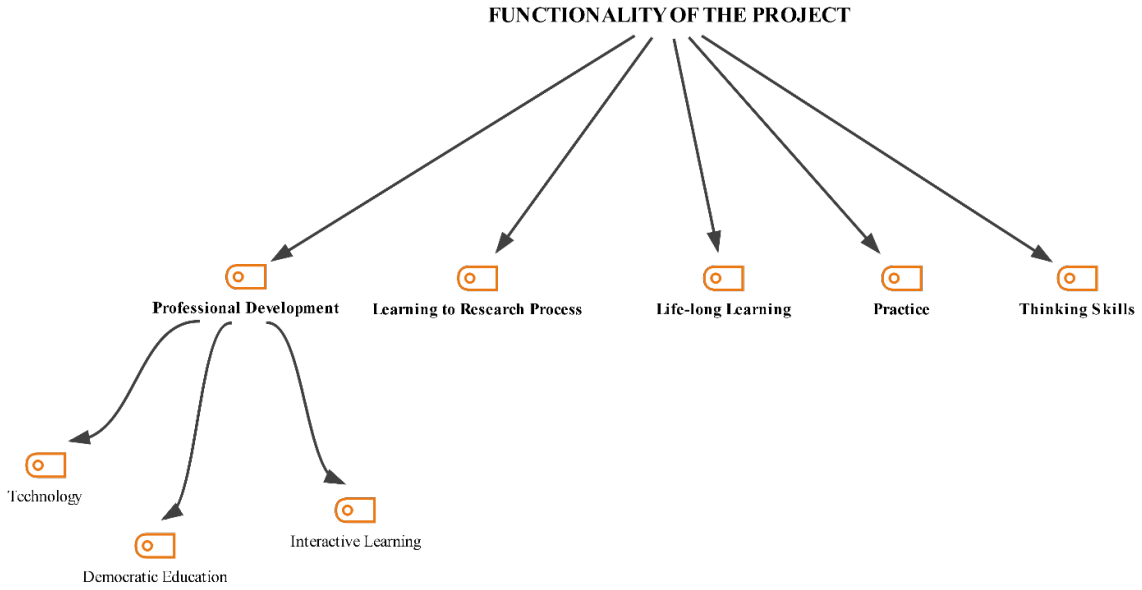
When evaluated in general, it can be said that the participants' expectations from the project in terms of professional and personal development were met. These expectations can be summarized as learning to think and learn in line with the goals of the project. Additionally, it can be said that the project meets the expectations in terms of determining the principles of democratic learning within the scope of the knowledge that they will transfer and use when they become teachers.

**Functionality of the Project**

Figure 3

Functionality of the Project Hierarchical Code Submodel




At the end of the day, participants were asked "Which training session was most useful to you in the project?" The answers received were combined under the theme of "functionality of the project".

Participants evaluated the learning tools they used during the process among the topics that were useful to them:

> *Web 2 tools, lifelong learning, and scientific research are among the activities that are most useful to me (S.H).*

During the process, some participants commented that they learned how to provide a democratic learning environment, adding to the skills they would use throughout their professional lives:

> *I learned useful information about scientific education, democratic education, and John Dewey (B.O.)*

They found the application of the principles of interactive learning to them functionally positive in the process:

> *It is very enjoyable and pleasant to listen to our teachers/lecturers explain the subject. Especially their conducting sessions by chatting interactively is very efficient (MKS).*

The experience of conducting scientific research, which is one of the main goals of the project, also contributed to learning the research process.

> *Examining the sites and personal development platforms that I will apply for research (S.K).*

Another aim, lifelong learning, is also included in the main theme of the project's functionality:

> *I learned that people prefer groups similar to themselves, and this phenomenon even occurs in babies (N.P)*



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All activities/practices made during the process of the project, were included in the main theme of the project's functionality:

> I *had fun and learned a lot while designing the mind map activity (U.A.)*

Improving thinking skills, which is one of the goals of the project, was also included among the codes in the functionality of the project:

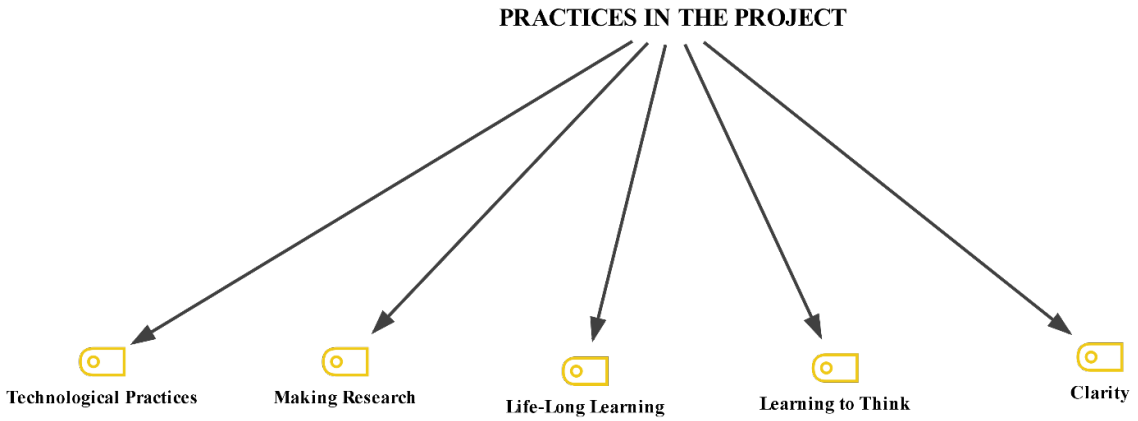
> *I think the critical and reflective thinking training sessions in the project will also be useful in my professional life (M.İ)*

When looking at the impact of the functionality of the project on the participants, it can be said that the goals of the project are evaluated in terms of their usefulness and being beneficial.

**Practices In the Project**

Figure 4

Practices in the Project Hierarchical Code Submodel




At the end of the day, participants were asked about the project: "What would you like to happen if the events were held again?" The answers received were combined under the theme of Practice in the Project

Participants expressed their opinions about the practices in the project. Participants' opinions were coded as technological applications, doing research, lifelong learning, assessment and evaluation, learning to think, and comprehensibility.

The practices were made in each category reported by the participants. For example, Web 2.0 tools used in education are coded as technological applications:

> *In the developing digital age, web 2.0 tools are starting to take an active role in student participation and in the processes of lessons (O.Y.).*

Learning the research processes, which is one of the objectives of the project, was evaluated in the application theme.

> *It is Ms. Nurtaç's session. because in that class I was learning the practice of things that had been always theoretical before. I was also curious about the content and method of Ms. Fidan's course today (E.G).*

Participants also expressed their opinions about the practices regarding the objective of lifelong learning: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*I would like to be provided with examples of practices in lifelong learning session that can be used during education in which we can improve ourselves in accordance with our field. (U.A).*

In the project, learning to think practices were carried out. The participants also expressed their opinions about these practices.

*Frankly, I would like to take all of the courses in the project again, but most of all I would like to take the 'Learning to Acquire New Skills' course again (İ.D)*

Participants also expressed their opinions regarding the comprehensibility of the activities carried out in the process:

*We were a little bit confused in the last event, this may be due to the program TEAMS, of course. Additionally, I think I would have liked more explanatory instructions, because at first we had some trouble with my groupmate regarding the instructions for our assignment (S.K).*

## Discussion, Conclusion and Recommendations

As an important component of the "I want to be a researcher teacher" project, in the self-evaluation section, candidate teachers completed reflective thinking activities by making practices after being informed about self-evaluation. Self-assessment activities, which require metacognitive skills in which reflective thinking is used in learning activities, have been used as a tool to improve the learning activities of their students both in their own studies and for their professional development. Self-assessment activities are important components of teacher training. Studies on the this area show that self-assessment is suitable for use by candidate teachers in terms of learning outcomes. For example, in the study conducted by Erman Aslanoğlu (2022), it was concluded that peer and self-assessment practices were effective on the development of students' writing skills and their attitudes and interests towards doing writing exercises. Similarly, Süğümlü (2021) stated that there are deficiencies in self-assessment questions in Turkish textbooks and that this negatively affects students' speaking, writing, listening and reading skills, and made suggestions that there should be questions about self-assessment in textbooks.

Self-evaluation is also a product of reflective thinking. When the contributions of reflective thinking for teachers are examined;

- Allows the teacher to monitor his/her professional development.
- Improves the ability to analyze and understand events/cases in the classroom.
- It enables students to reflect on their learning experiences that increase learning.
- It helps to create learning environment which is attractive, procedural and thinking processes are conducted.
- It ensures personal and professional development, effective school culture and organization of classroom life (Yeşilyurt, 2021, pp. 248-249).

In a study examining the self-evaluation skills of pre-school candidate teachers, it was concluded that the experiences gained by the candidate teachers from their teaching practices, the feedback they received, and their self-evaluations positively affected their reflective thinking skills (Altın, 2020). In parallel with this idea, it was concluded that keeping reflective diaries for the professional development of teachers who encountered burnout syndrome in the first years of their profession and the effectiveness of daily teaching activities improved teachers' reflective thinking skills (Göker and Göker, 2020).

In this study, during the self-evaluation process, candidate teachers stated that they had a new learning experience, both in accordance with the aims of the project and in a way that they could reflect their own experiences, and that they were generally satisfied with the results. Their self-evaluations reveal that the project achieves its goals in terms of practice, research and lifelong learning. When considered in terms of professional development, it can be said that the lifelong


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learning process is an important experience for the teaching profession. Self-assessment exercises are a vital element of both personal development and lifelong learning.

When the opinions of the participants are evaluated, it can be said that they had the opportunity to learn by practice. This practice found more response in activities related to learning the research process and assessment and evaluation. At the same time, practical training processes carried out throughout the project; Interactive learning opportunities gave participants the opportunity to actively participate in activities such as asking questions and encouraging sharing of ideas. When we look at the undergraduate programs and pre-service practices in the field of teaching, it is seen that there are generally no practical studies, and attempts to put theoretical knowledge into practice are limited only to the teaching practice courses. The literature on the subject is mostly about the adequacy of the teaching practice course and whether the theory and practice parts of teacher training programs support each other (Aslan and Sağlam, 2017; Kadakal and Polatlar, 2021; Yücel and Mızıkacı, 2023). However, it was found important for candidate teachers to make lesson plans (Süral, 2019; Davran, 2020; Yıldırım and Yıldırım, 2020) and design activities (Okumuş, 2021; Bilican, 2022) during the pre-service training process to prepare them for actual teaching experiences in their own classroom. It has been concluded that some of the courses given in pre-service training cannot be used much in terms of usefulness when teachers start their careers. For example, some of the teachers suggested adding some courses such as National Education legislation, official correspondence, folk dances, project preparation training to the classroom teaching undergraduate program (Çelik, 2020). In parallel with Çelik's research, teacher candidates in this project were provided with training that would benefit their principles when they became teachers. Participants stated that activities related to thinking skills, learning the research process and lifelong learning would be useful in their professional lives. In addition, when the themes, categories and codes revealed in the content analysis of the views of the participants of the project are examined, their expectations from the project are that there will be interactive and practical activities. The fact that the participants stated that they expected a project targeting democratic learning ways that support 21st century skills is consistent with the literature. However, another skill that the participants thought was useful in the project was research skills. Learning the process of conducting research in the project attracted the attention of prospective teachers with the practices they made.

In line with the aims of the project, the importance of thinking skills in the professional development of candidate teachers was emphasized. In parallel with this purpose, it can be said that the teacher candidates (the participants) understood the characteristics of the researcher-teacher in terms of thinking skills and emphasized them in the functionality of the project. It is stated in the literature that critical thinking skills are directly linked to the education that individuals received (Uyar and Çiçek, 2020; Cakan-Akkaş and Kabataş-Memiş, 2021). Research has revealed that there are deficiencies in providing critical thinking development in in-service training (Yücel, 2021; Durnacı and Ültay, 2020; Özelçi, 2020).

Another point that teacher candidates draw attention to when making a self-evaluation is their opinions about the usefulness of technology applications and practices in their professional lives. In the project, teaching Web 2.0 tools and discussing how to integrate them into lessons during the courses, enabled the prospective teachers to express positive opinions on this subject. In parallel with these thoughts of the participants, there are studies in the literature on the integration of educational practices with technology. Studies have emphasized the necessity of using 21st century skills in teacher education (Çelik, 2020; Muslu, İmer-Çetin, Okul, 2022).

In conclusion; most of the participants stated that they were able to actively participate in the most of activities, ask questions and they found sessions conducted throughout the project very useful for their personal and professional development. This contributed to the development of learning by doing and experiencing.

**Recommendations**

- Provide more guidance and structured feedback during the self-assessment processes for teacher candidates. Regular review and enhancement of these processes with supporting materials are recommended to make self-assessment activities more effective.



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- Diversify and increase reflective thinking activities to help teacher candidates develop these skills. Incorporate various methods that promote reflective thinking, such as group discussions and case analyses.
- Offer more training and practical sessions on the integration of Web 2.0 tools into teaching processes. Providing additional practical opportunities for teacher candidates in technology use can enhance the effectiveness of their training.
- Emphasize activities and training that develop research skills in projects. Focus on the role of research processes in the professional development of teacher candidates by creating programs and support mechanisms to strengthen research skills.
- Develop comprehensive training models that support the application of theoretical knowledge in practice within teacher education and pre-service training. These models should enable teacher candidates to apply theoretical knowledge to practical classroom scenarios.
- Integrate peer assessment and self-assessment practices more broadly into teacher training programs. These practices allow teacher candidates to evaluate their own development and receive feedback from others to make improvements.
- Strengthen feedback and support mechanisms to increase the effectiveness of self-assessment and reflective thinking processes. Provide additional resources and counseling services to help participants overcome challenges encountered in these processes.

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