

The Eurasia Proceedings of Educational & Social Sciences (EPESS), 2022

Volume 28, Pages 36-42

**IConSE 2022: International Conference on Science and Education**

## Opinions of Novice Mathematics Teachers on Improving the Teacher Induction Programme

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**Abstract:** Teacher induction programs are education systems designed to improve the knowledge, skills and mental structures of novice teachers. If we look at the induction program in Turkey, in March and October 2016, some radical changes took place in the induction process. With this change, the number of studies on the induction process has increased, and studies reflecting the views of novices on the induction program, regardless of field, have taken their place in the literature. However, as it is known, the field-specific needs and problems of novice teachers in different fields may change. In particular, it has been revealed that novices in the field of science and mathematics have more special needs than novices in other fields. Based on this idea, in this study, the views of novice mathematics teachers on the development of the induction program are discussed. For this purpose, 27 novice mathematics teachers who have just completed their induction processes were asked to make suggestions for the improvement of the induction program, taking into account their own experiences. The case study method was used in the study and the data were analyzed using the content analysis technique. Findings are presented in the form of MAXQDA maps, and quotations from teacher responses are also included. It has been revealed that the majority of novice mathematics teachers want support for the field. In addition, they stated that there should be mentors from the same field as the novices in the school and in the region, and that opportunities should be offered for them to develop themselves.

**Keywords:** Induction program, Novice mathematics teachers, Program development

### Introduction

Teacher induction programmes are official or semi-official programmes that aim to support the teachers who are in their early years having completed the pre-service training (Beijaard, Buitink & Kessels, 2010). Various studies have demonstrated that well-thought and well-implemented teacher mentoring and induction training programmes are successful in increasing the professional satisfaction and effectiveness of novice teachers (Ingersoll and Smith, 2004). Having looked at the induction programme in Turkey from 1995 to 2015, it is found that it was carried out within the scope of the "Regulation on the Training of Novice Officials" of the Ministry of National Education. Then, in March 2016 and October 2016, some radical changes took place in the induction system. With these changes, the number of studies on the novice teacher training process has also increased (Cam-Tosun & Şimşek, 2018; Gökulu, 2017; Gül, Türkmen, & Aksel, 2017; Hangül, 2017; Kılıç, Babayigit, & Erkuş, 2016; Kozikoğlu & Çökük, 2017; Naillioğlu Kaymak & Sezgin, 2021; Nayır & Çetin, 2017; Önder, 2018; Özen, Kılıçoğlu, & Kılıçoğlu, 2019; Ulubey, 2018). These studies mostly include the opinions of novice teachers about the induction process, in other words, the evaluation of the process. However, induction systems are professional development programmes and they need continuous improvement. Moreover, it is known that the content of professional development programmes ought to be updated within the framework of teachers' changing needs and diversifying conditions (Özen et al., 2019). However, in Turkey, professional development activities for teachers are usually carried out with courses or seminars (Bümen, Ateş,

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- Selection and peer-review under responsibility of the Organizing Committee of the Conference

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Çakar, Ural, & Acar, 2012). It is known that the induction programme, which is still considered anew, provides support to novices mainly in the context of seminars and mentoring (Baran-Kaya, 2019).

Considering the current induction system, the idea is that once a teacher is assigned, they will somehow learn the competencies of the profession over time is quite prevalent (Buldu, 2014). In addition, the current induction system is for all novice teachers, and given the qualifications that novices gain, it is possible to say that issues such as legislative knowledge, some personal characteristics and classroom management come to the fore. Opportunities to improve the knowledge of teaching the field are almost non-existent (Baran-Kaya, 2019). However, as known, novice teachers from different fields have different needs and difficulties, and novice mathematics teachers have some peculiar ones (Kralik, 2009). Parr and Papakonstantinou (2016) argue that, among these needs, the knowledge necessary for teaching comes to the fore. Apart from this, novice mathematics teachers have work-related needs, professional development needs, environmental needs, social cohesion and need to know their legal rights, which are similar to other novice teachers' needs (Faltado & Faltado, 2014). This study aims to address the proposals of current novice mathematics teachers to improve the induction system in order to meet the needs of future novice mathematics teachers, since it is needed to understand how the induction programme operates for novice teachers and to identify the problems and disruptions experienced (Özen et al., 2019). Thus, when necessary, some revisions in the induction system can be made in the context of these needs and suggestions.

## **Method**

In this study, the case study method as a qualitative research method was used. As it is known, case studies are studies conducted in the form of an in-depth description and analysis of a circumscribed situation (Merriam, 2013). The case study method was used in this research, as the suggestions that novice teachers provided for the induction system based on their own experiences were analysed in-depth.

### **Study group**

27 lower-secondary mathematics teachers who completed their induction training in the 2018-2019 academic year participated in the study. All of the participants work in schools affiliated with the Turkish Ministry of National Education. Easily accessible sampling method was used to determine the participants. Participation in the study is voluntary and participants' identities remain confidential. While the excerpts were presented, the teachers were named as Ö1, Ö2, ..., Ö27.

### **Data Collection and Analysis**

The data of the research was collected in the written format. Firstly, questions about what could be done to improve the induction training programme were sent to mathematics teachers, whose induction had been completed, in the written format as well. Teachers wrote their answers in the spaces below the questions. Then, the data was analysed through content analysis. Thus, codes with meaning were generated from the data, then themes emerged from interrelated codes, and contextually reiterative and valid outputs tried to be accessed. Thus, the data is presented under 5 themes, which will be discussed in detail in the findings, including support for the field, seminars, professional interaction, providing various facilities and opportunities for development beyond the existing ones. In the analysis of the data, the MAXQDA programme as one of the qualitative data analysis programmes was used and the findings were presented in the form of a MAXQDA map.

## **Results**

The findings of this study address the suggestions of novice mathematics teachers based on their own experiences on how the induction process can run better, and are presented in brief in Figure 1 below. As can be seen in Figure 1, when the support that the novice mathematics teachers required based on their own induction experiences in the induction training is examined, it is seen that those suggestions are presented in 5 dimensions, namely the support for the field (f=24), professional interaction (f=23), seminars (f=17), and the provision of various facilities (f=15), and development opportunities other than the existing ones (f=12). The participants predominantly made suggestions about giving support to the field and field teaching (f=24).

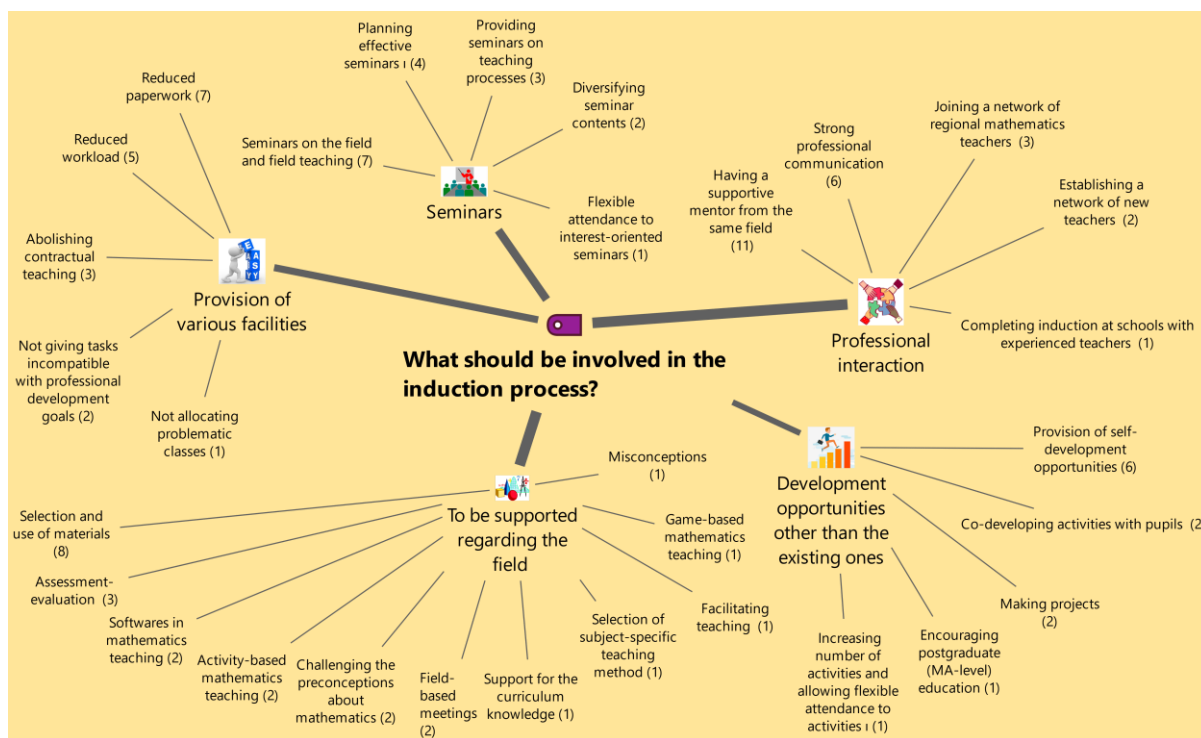


Figure 1. Suggestions of novice mathematics teachers regarding the induction process

The novice mathematics teachers expressed that they needed support in such areas as selection and use of materials in mathematics teaching ( $f=8$ ), assessment-evaluation ( $f=3$ ), activity-based ( $f=2$ ) or game-based ( $f=1$ ) mathematics teaching, challenging preconceptions about mathematics ( $f=2$ ). Among these teachers, T11 underlined the need of support to the field by stating that “*Training for programmes such as material education and Geogebra could be provided*”. T7 also underlined that need and stated that “*We could have received more academic support in terms of teaching. We generally received support on education, but various presentations and activities related to mathematics could have been provided. It would have been even better if these activities were in a way that we could use them in our classes*”.

Another prominent dimension is the professional interaction dimension. T17 stated that “*An mentor should be chosen from those who are experienced in their own branches. If this cannot be achieved, an mentor from another school should be invited*” and addressed the importance of having an mentor from the same field during the induction process. T4 stated that “*I think we should interact more with our experienced [senior colleague] teachers, excluding unnecessary details [during those interactions]. We should get more information about delivery, student behaviours, etc. The important thing is to benefit from their experiences and add something to [our knowledge]*”, and drew attention to the importance of making strong professional communication with experienced teachers. T32 emphasised the same concern with, “*More effective things could have been done in cooperation with the administration, the mentor, and the novice teacher*”. T14 stressed the need to develop cooperation particularly among newly appointed teachers and stated that “*To support new teachers, a group of new teachers in the same region can be established. If there is a separate group for each region or town, meetings can be held on certain days of the week, in which teachers can share their experiences and activities with each other, and such topics as how we can be more useful for pupils can be discussed*”.

Participants also made some suggestions regarding seminars, which is an important component of the induction process in Turkey. Particularly, having seminars for the field and field teaching has been most commonly emphasised issue in this dimension. In this regard, T6 argued that there needs to be seminars on misconceptions and solution suggestions in mathematics whilst T20 mentioned that there is a need to have seminars for mathematics-specific teaching methods and applications. T18 emphasised that seminars need to be delivered by experts of the field stating that “*The seminars we attended should have been about the field of teaching mathematics and these seminars needed to be given by really competent and equipped people*”. Another participant T9 stated that “*The first year at job is really overwhelming. We attended seminars all year long, both on Saturdays and on Sundays, which exhausted me. There should not be trainings in such frequency and the programmes prepared for the induction process in the local national education [presidencies] were quite useless, was a waste of time. More efficient trainings should be planned for future novices*”. In this regard, they

pointed out that the efficiency of seminars ought to be given due diligence rather than giving importance to their frequencies.

Some of the novice mathematics teachers also stated that various facilities need to be provided with the novices in order to alleviate the responsibilities of the first year of teaching. Some novice teachers mentioned that filling out documents and forms requires long periods of time and hence, such requirement needs to be moderate ( $f=7$ ). T36 supported this suggestion stating that *“It would have been supportive [for new teachers] if the paperwork burden that they borne would be lowered so that they could have been facilitated for focusing on pupils and their attainment”*. T19 also stated that school administrations usually gave the problematic classes to novice teachers, and suggested to get rid of this practice for the following years. T1 underlined the importance of lowering the workload of novice teachers by stating that *“Instead of giving them a lot of work and making them feel burnt-out, they can be treated in a more encouraging manner. Because we were contract-based and novice teachers, we were always exploited”*. T20 and T30 specifically emphasised the workload allocated by the administration, which was incompatible with the professional development goals, and mentioned that this needs to be eliminated. T20 supported this idea stating that *“The administration should not put everything on the shoulders of the new teacher. Is this person going to deliver a class or do a watch or deal with administrative documents? Especially if it is a subject teacher, it is time for them to solve questions [coming from pupils] during the breaks. Everyone should perform their own tasks, not throw them on novice teachers”*.

Some of the participant novice teachers stated that there ought to be other development opportunities in order to develop professionally. For instance, T2 said that *“We partially learned how other countries achieved success in the Comparative Education modules at the university [education]. But it will be more effective to learn by going [to those countries] and seeing [them] in person, by undertaking and living their practices [at first-hand]”*. In other words, T2 suggested to send novice teachers abroad to contribute to their personal development with such opportunities provided with them and that this could be more effective. T3 stressed that activities about pupils could be organised and stated that *“In order to support new teachers, many activities can be organised where teachers can spend more time with pupils. Thanks to these activities, teachers will have the opportunity to get to know their pupils better”*. In addition, T25 stated that the variety of activities in the induction programme ought to be increased whilst T23 stated that novice teachers could be encouraged to obtain a Master's degree.

## **Discussion and Conclusion**

This study examines the suggestions of novice mathematics teachers for the development of the induction process, and the results of this study suggest that the novices mostly prefer to receive support for the teaching of the field. Many studies addressing the needs of novice teachers also support this result (Burn, Hagger, & Mutton, 2015; Feiman-Nemser, 2003; Grossman, 1990). It is found that the participants need support regarding the teaching of the field, particularly the selection of materials for the subject of mathematics, how to use these materials, and the use of technology in the field of teaching. Faltado and Faltado (2014) have similarly showed that the work-related needs of novice teachers are more related to the use of technology and materials. In addition, there were novice teachers who stated that they needed to be supported in terms of curriculum knowledge, as shown by Mundt (1991) in his study in the context of field teaching. Novice teachers stated that they needed professional development opportunities other than the existing ones in order to improve themselves in the teaching of the field and in other subjects. As it is known, education in the current induction system in Turkey is mostly carried out through seminars and mentoring practices. However, there are studies showing that both these seminars (Baran-Kaya, 2019; Ulubey, 2018) and mentoring practices (Baran-Kaya, 2019; Özan & Nanto, 2018) are insufficient. In this study, too, novice mathematics teachers point out that opportunities to improve themselves ought to be included in the induction programme. While these opportunities are such activities as promoting postgraduate education and making projects for some, they can also involve in increasing the variety of activities for some others.

In studies on seminars, which are one of the prominent activities of the induction system in Turkey, it is found that novice teachers tend to be sceptical about this practice since, for them, seminars do not contribute to the field (Baran-Kaya, 2019; Ulubey, 2018), the content is insufficient (Baran-Kaya, 2019), and the seminar programme is too intense (Baran-Kaya, 2019; Yılmaz, 2017). In this study, following on the aforementioned concerns, novice mathematics teachers draw attention to the need for seminars to be field-oriented, to cover teaching processes, and to diversify their contents. At the same time, it was also stated that the seminar programme ought to be planned in a more efficient way, as it was too intense in the current state.

It is also known that similar to many other countries in the world, induction programme in Turkey too is full of duties incompatible with professional development (Baran-Kaya, 2019; Ulubey, 2018), documents and forms to be filled (Baran-Kaya, 2019; Dağ & Sarı, 2017; Nayır & Çetin, 2017; Ulubey, 2018; Yanık, Bağdat, Gelici, & Taştepe, 2016), and demanding workloads with seminars to attend, books to read, and films to watch, etc. Therefore, novices feeling overwhelmed with such demanding workload suggested that they needed to be facilitated with opportunities such as reduced paperwork, eased workload, and not allocated with the tasks and problematic classes that did not directly match with their professional development goals. In the literature, it is supported that some facilities ought to be provided with the novices so that they could find time for induction activities (Bleach, 2012; Mcbride, 2012).

In Baran-Kaya's (2019) research, there are novice mathematics teachers who stated that they lost certain rights and were discriminated against by tenured teachers and school administrations, since those novices were contractual. Some other novice mathematics teachers who were the participants of this research also stated that contractual teaching must be abolished for similar reasons and they liked to be in the same position as their tenured colleagues, since effective communication with colleagues is of great importance in being a teacher as known (Colgan, 2004; Fox, Wilson., & Deaney, 2011; Ngang, 2013). Mathematics teachers, who were the participants of this research, also mentioned that they had professional communication difficulties, as found in Baran-Kaya's (2019) research, and made some suggestions to avoid these difficulties in the future. Most of the participants emphasised that it was important to have a supportive mentor from the same field. It has also emerged in other studies that an mentor from the same field can contribute more to the novice (Desimone et al., 2013; Smith & Ingersol, 2004). Apart from this, they stated that activities that would bring experienced and novice mathematics teachers together not only in the assigned school but also in the assigned region could be beneficial. Moreover, there are studies showing that such an interaction is beneficial (McAleer, 2008). Another important interaction voiced by the participants is a network to be established among novice teachers. It was stated that opportunities for novice teachers to share their experiences with each other could be provided through some meetings where they would be brought together. For example, in New Zealand, which is a country that has come to the fore with its induction system, there are activities that specifically encourage such a network among novices. In addition, Gellert and Gonzales (2011) also revealed that such an interaction could be beneficial, especially in induction-related issues.

## **Recommendations**

The present study presents the suggestions to better shape the induction system for novice mathematics teachers. For this reason, it is important that the suggestions of the participants are taken into account by the Turkish Ministry of National Education. Mathematics teachers who have personally experienced the induction process have emphasised that they especially prefer to receive support for the field when discussing seminars, professional interaction, and professional development. This situation brings to mind that it may be beneficial to revise the induction system in a way that is aimed at the field.

After the change of the induction system in 2016, although there has been an increase in the number of studies on the induction process in Turkey, it can be said that there has been a decrease in recent years. However, the increase in the number of studies on the first years of teaching, which is the most critical time of teaching, will give an idea to the planners and practitioners about the revisions of the induction system. This research was conducted with mathematics teachers who had just completed their induction. It should also be taken into account that teachers from different fields may have different problems and hence, different suggestions.

## **Scientific Ethics Declaration**

The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

## **Acknowledgements**

\* This article was presented as an oral presentation at the International Conference on Science and Education ([www.iconse.net](http://www.iconse.net)) conference held in Antalya/Turkey on November 15-18, 2022

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**To cite this article:**

Baran-Kaya, T. & Celik-Demirci, S. (2022). Opinions of novice mathematics teachers on improving the teacher induction programme. *The Eurasia Proceedings of Educational & Social Sciences (EPESS)*, 28, 36-42.