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Visually Impaired Mentally Sighted: An Inclusive Education Case

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Abstract

This research was carried out as part of an Erasmus + project called "Visually Impaired Mentally Sighted" targeting to improve the conditions and materials used in the educational environment and to develop personal and professional skills of the school staff. This qualitative study employed descriptive case study design. The study involved 16 participants in total including visually impaired students, teachers and the principal from the high school which is the coordinator institution of the project. The researchers conducted two semi-structured focus group interviews with the participant teachers, one focus group interview with participant students and a face-to-face interview with the school principal. The data were analysed according to content analysis. The researchers created four themes as follows; 'consciousness', 'professional development', 'teaching materials' and 'motivation'. That means students in this case study increased their motivation at school. Also, teachers realized that there is a key area for their professional development. At the same time, the importance of using inclusive educational materials that enable disabled students to access education became apparent.

Keywords: Visually Impaired Students, Inclusive Education, Teachers' Professional Development, Consciousness

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INTRODUCTION

The estimated number of children living with disabilities is at least 93 million according to UNICEF (2018), but the actual numbers are thought to be much higher. According to the World Health Organisation (WHO, 2011, p.8) around 785 million (15.6%) persons 15 years and older live with a disability, while the Global Burden of Disease estimates a figure of around 975 million (19.4%) persons. Many children and adults with disabilities have historically been excluded from mainstream education opportunities. They have attended special education schools where they are usually segregated from their peers. However, over the last three decades, "integration" of children with special needs in inclusive classes has been a crucial topic for special education professionals. Special education is the education which aims to meet the educational needs of individuals who are in need of special education in an environment appropriate for the deficiencies and characteristics of those individuals using the specially developed educational programs and techniques provided by specially trained staff (Cavkaytar, 2006). It is stated in the Right of Children with Disabilities to Education (Sart, et.al, 2016) that there are two common conceptual models used in defining disability, namely the individual model and the social model. These models look into the status of disability from different perspectives and offer different solutions to solve the problems that people with special needs face. On the one hand, the individual model, also known as the medical model, is said to focus on the "personal tragedy" of the individual and define disability within a dual system consisting of those who are ill versus those who are healthy, those who are normal versus those who are abnormal, and those are handicapped versus those who are not handicapped (Sart, et.al, 2016), and as a result, persons with disabilities are not considered to be ordinary members of society, but rather people to be excluded. On the other hand, in the social model, disability is not seen as a problem inherited by the person, but is rather perceived as a set of obstacles caused by the social environment or society, or that comes into existence as a result of difficulties the society creates for individuals (Sart et al, 2016). That is to say, the social model mainly focuses on the social aspects of the problem and thus seeks to treat disability through social and inclusive methods.

Bearing in mind the aforementioned models, several different methods have been applied in the education of persons with visual impairment up until today. The first method applied to students with disabilities was exclusion. As one can understand from the term "exclusion", it means keeping the disabled and any person different from the norm, that is, anyone who is not appropriate for the educational environment prepared for regular students out of the educational system. In this traditional method, content is more important than the students' needs, and schools, as a result, are not considered to be a place to cater to different learning needs, but rather a place to focus on the transmission of a set of curriculum content organised in routine ways by teachers who usually work in isolation (Clark et al, 1999). Therefore, students with special needs have been excluded from schools or kept away from regular students and educated in places accommodated in accordance with their needs. There are several reasons for this situation. As mentioned in the conceptual paper called *"Overcoming Exclusion through Inclusive Approaches in Education",* (UNESCO, 2003) the main reasons for exclusion are socio-economic factors like inadequacies and inequalities in the educational system, negative attitudes towards differences, an insufficient curriculum that is unable to meet the needs of a wide range of different learners, physically inaccessible environments to many learners and inadequate human resources. These reasons usually result in exclusion of learners; as a consequence, students with disabilities are denied access to education in any form.

Another method applied by educational systems is segregation. It refers to keeping the students with special needs in a different educational environment specifically designed for their needs. In other words, education of students with disabilities is provided in separate environments designed for specific needs and in isolation from regular students. However, thanks to ideology brought by the social model, new strategies have been introduced and students with special needs have started to take their places in mainstream schools with regular students. Integration of students with disabilities is one of these strategies. The aim of integration is to avoid or reduce restrictions in any aspect of a child's development which might result from segregated education. A popular method applied to students with special needs in many countries is inclusive education. Thanks to inclusive education, educational environments, teaching materials and teachers working with students with

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special needs have been altered dramatically. Students with disabilities have more time to spend with their peers, which also has positive effects on the regular students as they gain some ideas regarding these people, who are an inseparable part of society.

Educational Needs of Visually Impaired Students in Turkey

Vision is one of our primary senses and is used continuously to gather information during functional activity (Roberts, et al., 2016). Yet, the number of people with visual impairment in the world is known to be 285 million (WHO, 2012), and according to the statistics in 2002 presented by the Turkish Statistical Institute (TUIK, 2011), 12.3% of the population in Turkey was disabled. There were 460,383 disabled people aged between 0-19, and 8.4% of them were visually impaired. It is also stated in the same research that 36.33 % of the disabled people in Turkey cannot read or write, and only 2.24 % of disabled students can find a chance to go to university (Melekoglu, Çakıroğlu & Malmgren, 2009). There are several regulations and articles in Turkey securing the rights of disabled. One of them is the Turkish Special Education Needs Legislation (No. 2916), mandating that all children have the right to be educated and, since 1983, the Ministry of National Education has promoted inclusive practices at all levels of school in Turkey (Melekoglu, Çakıroğlu & Malmgren, 2009) Also, according to the 42nd article of the Constitution of the Republic of Turkey, no one shall be deprived of the right of education, individuals may not be deprived of their right to receive an education, and primary education is mandatory for all citizens, both girls and boys, and must be free of charge in public schools. Education of visually impaired students, the main focus of this article, has been a problematic issue for governments in terms of providing an adequate educational environment, competent educational personnel and appropriate teaching materials. This has resulted in different approaches to teaching visually impaired (VI) students. In some countries, there are mainstream schools with VI students where they have a chance to obtain integrated and inclusive education with their peers. Horton (1988) defines integrated education as programmes where visually impaired children attend a regular school in their home community where they study in the regular classroom with regular teachers, but receive extra help or "support services" from a special education teacher who has been trained to work with visually impaired children.

Educational Needs of Teachers Working with VI Students

Many researchers have indicated that the quality of teachers is critical to the academic achievement of students (Carlson et al., 2004). However, since the courses teachers take during their undergraduate years do not prepare them for working with children with disabilities, teachers, who are one of the most important factors of inclusion often graduate without gaining knowledge or experience working in inclusive classrooms (Batu, 2010). This often makes teachers working with students with disabilities face serious problems in and out of the classroom as they do not have enough experience or knowledge, nor have they practised enough to be competent teachers knowing what to do in an inclusive classroom. In addition, even some special education teachers often lack knowledge about the curriculum of some subjects taught at schools such as science content and science pedagogy. When it comes to teaching visually impaired students at mainstream schools, ordinary teachers working at primary or secondary levels have greater difficulties compared to those special education teachers. Therefore, teachers who are very important in the lives of visually impaired students should extend and develop their educational competence and skills. Since the beginning of this century, much has been done to improve the quality of teacher education in Turkey (Çakıroğlu & Çakıroğlu, 2003). Some universities now have departments for the teaching of different types of special needs, namely visual impairment, hearing impairment, giftedness, and mental retardation as well as a general teacher education department on special needs education.

Pre-school and primary school teacher education departments have a course on special needs as a required course, while secondary teaching departments simply offer the course as an optional elective. However, as VI students have to attend a mainstream high school after graduating from a primary school in Turkey, they need to go to a mainstream school and study with teachers who have little or no knowledge regarding the teaching strategies to be applied and materials to be used. To

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remove this lack of knowledge, the Ministry of National Education has organised several seminars and courses on preparing Individualised Education Plans and classroom strategies in recent years. Despite all the advances in special needs education and regulations in force to provide better learning environments for students with special education needs, the scarcity of trained special education teachers and adequate schools is currently the most critical problem in the special education field (Şenel, 1998), which causes problems both for the students with special needs and teachers working with them. Ataman (2005) states that the reasons for that problem are resource deficiencies in terms of fiscal scarcity and a lack of trained professionals in the special education area.

Needs of Schools

In Turkey, there are 16 primary schools for the blind today, yet there are no mainstream high schools which accommodate the blind in Turkey apart from vocational ones. Students graduating from these primary special education schools for VI students must enter a national exam held throughout Turkey and need to get a good mark from it if they would like to go to a high-quality school. This creates an unfair playing field for VI students as they have to compete with regular students. Additionally, even if they are successful enough to go to one of those quality schools, they face lots of problems during their education life, such as an inappropriate educational environment, a lack of teaching materials, and insufficient teachers in terms of working with VI students. Up until now, most of the educational services provided to students with disabilities have been provided in special education schools designated by various disability classifications. However, schools should accommodate all children, regardless of their physical, intellectual, social, linguistic, or any other limitations. Also, Hegazy (2013) points out that an attractive, accessible and well-designed school provides children with a rich special experience in which they can continually challenge themselves in a secure and a supportive environment. As a result of this and similar international and national declarations, schools have become more and more inclusive and beyond those special education schools, educating students with disabilities in regular public schools with their peers has gained strong attention.

This trend has also become popular in Turkey and gained support from the Ministry of National Education. In the last decade, the Turkish government has emphasized the importance of inclusion of students with special needs into regular education classrooms, and encouraged schools and families throughout the country to embrace inclusive education and the principles behind it. Bearing in mind the principles behind inclusive education, the Ministry of National Education stated in the 8th article of regulation on Secondary Education Institutions that students with special education needs can attend mainstream school depending on their abilities, health status and residential addresses. In "*A Guide Book for School Principals- Teachers-Parents"* (MEB, 2011) it is stated that **s**pecial education differs from the schools for non-disabled pupils in terms of content, arrangement of content, assessment, teaching methods and materials used. That is the reason why teachers working with students with special needs have been asked to prepare an individualised education plan for the disabled to be applied in their mainstream classes. These plans should take the needs of the students into consideration and aim at developing certain skills so as to make them be ready for their future.

Thanks to the regulations, educational environments should adapt the design and physical structures, teaching methods, and curriculum as well as the culture, policy and practice of education environments so that they are accessible to all students without discrimination. As a result, schools have become more inclusive to provide quality and adequate education for everyone. Dreyer (2017) defines these schools as inclusive schools and states that inclusive schools must recognize and respond to the diverse needs of their students, accommodating both different styles and rates of learning and ensuring quality education to all through appropriate curricula, organizational arrangements, teaching strategies, resource use and partnership with committees. As a result of this conceptual and theoretical argument, the aim of this current research is to find out what the final results of inclusive education practices are in the school where an Erasmus+ project for visually impaired students was carried out. Specifically, we aim to find answers to these sub-questions: What are the learning experiences of visually impaired students? How is the professional development of teachers affected? What kind of

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contributions do other students make to their learning processes? How is the school's administrative processes reorganized?

METHODOLOGY

Context of the Study

This research was carried out as part of an Erasmus + project called "Visually Impaired Mentally Sighted" targeting to improve the conditions and materials used in the educational environment and develop personal and professional skills of the staff. The starting point of this project was the difficulty that the teachers working with students with special needs faced and the students with special needs experienced during their academic lives. When the idea to implement this project emerged, there were 4 totally blind students getting educated at different levels. One of them was in 12th grade, 2 of them were in 10th grade and one of them was a prep student. On the one hand, when we talked with those students with special needs, we realised that these students were not really happy about the quality of the education they had been provided since they were taught as if they were students without special needs. On the other hand, having classes with those students in a mainstream school, the teachers also experienced several difficulties and felt that they had to do something to solve these problems. These difficulties were mainly about educational materials, teaching strategies and accommodation of the teaching environment. After talking with those students about what they needed to be more successful and with the teachers about how to be better at teaching their subjects to visually impaired students, we noted down several possible solutions to these problems and implementing this project was considered to be the most fruitful one. As a result, we started to write this project, aiming to improve the quality of education through developing the professional skills of the teachers, applying the appropriate teaching strategies and using the necessary teaching materials. As the aforementioned objectives were rather challenging and demanding for teachers working at a high school, we sought partners with an academic background who were able to do research on this subject, and spend time working with us in order to find answers to the questions we have put forward above. Thus, we got in touch with these academics who were very interested in taking part in the project and implementing the project activities so as to collect data and publish this article. We also looked for partner organisations from different countries that would help us to clearly understand how to deal with the problems which we had been facing in and out of the classroom, such as teaching strategies, accommodation of teaching environment, professional development of the staff and increasing the motivation of both teachers and students. In conclusion, we started this project as part of an Erasmus + project in which four partner organisations took an active part, namely a Turkish high school, a Turkish university, a British special education school, and a Romanian special education school. To sum up what has been done in the context of this project; the project is a three-year project started on the 1st of September, 2017 and will terminate on the 31st of August 2020. The teachers taking part in this project have attended two Learning / Teaching / Training activities held in Romania and the UK respectively. The schools that we visited in the first two years of the project are our partner organisations and experienced in producing and practising materials for VI disadvantaged students. In addition to this mobility, two of the staff attended a course on the production of 3D materials, which are of great importance in and out of the class so as to make the teachers and students feel more comfortable in an educational environment thanks to the tangible materials to be produced. This project has intended to produce three intellectual outputs, namely an article for the academic world, a lesson-plan book for the teachers working with VI students and an audio library for the VI students to reach out some basic materials that they need while studying. The congress to be held on the 22nd of August 2020 is the dissemination activity of the project to which more than 120 teachers, academicians and stakeholders are invited. During the workshops, the participants will have a chance to see and practice the lesson plans we have produced.

Design of the Study

The study employed qualitative methods for data collection and analysis (Stake 2000; Yin 2011) which focused on the comprehension of human thoughts (Denzin and Lincoln 2005), and of

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their actions within their own unique context. The researchers aimed to understand the changing context of a high school with visually impaired students as a part of Erasmus+ project. Hence, the researchers planned to design the study in accordance with the definition of McMillan and Schumacher (1993) who defined qualitative research as "primarily an inductive process of organizing data into categories and identifying patterns among categories" (p.479). Specifically, this qualitative study employed descriptive case study design. This is because, as Baxter and Jack (2008) quoted from Yin (2003) "a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context" (p.545). For this study, the researcher adopted descriptive case study that tends to provide detailed and contextualized data that can lead to "a full and thorough knowledge of the particular" (Stake, 2000, p. 22). In this case study, the researchers needed to have a grasp of individual experiences of teachers, the school principal and visually impaired students by obtaining data in their own unique context.

Ethical Issues

The study is conducted with the approval of the project by national agencies (in Turkey, Romania and England) since, as aforementioned, the study is a part of an Erasmus+ project within a multi-institutional partnership. With ethical sensitivity, the researchers asked participants to sign the consent form. In this consent form, the researchers clearly presented the purpose of the research and the procedure. Each of the participants was kept informed about the study and their right to withdraw from the study at any time. Besides, after transcribing interviews and while analysing the data, the researchers asked participants to share their views as a part of the member checking process (Creswell, 2012).

Participants

The study involved 16 volunteer participants in total from the high school which is the coordinator institution of the project. One of the participants is the school principal. Two of the participants are visually impaired students. And the other 13 participants are the teachers who attended school visits abroad during this Erasmus+ project in the 2018-2019 fall and spring semesters. The researchers preferred criterion sampling, which is one of the purposeful sampling methods (Creswell, 2012; McMillan & Schumaer, 1993; Neuman, 2006) to determine the participants of the study. Purposeful sampling allows researchers to find and select participants who yield a potentially wide range of information regarding the research question to be addressed (Born and Preston 2016). According to criterion sampling, the researchers defined criteria for teacher participants as "participating mobility within the project" and "teaching visually impaired students". The students and the school principal were already defacto participants in this study.

Data Collection Procedures

For the purpose of the study, the researchers conducted two semi-structured focus group interviews with the participant teachers, one focus group interview with participant students and a face-to-face interview with the school principal. The researcher preferred focus group interviews for the data collection technique because the interaction among the participants increases the depth of the data in this way (Patton, 2002). The researcher formed the semi-structured interview questions in three stages. In the first stage, they scrutinized overall aims of the project and reviewed the literature. Then, they created draft questions for the interview. In the second stage, interview questions were looked over by academic staff of the university as a 'peer-review' strategy (Creswell, 2012). Some of the questions were eliminated as a result. In the third stage, the researchers tried the questions within a pilot interview and some interview questions were revised. The researchers collected data using these interview questions as bellows:

Interview questions for participant students;

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- Do you think that taking part in such a project contributed to you? If so, in what way do you think the process contributed?

- Do you think that your teachers' education activities have changed after the project? If you think, could you explain us?

- Did your teachers change their attitudes and behaviours towards you after your participation in the project? If so, could you please explain us?

- How do you think the tools and equipment supplied under the project affect your learning performance?

- How did participating in such a project affect your thinking about school and teachers?

- Do you think your visits / project has contributed to equal opportunities in education for visually impaired students in your school? Why?

Interview questions for participant teachers;

- How did it help you to take part in such a project?

- How did your education and training activities change after your participation in the project?

- How did your attitude towards disadvantaged learner groups change after your participation in the project?

- How do you think the tools and equipment supplied under the project affect your teaching performance?

- What effect do you think such a project has on the learning groups?

The researchers participated in all of the school visits abroad. Moreover, they spent time with teachers during these visits and also during other parts of the project. Hence, it is possible to say that the participants were close enough to the researchers to express their feelings and thoughts without barriers. Also, the researchers informed participants before interviews about the aim of the meetings and interviews. Focus group interviews with teachers lasted between 120 and 180 minutes. The first teachers' focus group consisted of 7 teachers, and the second focus group consisted of 6 teachers. The last focus group interview with visually impaired students lasted 60 minutes. The school counsellor participated in this interview with students to make students feel emotionally safe. The face-to-face interview with the school principal lasted 40 minutes. Both focus group and face-to-face interviews were conducted in the school where the case study took place. All of the interviews were recorded by using audio devices. The researchers attended each interview in order to take field notes and analytic memos. This participation allowed the researchers to provide investigator triangulation (Creswell, 2012). Thus, the researcher could crosscheck their field notes and observations. All of the interactions during the interviews were recorded and transcribed then sent back to participants for member checking.

Interpretation of Data

The researchers preferred manual analysis of the data. They utilized the content analysis technique, which allows researchers to find out similarities between codes, categories, themes and their uniqueness (Strauss and Corbin, 1990; Yıldırım and Şimşek, 2005). The analysis of the data was carried out according to coding cycles proposed by Saldaña (2009). Each of the researchers examined the transcriptions of the interviews individually several times to create initial codes. In the first cycle, each researcher employed *In Vivo* coding which enables the researchers to create codes from participants' statements. Then, the researchers gathered codes under the categories according to their

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similarities in the second cycle. In the third cycle, the researchers reanalysed and reorganized the codes under the final themes. The main priority of the researchers was to detect the networks and relations between codes, categories and finally themes. The researchers employed 'peer-review' of academic staff who have studied on educational science and have strong experience on qualitative data collection and analysis in the faculty during analysis of the data to establish credibility of creating themes. Finally, the researchers created four themes as follows; 'consciousness', 'professional development', 'teaching materials' and 'motivation'. These themes reflect the differences as well as the similarities of the codes and categories (Saldaña, 2009).

FINDINGS

As a result of the analysis of the research data, four different themes were obtained: "awareness", "professional development", "teaching material" and "motivation". Under the theme of awareness, two different sub-themes were created: cognitive and affective. Under the sub-theme of "cognitive awareness", the sub-categories of "instructional awareness" sub-category was developed, and under the sub-theme of "affective awareness", the "empathy development", "disabled person awareness" and "communication with disabled person" were developed. Under the theme of "professional development", two different sub-themes were created: "professional development opportunity" and "awareness of professional development need". Under the theme of "teaching material", the sub-themes of "opportunity to use teaching material" and "opportunity to develop teaching material" were developed. Under the theme of "motivation", the sub-themes of "learning motivation" and "teaching motivation" were developed.

Theme One: Awareness

When the expressions of the teachers participating in the study were examined, two dimensions of awareness came to the fore: cognitive and affective. In the cognitive awareness dimension, teachers stated that they achieved instructional awareness as a result of the project. Within the scope of this project, teachers stated that they had becomeaware of using instructional materials, creating a learning environment, using teaching methods, doing assessment and evaluation, developing kinesthetic skills, and developing life skills for the visually impaired students. Teachers stated that they gained awareness about creating a learning environment as a result of the project. In this context, the school principal Önder stated the followings:

> Maybe you've seen the signs, we've changed them all. We did it in our own workshop and we even did production in our own workshop. It is not three-dimensional but we made all the signs made of glass in the glass workshop. We worked with an expert and arranged the names accordingly. There is no such practice in any school right now.

The teachers who participated in the study stated that they also gained awareness about using different teaching methods. Physics teacher Serdar expressed his opinion on this subject as follows "*I have realized more clearly what way they used to learn things they could and couldn't do*." Canan, an English teacher, explained her awareness of using different teaching methods as follows:

> They somehow involve children in life. They make trips and make students see and touch. Previously we used choirs and exhibitions, but I think the number of the activities that we have been using is becoming more diverse. Wolbo is one of them. It's nothing new, but it was something I saw and implemented through the project.

Canan is also among the teachers who stated that they have gained awareness in assessment and evaluation. Canan explained her awareness as follows: "*I think we have become more conscious about the lesson for the child in terms of learning and how to measure it.*" Erman, also an English teacher, emphasized the awareness he gained about assessment and evaluation with these words:

> Our system of exams! Maybe we'll find something newer, more practical, something that suits more. How useful can we be with technology? Which questions are useful to apply to these

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> students? For example, we asked them to fill-in-the-gap questions, the voice system reads and says the bottom line and continues. So we won't put the bottom line there.

Another area of awareness is the development of kinesthetic skills. Regarding this issue English teacher Erman stated that, "The possibility of doing sports is almost impossible for disabled people. But the students were doing sports at the school we had visited." Sinem, the school counselor, used the following expressions regarding developing kinesthetic skills:

> The thing that impressed me the most was when we went to Romania. My point of view has changed. There was an IT teacher. He was a very confident gentleman. His movements, physical control were very good. At this point, I started to think that children should definitely and certainly participate not only in cognitive activities but also in physical activities very intensely such as climbing trees, doing different sports, engaging in visual arts.

Finally, the participants stated that they gained awareness about developing life skills. English teacher Eda expressed her thoughts on this subject as follows:

> There was a lesson in life skills. We also participated in the life skills workshop. It caught my attention there. How will the visually impaired student iron? How will he repair it? How will he overcome the difficulties he may encounter at home? Then our parents in Turkey relevant to our own students are becoming helpful in this regard. When they need it, they can be directly involved, but in Europe children are liberated a little more. How can our students overcome such a challenge? Questions like that had occurred in my head.

Music teacher Özge expresses her awareness of life skills teaching and development as follows: *"We've already done it there. How many inches are you going to keep the knife? They gave us a salad. We asked how they taught them. How does an individual make a salad?"*

The second dimension of awareness is affective awareness. In the affective awareness dimension, teachers stated that they gained empathy, awareness of disabled people and communication with disabled people as a result of the project. Music teacher Özge expressed her thoughts on empathy development as follows "I have recognized how precious empathy is in every respect." Regarding to this issue school principal Önder states "*I can say that I realized how valuable empathy is in every respect".* Onder also made the following statements: "*So here I have further reinforced the belief that caring for human beings and humanitarian issues, and that this can only be achieved through the existence of such a mentality in schools such as this school.*" Teachers and students used similar expressions about disabled individual awareness. Mahmut, one of the students, made the following statements: "*I would like to thank my teachers who started this project. Good thing they did that because such projects are not witnessed at state schools. This is a step to raise awareness.*" Visual arts teacher Banu expressed her views as follows: "*An event was held in Romania. They blindfolded one of us at the event. And they gave us some materials and we were asked to paint. It's the first time I've ever had it. I had a hard time*." The last topic for affective awareness is communication with disabled individuals. Music teacher Özge used the following words: "*I realized that it was unnecessary to say some words or to try to do something that disabled students could do. I realized that this behaviour prevented them.* Student participant Mahmut used similar expressions: "*Our relations with our teachers have improved. We are better acquainted with the teachers involved in the project. We had good dialogue with them*. Gözde, an English teacher, said, "*I can now afford to be more open and braver in my approach to my disabled students. Even though I am not teaching Murat, I can now have a good conversation with Murat. I have learned that we need to approach them more openly*."

Theme Two: Professional Development

The participants stated that they gained awareness of the need for professional development and the opportunity for professional development as a result of the project. Music teacher Özge expressed her thoughts on the awareness of the need for professional development as follows: "*Let me just say this. Everything I said was a gain for me. I've never thought about it before. I've never been in*

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such an environment. I didn't need it, but everything I've just stated is a gain for me, so I'm glad." Erman, an English teacher, also expressed his views on the need for professional development: "*We realized that there are a lot of associations working for the visually impaired. We noticed that some of them organized some activities on some days. As you see these, people's awareness in terms of personal development begins to increase*." Önder, the school principal, expressed his views on the need for professional development as follows:

> "Of course, I can say that it caused my individual awakening very seriously. It gave me great pleasure to be on this project. It both improved my spiritual world and my thought. But beyond the project, it pushed me in a different direction. It pushed me into different research. I get ideas from people in the form of an oral interview and try to make readings. I was especially shocked in the UK, I was very impressed, it made a lot of contribution to me in England. So you can ..."

In the project, the participants stated that they had the opportunity of professional development. Physics teacher Serdar used the following words: "*For example, we bought a three-dimensional printer. I attended seminars about 3D printer with my colleague, Erdoğan. We attended workshops. We're trying to learn something. There, we learned the drawing programs of the three-dimensional printer. That's new learning for us. Maybe we wouldn't have worked so hard like that without this project.*" Canan, an English teacher, said: "*Extra teaching materials are very important, but we need to learn how to use them. We need teaching materials. Then I think the process will work quickly*".

Theme Three: Teaching Material

In addition to awareness and professional development, the participants stated that they had the opportunity to use and develop teaching material. Math teacher Batuhan used the following expressions regarding using instructional materials: "*Within the scope of the project, I got aware of how difficult it is for visually impaired students but how easy it can be. In fact, I think we can include these people in our lives with certain materials. I think these people can participate in learning mathematics or geometry."* Gözde, on the other hand, expressed her experiences regarding the use of teaching materials as follows: "*We can become more active by ignoring certain things that can be done with technology. I discovered that!*." Visually impaired students who participated in the study stated that they gained awareness about using instructional materials at the end of the project. Eren, one of the students, summarized this situation as follows: "*I can only say that there is a difference in my field of music. After returning from Romania with my music teacher, we started learning the notes in the Brail alphabet. We saw that people do it that way. So we said, why don't we?*" Music teacher Özge said the following about using instructional material: "*Thanks to the project, I realized that there were systems. They have music sections. Every branch has a department. Each disabled person has a note written in Braille that is easily accessible.*" Similar expressions were used by students, such as Mahmut.: "*I had the opportunity to see many materials in Romania. It was a big advantage for me. The 3D printer, for example, could definitely help us. We can produce all shapes. In fact, our basic material*." The other student, Eren, expressed his thoughts on this subject with the following words: "*I learnt new things during the project's overseas visits. We have seen how the solutions we know can be applied in our training there. Various designs were made*." The participants also stated that they had the opportunity to develop teaching materials through the project. Gözde, an English teacher, expressed her thoughts on the subject as follows: "*Yes, I need time if I go back to class with those materials. I spend a lot of time preparing those materials, but once I prepare it, I use it for a year*." Canan, an English teacher, expressed her thoughts on developing teaching materials as follows:

> The children were listening and filling the gap. He made important points on the 3D printer. Like the Eiffel Tower. We were giving it to the children and asking questions about it. This is located in Paris, France. Can you feel that there is such a feature? What feature do you think it has? How long can it be? At first they would guess and then explain the features on that topic.

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Theme Four: Motivation

Another achievement of the participants was motivation. The participants stated that they gained learning and teaching motivation through the project. One of the students, Eren, made the following statements about learning motivation: "*Yes. thanks to the project I started to learn musical notes in Braille*." The project also increased teachers' motivation in teaching. In this regard, the mathematics teacher Batuhan said the following:

> Mathematics was actually taught to them in a much better way. Actually, our system is a rote teaching system. I believe they can be more successful. I believe that these students will be able to do better at mathematical subjects except geometry. I didn't feel any difference personally after the project. Related to teaching, I have realized that there is concern about how to better teach mathematics.

CONCLUSION AND DISCUSSION

At the end of the project, teachers had gained awareness regarding disabled learners. Teachers empathized with disabled learners, developed more empathy for disabled learners, and improved their communication with disabled learners. In addition to that, teachers obtained awareness in using teaching material, creating learning environments, using teaching methods, using assesment and evaluation, using kinestetics and developing life skills. Furthermore, the project provided the opportunity for professional development for teachers. In respect to professional development, teachers also felt the need for professional development in teaching disabled learners. Throughout the project, teachers and disabled students had the opportunity to see, observe and experience various teaching materials in partner schools. As a result of this inspiration, teachers also had the opportunity to develop their own teaching materials for disabled learners. Finally, the project enabled teachers to increase their teaching motivation. It is natural that awareness mostly results in action. Apart from teachers, due to project activities, materials, and both professional and psychological outputs, disabled learners' learning motivation increased as well.

Although there are a lot of visually impaired students in Turkey, the number of studies carried out to monitor and understand the present situation and to find solutions to the problems these students face is very limited. Based on the findings of our research, the problems generally arise from teachers with no or limited experience in working with visually impaired students, lack of materials suitable for visually impaired students, and an inappropriate teaching and learning environment, which results in lack of motivation and awareness. Regarding teachers, it can be said that thare are two kinds of teachers. The first group can be described as being not fully committed to inclusive practices in their classrooms, while the other group of teachers is willing to implement effective inclusive practices (Baykaldı, 2017). Although the second group is willing to work effectivley, they are not equipped with special education techniques and may feel unconfident about teaching visually impaired students (Aydemir, 2009, p62). During the interviews with the participants, it was frequently repeated by the teachers that they were unaware of the needs of the visually impaired students and didn't know what to do in their classes. In addition to that, Kargın, Acarlar, & Sucuoğlu (2004) stated that the reason for the participants' poor evaluation of their teachers' instructional techniques can be explained by the limited teaching knowledge of the practitioners. Another problem that was encountered regarding the education of visually impaired students was the teaching materials. According to Durna (2012) students who have their own special course materials such as Braille, audio or recorded documents, have been more successful than those who need someone else's help while studying. In other words, they want to be independent while studying, which will make it easier for them to decide when and what to study. Besides, students with visual impairement could not get enough out of the teaching styles in the classroom as their learning style is different from the sighted students and teachers have limited knowledge (Bayram, 2014). If the visually impaired students had the same materials as other students, they believe that their academic success would increase since they would be able to participate in reading and writing activities by following the book at the same time (Durna, 2012).

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The third problem is the learning and teaching environment. Generally, mainstream schools in Turkey are not equipped to meet the needs of visually impaired students. Most schools do not provide audio or tangible materials inside or outside the classroom. Besides, other educational places are also not suitable for visually impaired students. For instance, the limited number of libraries cannot meet the needs of visually disabled individuals satisfactorily because Braille books are either too old, printed years ago or unsuitable to read due to their overuse and missing letters (Durna, 2012). This results in the dissatisfatction of the students with visual impairement. As a result, life satisfaction of visually impaired adolecents decreases with age as they continue their education in mainstream settings, where many are studying with sighted peers for the first time (Aydemir, 2009).

Bearing in mind all the findings of this research, it can be said that teacher training at university level should be revised. As every teacher will possibly be working with a visually impaired student in their future career, they should be taught teaching strategies and how to produce class materials for visually impaired students as well as those sighted ones. In addition to the revised teacher training curriculum in higher education, the materials to be used inside the classroom and the ones to be produced for visually impaired students so as to make them able to study on their own should be prepared by experts and/or teachers with experience in special education. Finally, standardization in terms of tangible and audio teaching and learning materials has to be provided at schools so that anyone with visual impairement can get the most benefit from the school. To be able to create a such learning and teaching environment, parents, teachers, school principals, academicians and politicians should work hand in hand with one another.

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