Pegem Journal of Education and Instruction, Vol. 11, No. 2, 2021 (pp. 72-86)

RESEARCH ARTICLE WWW.PEGEGOG.NET

Making Learning Visible in the 21st Century; Examining of The Use of Digital Assessment Tools in Montessori Education

Fatma Merve Şimşek1, Mehmet Nur Tuğluk2,

[1]Master's Student, Social Science Institution, Yildiz Technical University, Istanbul, Turkey

[2]Assistant Professor, Department of Early Childhood, Faculty of Education, Yildiz Technical University, Istanbul, Turkey

Abstract

This research aims to determine the experiences of Montessori educators, who apply the Montessori educational approach and use a digital assessment tool, towards the digital assessment tool they use and their views on these experiences. Within the scope of this purpose, the study was designed in phenomenological research, one of the qualitative research methods. Within the scope of this study, phenomenon was determined as the digital assessment tools used by Montessori educators in Montessori education settings. The study group consisted of 14 Montessori educators, 3 of whom were working in Barcelona and 11 from an official and private Montessori school in Istanbul. The data collection of the study consisted of personal information form and individual interviews conducted by the researcher with Montessori educators through online interview systems. When the data gathered as a result of these interviews were analyzed, it was seen that the digital assessment tools were considered as a phenomenon with different dimensions by the Montessori educators who participated in the research. These dimensions have been "ease of use and necessity", "parent", "Montessori education". In addition, it was determined that Montessori educators explained for the tools they use, apart from the digital assessment tool. The non-digital assessment tools dimension was also examined in the study in order to reveal the educators' perceptions of the digital assessment tool holistically. As a result of the study, sixteen sub-themes related to four themes were formed. The findings were discussed within the framework of the studies in the field.

Keywords: Montessori Education, Digitalization, Digital Assessment, Assessment in 21st Century, Early Childhood, Phenomenology

1. Introduction

All With the start of the journey of life that begins in the womb, vital signs of man are monitored and information such as the time of birth, average heartbeat per minute, breathing, reflexes, the appearance of his skin are recorded (Wortham, 2014). In the first years of life, the recognition process that consists of numerical and medical information becomes different as time passes, and it becomes important to evaluate the child as the education of the child becomes systematic with preschool education. The first step in evaluating the child is to get to know the child. (Slentz, 2008). In this process, the biggest role in recognizing the individual/child falls to the educator. A complex process, the assessment of the preschool period (Dunphny, 2008), differs from the assessment of older children (Horton, Bowman, 2002), and it requires systematic assessment in coordination with the teaching process (Elden 2019). A teacher must apply appropriate evaluations (Buldu, Erden, 2017)and use recognition and evaluation techniques to be informed about the progress of the child; and therefore get information about whether there is any change in his/her development.(Büyükgöncü, 2013) Although it is primarily aimed at the child, this assessment, and its tools and applications vary according to training programs.

According to Montessori (2015), children have sensitive periods during the pre-school period. Montessori says these sensitive periods are critical time zones for the development to take place, and it is essential to provide the necessary stimulation. The role of the adult for the child's education during this period is to guide the desire to learn and understand this environment that the child absorbs like a sponge in its nature.(Isaacs, 2007) Therefore, a Montessori educator is a good observer above all.(Durakoğlu, 2010) The origin of the Montessori pedagogy is based on the observation of children's natural behavior without restriction (Wentworth, 1999). Another characteristic of the Montessori classes is the child's free choice. This makes the issue of

Corresponding Author e-mail: fmervesmsk@gmail.com

ORCID Number: 0000-0003-2007-5942

How to cite this article: Şimşek FM, Tuğluk MN (2021). Making Learning Visible in the 21st Century; Examining of The Use of Digital Assessment Tools in Montessori Education. Pegem Journal of Education and Instruction, Vol. 11, No. 2, 2021, 72-86

Source of support: Nil

Conflict of interest: None.

DOI: 10.14527/pegegog.2021.00

Submission : 08/11/2020 **Revision:** 02/04/2021

Acceptence: 15/04/2021 **Publication :** 23/04/2021

monitoring the child even more important. The study selected by each child in the classroom, the attitude toward work and the relationship with others is followed by the Montessori teacher. So, the Montessori teacher can plan the next step and prepare the appropriate environment for the child. (Isaacs, 2010) This is a key tool for monitoring and preparing the environment for the child. Through observation, the Montessori educator, like the conductor of an orchestra, should be able to know what each child is doing and how he/she is doing, and to provide the opportunity to the child to experience other studies that he/she will find the chance to progress.(Wentworth, 1999)

In Montessori environments, daily observations are made using various methods. These observations are recorded from short notes concerning the behavior, words, or interests of children, with dated checklists such as the Individual Learning Plan (ILP) used by many Montessori schools(Isaacs, 2018).

The technology developed in the 21 st-century started to be used in education by the time. So digital tools and applications have shown themselves at many points of the education. These documents, which are used in accordance with the developing technology, and data on achieving children's learning objectives are utilized by various companies to develop a digital recording system that helps to track children's progress throughout the process, (DfE, 2017). It is seen that the observation data obtained has turned into a digital assessment tool rather than a paper-based tool. Teachers, who are the initiators and practitioners of these digital transformations that emerge with technology in education, have been, as in all levels, initiators in Montessori training, the history of which dates back to more than a century, and which maintains its validity and effectiveness today (Özçelik, Eke, 2019).

It is observed that Montessori educators in the world and our country have been using a digital assessment tool to monitor each child and record observation data for the child. Lacina (2006) states that the class type must be compatible with the recording tools. This shows that more research is needed on the effectiveness of record-keeping tools designed for certain classes such as the use of SAP Fiori, Transparent Classroom utilized in Montessori classes.

The objectives and substances covered by the 2023 Education Vision set forth by the Ministry of National Education show that a digital evaluation system has been introduced to monitor, assess, develop and steer children. (MEB,2018) Thus, it is understood that the evaluation, monitoring, and support of the individual characteristics of each child that gains importance in the 21st century in our country is being carried out. Besides, within the scope of the 21st-century skills of ISTE standards, the use of a digital assessment tool as a means of evaluation and the use of digital assessment tools in education has been emphasized. It has become important to study the effectiveness of its qualitative use as a result of the prevalence of its use in terms of quantity.

In line with this research, techniques used by Montessori teachers who apply Montessori educational methods, which are one of the approaches of preschool education to evaluate the child and the changes today are expressed. In other words, this study reveals how Montessori educators make the learning of the child visible in the 21st century. In order to take a close look at how Montessori educators, who realize the change in the music, change the dance, and to examine their opinions, the problem sentence of this study is "What are the opinions of Montessori educators regarding the digital assessment tool they use?"

2. Method

2.1 Research Design

The research was developed using qualitative research methods to interpret the experience of Montessori educators on the digital assessment tools they use by consulting their opinions. Qualitative research is a method in which literature does not provide sufficient information about the phenomenon being studied, so it is a way to get detailed data about the phenomenon from participants (Creswell & Poth, 2018). One of the patterns of qualitative research, the phenomenological study is an approach that closely examines how an individual interprets his/her experiences(Cilesiz, 2011; Lodico vd., t.y.). In the study, the experiences, perspectives and attitudes of Montessori educators for digital assessment tools considered as phenomena try to be uncovered and interpreted.

2.2 Study Group

The study group consists of Montessori educators who provide Montessori education, use a digital assessment tool as a means of evaluation. And work at two schools having the official private school status in Barcelona and Istanbul cities, 3 of the 14 participants used the digital assessment tool called Transparent Classroom at the Montessori school in Barcelona, whereas 11 used the SAP Fiori digital assessment tool at the Montessori school in Istanbul. The phenomenological study consists of participants' experiences of the specified phenomenon. It is very important that all participants have experience with the phenomenon being studied. Criteria sampling requires that all individuals examined should represent those who have experienced the phenomenon (Creswell & Poth, 2018). For this reason, the method of "criterion sampling", which is one of the "purposive sampling" methods, has been selected in determining the study group. The research has criteria for the inclusion of participants in the study group. In line with these criteria determined during the preparation stage of the study, the criteria were set forth as follows: The participants in the study group should receive Montessori educator training from

an officially trained institution, and use a digital assessment tool designed for Montessori education as the assessment tool in educational institutions designed with the full Montessori method in early childhood category. Besides, the concept of "experience acquired" in phenomenological research is very important. The study contains the experiences acquired by participants in 2 months to 2,5 years of phenomena, in other words, the digital assessment tool. Purposive sampling, which allows the sample to best represent all of the diversity indexes, provides maximum diversity in qualitative research with different people and environments in the selected sample. (Maxwell, 2013) In the study, participants' experience periods have the quality of providing maximum diversity. In the study, the participants' entire experiences for the digital assessment tool were discussed.

2.3 Data Collection

Within the scope of the study, the researcher used a structured interview as a data collection tool. Also, the interviews carried out with the participants via the online platform were structured with the personal information form created by the researcher. Before the interviews with the participants, a pilot scheme was conducted with the research assistant who received the Montessori educator training and completed the internship process, and used the digital assessment tool actively throughout one academic year. The pilot scheme also has a role to play in ensuring that the research tool as a whole works well (Bryman, 2012). After the pilot scheme, it was understood that the interview form was ready to be applied and no changes were made to the questions.

2.4 Data Analysis

There are many approaches to analyzing data acquired through the Phenomenological approach. (Merriam, 2009; Moustakas, 1994). The data obtained within the scope of this study was analyzed by following the steps developed by Moustakas (1994). Moustakas' phenomenological data analysis procedure was followed in the analysis of data collected from educators through the phenomenological interview

Interviews with educators were recorded on video and transcription was made by the researcher within a maximum of three days. The punctuation and spelling that the participants said were ignored while transcription was being made, and put on paper in a computer environment. After the recording was transcribed, the recording was listened to several times to check for an error. This was to ensure the accuracy and uniformity of coding and themes from the transcriptions which were tried to be made without errors. Besides, accuracy and uniformity were achieved through review analysis.

3. Findings

When the data is analyzed, it is found that Montessori educators' experiences with digital assessment tools are associated with ease of use, sharing with parents, and Montessori education. It is also observed that Montessori educators included statements about their own observation practices and observation recording methods. Although these statements do not give information directly about the digital assessment tool, they are examined as a separate theme, as it is important for educators to be able to understand their feelings and attitudes toward the digital assessment tool through a holistic approach. As a result, the data obtained has revealed four main themes. These are ease of use, sharing with parents, Montessori studies, and non-digital assessment tools. The data obtained is converted into diagrams as in Figures 1 and 2. As detailed in the method section, this research examines the data concerning the digital assessment tool experiences, perspectives, and recommendations of Montessori educators.

3.1 Findings for Ease of Use And Necessity

This theme combines Montessori educators' views of the digital assessment tool which they assess systematically. Headings namely the process of entering data, the time spent entering the data, the technological devices used to enter the data, the necessity of a digital assessment tool, digitalization while using the digital assessment tool constitute the sub-themes of this theme. Montessori educators' sub-themes for the ease and necessity of the use of the digital assessment tool are separated in terms of the formation of positive and negative meaning. These experiences have been reviewed as separate headlines as follows;

Table 1: Experiences regarding the ease of use and necessity

Ease of use and necessity	*Positive statements from participants*	*Negative statements from participants*
Process	"The system seemed complicated to me in the first place. There were constant updates. In fact, it was easy, not so tough." K-6 "It's a very useful application; we can easily record information, but without this application, we can take notes and make reports anyway" K-8 "I was able to use the computer actively anyway; if it were for someone who couldn't use it, it would be complicated." K-13	"The interface is multi-staged, there are too many tabs. It's a problem that we see the materials one by one." K-1 "It is an application difficult to use, and I think it is not an application where everyone can see everything easily, where we can reach something at once. You had to click on something all the time. Sometimes, when you push the command button multiple times, it could freeze and rewind everything. Sometimes

Table 1: Continued

Ease of use and necessity	*Positive statements from participants*	*Negative statements from participants*
Process	"It's a very easy and helpful tool to record child's information." K-14	"The interface is multi-staged, there are too many tabs. It's a problem that we see the materials one by one." K-1 "It is an application difficult to use, and I think it is not an application where everyone can see everything easily, where we can reach something at once. You had to click on something all the time. Sometimes, when you push the command button multiple times, it could freeze and rewind everything. Sometimes you think you're uploading photos, and cannot upload them. So it's a difficult, not user-friendly system." K-3 "It's a difficult system, complex, finding it from there, entering... It isn't a regular interface, so you can't see clearly from there." K-5 "When we entered the material in the system that the child was working on, it may not appear in the system. The system was failing. I entered the work of Merve (nickname) and Merve's work appeared in Kübra's (nickname) screen." K-6 "We were already having problems regarding the fact that we were entering our observations in the classroom in our observation booklet momentarily, and in the system on our own time; and that it was always step-by-step, slow and not practical." K-10 "The system flows slowly and goes in detail, so everything is multiple-staged." K-11
Time	"Instead of emailing or uploading to each family individually, the fact that the parents see what their kids are doing from there was buying me time" K-8 "You can also write on paper, but the digital assessment tool saves time for families to report, which is very useful in this sense." K14	"There is an extra workload for the teacher. We enter them at home because there's no time to do it at school. It was hard to enter the observation notes, which you already recorded in the book, also into the system." K-4 "It's easy to enter observation data over the phone, but something that can take time when we have to go in there in multiple stages can be facilitated to provide practical insertion of data right away," K-7 "It takes time to get into the system, we have to do it after school. Uploading photos, uploading studies, entering children's observations requires a separate time and it is multi-staged.There were some shortcomings in the study and I find it time-consuming." K-12 "Spending time with the iPad made me a little nervous. I was feeling out of class. So, firstly I was writing on paper, then I was entering the data again into the system at home, and it means extra work for me, and it's quite time-consuming. That's why it's better to get in right away after working with the child, and that's the only way I can buy time." K-14
Technology devices	"I prefer a phone when entering data into the SAP Fiori system. Because multiple photos are being uploaded on IOS." K-1 "I preferred the phone. I was using the computer rarely while entering parent-teacher interviews, etc. It allows me to enter data while I am sitting, or I am on the road." K-3 "It's easier to select and upload photos to SAP from the phone's gallery. I was doing mass observation entries on the computer. There was a presentation in the circle that week, and that presentation was a study that all the children attended, and I was entering it from the computer." K-5 "I am using my own phone and tablet, and I realized that my phone is the fastest in that sense." K-8 "The phone is faster for instant entry, so we don't carry the laptop all the time, but you can enter immediately after working with the child in the classroom or when you are	"It was too much to activate the WhatsApp web when using it on a computer, to download the photos on a computer from a phone, and then upload there. It was harder. The school gave us the tablets as a means. But it was more practical to enter them on the phone." K-4 "I was usually using my phone, from the application. I had a hard time getting into it. It's because it has an android system. Friends were talking about being more practical on IOS. Since we had to enter data instantly, for example, we had to share photos, It was more practical through the phone. Rarely from the computer." K10 "The biggest challenge I faced was technology tools. And sometimes we had problems with the Internet. We were not using it in order not to expose children in the classroom; so firstly handwriting and then entering them into the system was difficult." K-13

Table 1: Continued

Ease of use and necessity	*Positive statements from participants*	*Negative statements from participants*
	going somewhere, or even while you are sitting. Let there be a section for attendance." K-9 "I prefer a tablet or a computer, but it is often better to use a smartphone. I can enter data when I'm not with the kids during the day. That's why it's more convenient." K-13 "I was logging in with my computer at first, and then I started logging in with my tablet, İt is much easier for me in terms of carrying it and practicality." K-14 "In fact, I think the palest ink is stronger than the sharpest memory. We also write on paper, but the storage of these children's data online will be very useful to the other teachers of the child in the next few years." K-4 "It is a good thing on behalf of the institution that the information about the child is kept in a neat and tidy manner, and that they have data in hand." K-10 "It is effective if we consider it as transferring the observation forms to the digital field. I find it more functional to use technology actively and filling out forms on the phone than to buy and write on printed papers" K-11 "After all, we are living in a society of technology, and we need to inform the families. Rather than sending photos from WhatsApp, the SAP Fiori system is a much more formal platform for us." K-12 "It makes it easier for the teacher to be online and digital so that other partners and parents can be informed of the observation data entered about children." K-13	"It was too much to activate the WhatsApp web when using it on a computer, to download the photos on a computer from a phone, and then upload there. It was harder. The school gave us the tablets as a means. But it was more practical to enter them on the phone." K-4 "I was usually using my phone, from the application. I had a hard time getting into it. It's because it has an android system. Friends were talking about being more practical on IOS. Since we had to enter data instantly, for example, we had to share photos, It was more practical through the phone. Rarely from the computer." K10
Reporting	"The opportunity of reporting was not offered us, but to managers. They could report many things from the status of school attendance, to the studies offered, and which teacher offered them, at what level in this study. I've never done this, the managers could." K-2 "The report could be created but not by the teacher. We could do it about the absence. But there was no other type of reporting." K-5 "The report can be taken in SAP; it is about absence, it is also about studies. Reports can be received for interviews. The board of class teachers reports, the reports of the studies can be taken per field; we took it as a printout, but I think it can be taken." K7 "In fact, it's a very useful application for recording children's data, and we can actually do this without the application, but thanks to this tool we can take report." K-8 "When I turn on the SAP Fiori system, I can see all the interview reports that I have entered. Even though we can manually record it, it can get lost. At that point it's good." K-9 "The attendance-absence report could be received. We couldn't get another report." K-10 "No, the tool did not provide the means for reporting. It was used on an absence recording basis." K-11 "There are many children; we can get reports and so we can see where they are, and there are comment fields, we can write comments on them. We just click and the system provides us with a report on all studies concerning the child." K-13 "We were able to get reports such as absence reports, and reports where there is data regarding which child had studied where, and which child had done several studies in one field." K14	"There are certain tabs in the system and we can only use those tabs; there is no extra part for writing an observation report and assessment." K-4 "If reporting were possible, at least the child should be added to the interface of the system according to certain criteria. If there was a chance of reporting such as "when this child has leveled up to these studies in the field of language, s/he can switch to literacy materials", it would have been really easy for us." K-10 "It takes time to get into the system, we have to do it after school. Uploading photos, uploading studies, entering children's observations requires a separate time and it is multi-staged. There were some shortcomings in the study and I find it time-consuming." K-12 "Spending time with the iPad made me a little nervous. I was feeling out of class. So, firstly I was writing on paper, then I was entering the data again into the system at home, and it means extra work for me, and it's quite time-consuming. That's why it's better to get in right away after working with the child, and that's the only way I can buy time." K-14

3.2 Positive statements

Montessori educators' statements regarding the ease of use and necessity of the digital assessment tool, which can be understood as "positive", are shown in Table-1. When the participants' statements regarding the ease of use and necessity of the digital assessment tool in Table-1 have been reviewed, they have stated that the use of the K-6, K-8, K-13, and K14 assessment tool is easy to process. From these educators, K-6 expressed his opinions towards the SAP Fiori system, whereas others towards the Transparent Classroom tool. While the K-6 stated that it was initially difficult to use, but it was easy for use when one gets used to it over time, it is understood that they emphasized understanding the process of a system rather than entering data. The K-13 linked one of the factors that make it easier to use the tool to familiarity with computer use. Among educators, K-8 and K-14 stated that it is a time facilitator. It is noteworthy that both of these educators have assessed the time-saving feature of the digital assessment tool for the educators in terms of sharing the child's information with the parent.

K-1, K-3, K-5, K-8, K-9, The K-13 said that for data entry into the digital assessment tool, many technological devices are used, but smartphones are preferred as they facilitate data entry. K-14 stated that s/he initially made data entries of paper-based evaluations with the computer, and then used a tablet, and indicated that tablet facilitated data entry.

Among the educators, while K-4 discussed the assessment tool in terms of storing the data and accessing information about the child's history in the following years, K-10 stated that the institution should have the child's data regularly, K-11 indicated that digital tool facilitates data entry, and K-12 and K-13 stated the necessity of the digital assessment tool to share information with the parent.

Among educators who positively emphasize the reporting ability of the digital assessment tool. K-8 and K-9 emphasized that the other features of the tool can also be done manually, but the reporting process is a distinguishing feature of this tool, While K-7 mentioned that the tool allowed to receive reports on the child's data, but that s/he could not use it, K-5, K-10, and K-11 said that report can be taken solely concerning the Information on child's attendance to school. Similar to K-5, K-2 expressed that managers could take the report, not themselves. It is understood that the K-13 and K-14, who use the Transparent Classroom vehicle, were able to receive reports in various areas related to children.

3.3 Negative statements

Montessori educators' statements regarding the ease of use and necessity of the digital assessment tool, which can be understood as "Negative", are shown in Table 1. When the negative statements of participants regarding the ease of use and necessity of the digital assessment tool in Table-1 are reviewed, the educators K-1, K-3, K-5, K-6, The K-10, K-11, stated that they had systematic problems in the process using the digital assessment tool, and that data entries are difficult to as they comprise many steps and stages. It is understood that errors in the system during data entries are effective in their thoughts. It has also been noted that negative statements about the process of the digital assessment tool come from educators using SAP Fiori.

K-4, one of the educators, stated the difficulty of entering the observations that it has already recorded in the observation book into the digital assessment tool, while K-12 and K-7 indicated that recording the data in the digital assessment tool during the day constitutes a waste of time and workload due to the slow system. K-12 mentioned that it is time-consuming to enter data on the classroom observation sheet, rather than enter directly into the digital assessment tool mentioned by K14. Besides, K-14's statement "Spending time with the iPad made me a little nervous. I felt outside the classroom," is found note-worthy in terms of revealing his feelings about device use in the classroom besides the time-consuming extent of the digital assessment tool.

Concerning technology devices used in the digital assessment tool data entry, K-4 said that data entry via computer is particularly challenging because it requires too much processing to upload photos, so he chose his phone. The K-10 emphasized that the phone's operating system is important for data uploads, and said that it creates difficulty in the Android operating system as it does not multi-upload photos from a smartphone. K-13 seems to evaluate technology devices through the problem of accessing the Internet and in fact the extent where it serves as a role model for the child.

One of the educators, K-4 stated that digital assessment tool does not offer a means for reporting. When positive and negative statements of educators regarding the provision of reporting means of the digital assessment tool are evaluated together, it is understood that tools often offer partial reporting.

3.4 Findings Concerning Parent

This section provides insights into Montessori educators' experiences in terms of using the digital assessment tool and sharing with the parent With this theme, Montessori educators' views of the digital assessment tool to share the child's data with the parent are brought together. Guidance headings namely the parent theme, sharing information about the child with the parent, sharing photos, the usage as a digital evaluation communication tool, and recording of the conversation with the guidance teacher or the Montessori educator about the child for the sub-themes of this theme. The theme of sharing the child's data with the parent of the digital assessment tool of Montessori educators is divided into two in terms of the formation of the positive and negative meaning of its sub-themes. These experiences are reviewed as follows under separate headings.

Table 2: Findings Concerning the Parent

Parent	*Positive statements from participants*	*Negative statements from participants*
Information Sharing	"This is actually something that is done to inform the parent, teachers actually do their own assessments elsewhere". K-3 "...but some of our parents were very interested, they were logging in at least once a week as they check the study which their child participate. K-9 "As a result, there is a regular data entry in a particular order. When a parent requests or another administrator in the institution requests, you can print it out and submit it directly to them. It's useful in that sense." K-10 "You can write a statement there if you want, but this statement is visible to other teachers; and the parent can see it, as well." K-11 "Actually, it is a platform for the teacher. We are not recording all the data we have entered into the system for the parents. We only share it with parents shortly and concisely." K-13 "The main goal is to share with parents what has been done concerning the children and to share where and in which study the child participates. To be able to create reports and establish a network between family and class." K-14	"The parents didn't like this system, and they expressed that the practitioner's side was challenging and that they couldn't access the data very easily, and I think that the turnout was very low, and I can tell you that it was one-third." K-2 "Parents didn't often look. There were only two parents and one was a computer engineer. They had previously used this system for other purposes, so that parent was very interested. We thought maybe we should take it out of Whatsapp now, but even if we continued to load it and steered the parents, they weren't very interested." K-6 "Some of the parents waited for photos day by day, some of them didn't log in during one semester. For example, we know that from the bulletins. When we installed the bulletin and asked if they looked at the bulletin, they were saying, "No, sir, we didn't." Even the next month, we were going through this issue." K-7 "Parents were thinking that it was very complicated and difficult. Some of it was self-defense, but some of the families who couldn't deal with technology thought it was difficult and complicated." K-9 "Parents told us that it was a complicated system where there are 5 study fields, the Montessori studies in the sub-headings of these fields, and another title under one heading where there is again a study." K-10 "It is a good tool but I don't think it is very reliable. I don't think it's necessary for the family to see what's been done all day. I think it's too much. It cannot replace a one-on-one meeting with the family." K-14
Communication Tool	"There was an advantage in terms of professionalism". K-1 "We were informing the parent from there. It's good for a discreet relationship with the parent. The SAP Fiori system was better than sending photos from our cell phones We had to upload photos and study data about the child every week. When the parents asked, we were directing them there." K-5 "We used Transparent Classroom to communicate with families daily or to send reports before meeting with parents." K-13	
Photo	"Parents can see what the children are doing in monthly bulletins, loaded photos, and in the classroom." K-1 "We were uploading monthly food list and bulletin there. And there were photos. There were photos we have taken of the studies with children or extra trips." K-2 "In fact, sharing photos from there can also prevent the teacher from checking continuously his own personal Whatsapp account. A separate field is an advantage." K-3 "When I upload a photo of the group with the Transparent Classroom, I can tag all children with materials and upload them directly to every child's profile." K-8 "It was used by educators to take the children's attendance, enter their observations and upload their photos concerning the studies carried out." K-12 "... It is a very secure platform for sharing photos and information with families only for their children." K-13	"I don't find the Fiori system very useful. The problems faced by the teacher in entries It is multi-staged and s/he has to upload photos, which is a burden for the teacher." K-12 "Of course, we don't need to take too many photos of what children do during the day and upload them to the system; we can take pictures of children on important days, etc." K-14
Guidance	"When we had a guidance conversation, we were recording there that we had conducted a guidance interview with the parent and stating the issues we had discussed". K-3 "We could also see the guidance interviews. When the child moved to another class, we could see the things done, the things said, the guidance, the problems the child had, the things understood in last year's meeting." K-4	

Table 2: (Continued)		
Parent	Positive statements from participants	Negative statements from participants
	"I thought about the student's social-emotional relationships and friendship relationships. It can be added the most in the psychological counseling and guidance interviews." K-7 "If a student needs a guidance service, we can use SAP to make a request regarding the need." K-9 "When there is a behavioral problem, etc., s/he can reach the guidance service via SAP." K-11	

3.5 Positive Statements

Montessori educators' statements regarding sharing of the child's data with the parent via the digital assessment tool, which can be understood as "positive", are shown in Table-2.

When Table-3 is examined, it is seen that the educators express their opinions about sharing of the child's data with the parent via the digital assessment tool. One of the educators, K-3 stated that the digital assessment tool was a tool used in terms of sharing data concerning the child with the parent, while similarly K-14 emphasized the tool's features concerning the to parent, and stated that the purpose of the tool was to "establish a network between the family and the class". K-9 noted that some parents are strict followers of the system, this fact motivates educators to enter data. K-10 has mentioned the functionality of the tool in the context that it enables the data already entered regularly to be documented and shared with the parent. K-13 said the tools allows the educators to share what they allow, rather than having all the data entered seen by the parents.

Educators have positive views on using the digital assessment tool as a communication tool with the parent. While K-1and K-5 emphasized the level and professionalism of communication between the parent and educator, K-13 indicated that the tool can be used to communicate with the parent.

Educators pointed out that the tool allows for sharing the photos of the child with the parent alongside with many different materials. K-1 said that bulletins and photos can be shared as well as observations regarding the child, while, in addition to K-1, K-2 stated the food lists and photos on trips can be shared. K-3 said that the digital assessment tool is an advantage in photo-sharing, and K-12 said that he can also upload photos to the system in addition to taking the child's attendances and entering the observations concerning them. K-8 said that the tool provides the ability to tag the uploaded photo so that the group photo tag is automatically created instead of saving it to each child's individual system. The K-13 emphasized that a digital assessment tool is safe to share information and photos about the parent and child.

In the educators' views on the digital assessment tool, the emphasis on guidance is observed. Educators K-3, K-4, K-7, K-11 emphasized that the SAP Fiori assessment tool allowed for recording guidance teacher's interviews and the educators to see them, as well. K-9 mentioned that he could request a guidance call through the SAP Fiori system. It is noted that, among the educators, the users of the SAP Fiori system are those who provide opinions on guidance.

3.6 Negative statements

Montessori educators' statements regarding sharing of the child's data with the parent via the digital assessment tool, which can be understood as "Negative", are shown in Table-4. When Table-4 is examined, the educators K-3, K-9, K-10 stated that parents found the system complex and it posed difficulty for the user in terms of sharing the child's data with the parent so the use of the tool by the parent was low. K-6 based the fact that parents who were actively using the tool on the fact that they were intertwined with the technology, and others did not use the tool. K-7 stated that the parent's status of usage varies from one parent to another.

While one of the educators, K-12 said it was challenging to upload a photo to share with the parent in addition to the difficulties in using the digital assessment tool, K-14 talked about uploading photos only on special days to the system instead of sharing a photo of the child every day with the parent. Besides, there is no adverse statement about the communication tool and guidance themes.

3.7 Findings concerning Montessori Education

This theme brings together the Montessori educators' views on the digital assessment tool in terms of the Montessori education and collaboration of the Montessori educators with each other. The sub-themes of this theme are composed of the headings namely academic studies, social-emotional field, collaboration, and evaluation. Participants are divided according to this theme of the Montessori training in terms of the formation of positive and negative meaning. These experiences have been reviewed as separate headlines as follows;

Table 3: Experiences concerning Montessori education

Montessori Education	*Positive statements from participants*	*Negative statements from participants*
Academic studies	"There is very good content about academic development… in other words, such applications exist in academic terms only. The language is cosmic, we could enter or even interpret whether he has done studies on the mathematical materials of daily life, whether he has been still working or completing." K-1 "There were different pages about all the fields. He had the sub-steps. Think of them as our checklist which we can tick directly. We could share the grade where the child was academically in the form of notes that only our teacher colleague could see. K-2 "I am saying that Ahmet, Mehmet, Ayşe, Fatma (nicknames) have been presented with a shuttle box. I want to enter this information at once. What do I do? I click and record the names and I enter data. At the same time, let the most basic work be carpet folding or carpet transportation. You can enter the	"It is not very useful in academic terms. We could only use it in two places, guidance, and parent-teacher meetings." K-4 "There are three options for Montessori studies, namely "presented", "working on it" and "specialized"; they can not fully express the child. You have to mark it there just to get your information in there. The child seems good, he is at the medium level, but he is good, then you mark it as "working on it"" K-6 "With the SAP Fiori system, we only keep the record of the child's level in the study. We can call it a very narrow assessment." K-11
Social-emotional area	"...we were able to write comments about the child as the social field, emotional field, but we were discussing the child's status regarding the field with parents more at meetings rather than the system. K-14 "...we were able to write comments about the child as the social field, emotional field, but we were discussing the child's status regarding the field with parents more at meetings rather than the system. K-14	"We couldn't process social data. We were only able to interpret studies in the academic sense." K-1 "No, It certainly did not have that field. There was never a section, no part, where the teacher's observations were expressed." K-2 "We were not doing anything like this. There was no entry section reserved for this and we couldn't project it there." K3 "There was a social development part concerning parent meetings; we could enter there. We couldn't enter any extra data concerning this field. There are certain tabs in the system and we can only use those tabs; there is no extra part for writing an observation report and assessment." K-4 "I thought about the student's social-emotional relationships and friendship relationships. It can be added the most in the psychological counseling and guidance interviews." K7 "We can prepare such development reports in different formats outside the SAP, in our own format before classroom teacher-parent meetings or group meetings and we can say that development reports are like e-school reports". K-10 "We couldn't enter data concerning the social-emotional development of children. The field to express our views was only for the study." K-12
Collaboration	"Given the moments when s/he couldn't share with the other the day s/he was working with which child and on which type of study, Both teachers could see the other teacher entering from there, which level s/he was at; and instead of taking the time to communicate with each other, they could provide it from there." K-2 "There was a collaboration in the data entry there We were entering the observations in Montessori by 3 or 2 teachers collaborating" K-5 "Three teachers last year, two teachers this year. If we can share it and enter it into the system, it makes it easier for us. Anyway, it can be seen which presentations are entered. I did not have problems at that point; it even made our job easier when it came to photo entry. And when I enter the explanation, my other teacher colleague can see the explanation. So, s/he can see the details of my work by reading my views." K-7	"It had no effect, as it wasn't a very useful program, it didn't have any effect." K1 "We didn't need to open and look at it anyway; it took too long to get into the system. We were opening our observations book and we were looking to move on from level where the student was". K-6 "I never use it to see what my other teacher colleague is doing. We used our own observation charts and notebooks to decide." K-5
Assessment	"It makes the assessment of the child easier for us; but as there is a workload on the teacher during the day, it just makes for us difficult to enter data." K-4	"It's supposed to be fast, but it's slower than normal. That's why it doesn't encourage me to use." K-1

	"It actually makes the assessment easier. When a three-year-old comes in from the basic level, and you get all your data in there, it makes it easier for us to assess correctly. While entering, yes, the process may take some time; but it is very good for assessment." K-7 "It was very encouraging to be able to check the boxes and print a progress report, but it should be noted that to fully assess progress, you need to be aware of observation and good knowledge of the child." K-8 "As we had to enter the presentations made in the system there, it became useful in terms of evaluating the children at that point ." K-9 "Having many notes for your observations about the child is very encouraging for the assessment. Throughout the year, during the week, the Transparent Classroom helps you enter presentations and keep track of children. When we look at the language field, we can see all presentations, comments in one field. We can see which study the child is doing, and the level he is in. This makes the assessment easier." K-13	"I wasn't thinking that I had to make extra observations as there was this system. This is something that you should be doing, and you should be doing it about the child's academic condition. However, with this system, you can hardly transfer it, or only report it." K-2 "We are already evaluating the child in our own minds while the child is working. SAP did not have an extra impact on us." K-10 "There was no incentive for making many assessments. You just keep a record of whether you're presenting or not, and you don't have that kind of observation field for the child, so I don't think it's effective." K-11 It didn't encourage us because we were using our observation reports in our classroom when we were going to make an assessment," K-12 "Ir didn't encourage the assessment very much." K-14

3.8 Positive Statements

Statements of Montessori educators' digital assessment tool in terms of Montessori education that can be interpreted as "positive" are shown in Table-5. When table-5 is examined, one of the educators, K-1 stated that the digital assessment tool was more suitable for entering the academic studies of the child in Montessori education, and that he could follow-up the child. K-2 and K-9 stated that the tool allows you to record Montessori academic studies gradually and allows taking notes concerning the child's status in the study. In addition to these educators, K-13 expressed the use of colors and symbols to determine the level of the child's work. Besides, educators emphasized that there are levels in the child's study, namely "presented", "working on it", "specialized". K-7 mentioned that the digital assessment tool allowed him to enter the same work offered to multiple children into the system at once. K-8 stated that the digital assessment tool allowed the educator to add newly prepared materials as well as to enter the presented materials.

K-13 stated that the digital assessment tool allowed for writing down data such as behavior, social skills, adaptation processes, and friend relationships of the child. K-14 said that the vehicle allowed for entering information on the child's social-emotional skills, but they made that sharing in the meeting with the parents.

When examining the digital assessment tool in terms of collaboration between educators in Montessori educators, the educators K-2, K-7, K-9 and K-11 said that the tool was used so that other educators could see and be informed about the child's condition while working. Besides, just like K-5 and K-11, K-7 stated that educators collaborated in data entry into the digital assessment tool.

Expressing positive experiences regarding its use for assessment purposes, K-4 and K-7 emphasized that the SAP Fiori system made assessment easier for them even though data entry was tough, whereas K-8 emphasized that the tool was motivating for making assessments but underlined the information and observations about the child in order to fully evaluate the child. K-9 mentioned that the need to enter data into the tool encourages them to provide regular data, and thus make a good assessment. K-13 expressed the importance of the data recorded on the tool in terms of fully assessing the development of the child.

3.9 Negative Statements

Montessori educators' statements regarding sharing of the child's data with the parent via the digital assessment tool, which can be understood as "Negative", are shown in Table-6. When table-6 is examined, it is seen that K-4 said that he did not find it useful in terms of recording the data for the academic studies of the child, but emphasized the parent-oriented side of the tool. K-6 and K-11 stated that the academic studies of the child did not find completely a place in the system, but were done only on rating scales, which meant "limited" in terms of evaluation.

The K-1, K-2, K-3, K-4 and K-7 and K-10 said that there are fields for comments about the child's academic work in the digital assessment tool but there is no field for social-emotional observations to be recorded.

It is observed that K-1, K-6 and K-5 expressed that they did not use the digital assessment tool for collaboration with each other. Educators stated that this is due to the difficulty in using the system and that educators can do so with their own recording tools.

There were also negative findings on whether the digital assessment tool encourages the assessment. K-1 said that the vehicle's slowness was effective in this sense, and K-2 and K-10 said that the educator did the assessment and that the

Table 7: Experiences with Non-Digital Assessment Tools

Non-Digital Tools	*Participants' statements*
Observation Book	"I personally write down our observations in the classroom in my observation book. Every day before I enter the classroom, I write down the name of my students... In our observation book, we were writing down which date and place of note were included in the study when this study was presented. For example, a child could have been stuck in a number. He may be tired of a stage. We could write them down." K5 "We already had our observation books. We could write this in detail the note we wanted." K-6 "I am not sure in terms of assessment of the child, because we are continuing the assessment on our own individual forms, our notebooks." K-9 "The teacher cannot see it in its entirety. I've never assessed the child's development through the SAP. I took advantage of my own observation book." K-12
Checklist	"I think, through this way, the children can have a checklist with all fields and studies. I think that it's good and healthy for educators to have a folder where they can keep their own notes instead of keeping it in digital form in terms of teacher observations, and it seems more realistic to the parent in terms of parents." K-2
Observation form	"To be more practical, we use our class observation forms to see who presented what last time, because there are so many cases such as using the password, no phone sign, etc. We're already in our class with our booklet and observation forms; we continuously fill them manually in the class. We follow children all the time." K-10 "...Instead of entering SAP, we use observation form in the classroom as it is a multi-staged process, and it doesn't have many functions because we process it through observation form." K-11

tool was not needed. While K- 11 was talking about the lack of field for assessment in the system, K-12 explained that they used their own methods for this purpose. It is noted that K-14, who used the Transparent Classroom tool, unlike the others, said the vehicle did not encourage the assessment.

3.10 Findings on Non-Digital Assessment Tools

This section contains the findings of non-digital assessment tools that Montessori educators apply in their classrooms. Montessori educators' views in that sense formed two sub-themes. Educators' experiences for non-digital tools are as shown in Table-4;

All educators stated that they have recorded manually after observing in the classroom. This theme includes the statements of educators who use non-digital assessment tools more actively and extensively. When Table-4 is examined, K-5, K-6, K-9, and K-12 emphasized that they actively and comprehensively used observation books as a means of recording observations. While K-5 and K-6 stated their intention of choosing the observation book as to take a detailed note of the child's study, K-12 said the tool cannot project the child's study entirely K-2 stated that s/he can use checklists instead of a digital tool, and that would be a healthier observation. K-10 stated that he preferred the observation form as it is easier to use, where K-11 said he preferred the observation form because the digital assessment tool was difficult to use. The expression of the fact that these non-digital assessment tools used are more practical than the digital assessment tool as well as the creation of a personalized tool is observed. Besides, it is also found note-worthy that educators, who prefer the digital assessment tool to the digital assessment tool, are Montessori educators who use the SAP Fiori tool.

4. Discussion

4.1 Discussion of findings regarding the ease of use and necessity

Findings from Montessori educators' experience with Transparent Classroom and SAP Fiori digital assessment tools show that Montessori educators have positive and negative views on the ease of use and necessity of utilizing the digital assessment tool. While the process, time, technological devices, reporting cover both positive and negative experiences, the heading of digitalization is included in the subheading that covers positive experiences.

The fact that in his study, Lacina (2012) mentioned that there are many benefits of online systems as well as negative sides supports the positive and negative views of Montessori educators. It can be said that the concept of "digital" brought by the age has been effective in the fact that Montessori educators think a digital assessment tool is necessary. The digital concept is used by educators to provide the observation data from children in an environment that can be accessed, shared at any time. Educators stated that this technology-led opportunity should also be used in education and assessment. Many educators expressed a negative opinion of the need for the use of the digital assessment tool in the assessment. Negative insights have been negatively expressed in terms of the efficiency and usefulness of the digital assessment tool used. It is understood that the digital assessment tool is compared to the paper-based evaluation. Some Montessori educators using the SAP Fiori system said that the usage of the SAP Fiori digital assessment tool is necessary if its usage is facilitated, and some think that it is sufficient to assess on the paper for this reason. Neuman et al., (2019) in the pre-school research on technology and evaluation, said

that the challenge of making technology-based education assessments a part of good education practices can only be addressed through the common efforts of many stakeholders; and it is important that the technological tool to be used is well chosen. This is in line with Montessori educators' view in terms of the necessity of using the digital assessment tool that the tool is easy to use. In the study, Montessori educators using the SAP Fiori tool expressed negative experiences on the tool's necessity due to issues related to the process, while Montessori educators using Transparent Classroom made positive statements about the process of the digital assessment tool. Based on these findings, educators using the SAP Fiori tool were expected to consider using the digital tool as not necessary, while educators using the Transparent Classroom are expected to consider the digital tool as necessary due to the fact that they did not have any difficulty with the tool, but no linear results were achieved. As many studies have shown, it is possible to say that the history of early childhood knowledge and education is influential in the understanding and execution of the assessment (Basford, Bath, 2014; Bennet, 2011; Buldu, 2010).

The findings show that educators associate digital assessment tools with time. When the literature is examined (Buldu, 2010; Fleer, Richardson, 2004; Nah, 2014), it is seen that the biggest obstacle educators have in their evaluation practices is lack of time and that the time they spend on assessment has decreased their interaction with children. Within the scope of the work, it is understood that educators consider the slowing down of the tool and the difficulty of data entry as a waste of time concerning the SAP Fiori tool, and educators using Transparent Classroom consider the digital assessment tool as negative in terms of time spent as they pay attention to record their observations when they are not with children; and these findings coincide with the literature. Besides, the findings have shown that the system is easy and practical, and educators using the Transparent Classroom are saving time. This is supported by Seril's study (2015) saying that it takes less time to record and use a technological system to communicate with parents.

When the findings are examined within the scope of the research, it is stated that the SAP Fiori tool partially allows reporting, while Transparent Classroom provides a comprehensive report with a different algorithm. As a result of the findings, it is seen that the positive and negative expressions of the educators regarding the reporting characteristics of digital assessment tools were parallel in this sense. Binkley et al.'s (2012) study support the finding that it is important to evaluate the use of information communication tools more effectively and faster than traditional methods through visualizations and simulations.

In their study, Khairuddin and Mustaffa (2002) said that 67% of Montessori educators tend to forget about the progress of the child and that their electronic systems should report on children's progress. This supports the opinion of the educators in this study.

4.2 Discussion of the findings regarding the parent

In this study, it is found that Montessori educators associate the digital assessment tool with information sharing, photo sharing, communication means, and guidance.

As a result of the research, Montessori educators highlighted the digital assessment tools' feature to communicate with the parent. Montessori educators have both positive and negative statements regarding the digital assessment tool. They expressed a positive attitude toward the digital assessment tool in terms of sharing the status of the children in the classroom and ensuring that the parent could see them. In fact, they used digital assessment tool in the sense that the parent can see how their child is doing. It is also understood that two-way and one-way communication is used with the parent. Montessori educators using The SAP Fiori digital assessment tool can share a photo, monthly bulleting, and monthly meal lists utilizing one-way communication. Besides, the studies and study reviews of children are communicated to the parent via the digital assessment tool.

When the literature is examined, it is found that educators maintain positive relationships with parents and that it is necessary to communicate and cooperate with children to support their learning and development, as recommended in studies, and that communication between parents and teachers is useful in building trust-based relationships and improving school-related communication (Miretzky, 2004; Hammonds, 2013; NCCA. 2009). Montessori educators using Transparent Classroom said that in addition to parents entering the system at any time and seeing their child's development, they sent the information concerning the children's studies in two weeks to parents every two weeks on Friday through e-mail system of the digital assessment tool. This indicates that Montessori educators using Transparent Classroom use the digital assessment tool instead of their own personal communication channels in their communication with the parent. The study conducted by Migliorino and Maiden in 2004 supports the fact that using an online record-keeping site has many positive aspects such as allowing parents to instantly access up-to-date information about their children from anywhere (Migliorino & Maiden, 2004).

Situations such as parents having problems using the system, and not understanding what the study involved meant, etc., had a negative impact on parental communication. Besides, the research found that parents had difficulty in understanding the reports and entering the system. The fact that Montessori educators prefer face-to-face communication more because of problems due to the feedback from parents such as parents finding the system complex, losing the password to enter the

system is also among the findings. Deslandes (2013), found that parents should be clearly informed and educated about the assessment process. Besides, Damore (2004) said that factors such as parents' lack of knowledge about Montessori philosophy and methodology, and the fact that Montessori classes have a different system than traditional methods, would lead parents to develop misconceptions about assessments of the child's development. This is consistent with the findings in the study in terms of parents' attitudes toward digital assessment tools.

The findings suggest that another issue that educators associate with the parent regarding the digital assessment tool is child photo sharing. Ellis (2015) found in his study that photography allows for visualization of what children do at school, which gives the parent a better understanding of the child's daily activities and ensures transparency.

4.3 Discussion of the findings concerning Montessori Education

The findings suggest that Montessori educators' Montessori studies are included in the digital assessment tool and coincide with the purpose of use in Montessori training. It can be said that the use of digital assessment tools for Montessori training is quite appropriate. It may also be due to the digital tool's ability to organize many data. In his work with Montessori educators using Transparent Classroom for record-keeping purposes, Wheeler (2018) stated that the tool has a positive impact on educators' self-competency skills. In the study, it is observed that the ability to monitor the study offered to children and to meet the needs of children increased the confidence and self-competence of the educators.

In addition to these findings, it is found that the digital assessment tool did not allow the data regarding the child's social and emotional field to be entered. Montessori educators have developed a different form of documentation. Although it is specially mentioned in the statements of educators using the SAP Fiori tool, it is understood from educators using Transparent Classroom that the information about the social-emotional data of the child is provided face-to-face to the parent. This may be due to verbal preference for statements about the child's social-emotional behavior due to the difficulties experienced in the written language.

Furthermore, the findings show that educators using SAP Fiori experience the fact that parents are not interested in the system, and therefore it does not make much sense to enter data into the tool. In his study, Buldu (2010) found that assessments made among the difficulties experienced by preschool educators during the assessment were not considered valuable enough by parents. It is observed that this supports the findings regarding the Montessori educators using the digital assessment tool.

Since there is more than one teacher in Montessori classes (the number of educators based on the number of children was given previously), it becomes even more important in terms of the relationship between each other. It is observed that Montessori educators use their collaborative skills in digital assessment tool to record children's observation data in the system, but different factors are effective in the communication between each other; and the most important one among these factors is their face-to-face information transfers Neuman et al., (2019), in their research on assessment and technology in early childhood education, stated that technology has many benefits for assessment Thus, in the 21st century, it is understood that in addition to the effect of digital assessment tools on communication and cooperation between Montessori educators, cooperation and communication skills have an important role in its adoption and the increase of efficiency.

4.4 Discussion of findings concerning Non-Digital Assessment Tool

When the findings are analyzed, Montessori educators were likely to use the digital assessment tools. Despite these tendencies of educators, it is understood that Montessori educators did not choose to use the digital assessment tool and that educators using SAP Fiori have that view. It is observed that this is due to fact that they find the digital assessment tool difficult and impractical, and on the other hand, this has affected their perception of the digital assessment tool.

Henry and Stone (1997) attributed the year of teaching to the experience of teaching and stated that teachers with a longer professional experience tend to have more problems with technology integration. In the study conducted by Miglorino and Jeffrey (2004), it is stated that age and gender do not play an important role in teachers' attitudes towards electronic systems, but that the teaching habits developed by professional experience over many years are the reason for resistance to technological systems. The fact that no age-related relationship is found in Montessori educators' tendency for non-digital assessment tools coincides with the literature. However, contrary to these studies, in Montessori educators' tendency to prefer the use of non-digital assessment tools instead of digital assessment tools the impact of professional experience periods is not found.

In the study, it is concluded that the most important factor affecting the usage habits and attitude of Montessori educators towards digital assessment tools was whether the vehicle is user-friendly.

Besides, even though educators who tend to use non-digital assessment tools generally have negative views of digital assessment tools, it is seen that these educators express positive statements, as well. On the other hand, as a result of the findings, it is understood that the educators who developed a generally positive attitude towards the digital assessment tool expressed negative opinions at certain points.

However, the fact that the overall attitude of the educators affects their perceptions is one of the key results of the investigation. For example, in his statement, the educator using the Transparent Classroom indicates that using the non-digital assessment tool is an extra load for him, and the educator using SAP Fiori indicates that using the digital assessment tool is a challenge.

5. Conclusion

The findings show that the digital assessment tool has positive and negative effects on the Montessori educators' work in cooperation, and it is understood that it varies according to the attitude of the educators towards the digital assessment tool. However, the study has found that the digital assessment tool, even if not directly, contributes indirectly to the collaborative ability of the educators. A study by Johnson (2003) found that while there are some negative opinions about teachers' collaboration as a way of working, it makes most teachers feel good. In this respect, while being supported by the literature, nowadays, at a time when the cooperation skills in the school environment are increasingly important and becoming the basic skills among the 21st-century skills (Griffin, McGaw, Care, 2012; Trilling, Fadel, 2009), it can be expressed by looking at the opinions of the instructors that a digital tool has a positive impact on the skills of educators.

6. Limitation

The sample of this study is limited to 14 Montessori educators who are female and work in two private, official independent early childhood education institutions in Barcelona and Istanbul. The research findings are limited to the data generated from the statements of the trainers during the interviews. Since the research was built according to the qualitative research method, the obtained data do not need to be generalized to all preschool teachers who are Montessori teachers. The study is limited to the interview questions prepared by the researcher for the educators and the opinions given by the educators.

References

Aktepe, V. (2005). Eğitimde Bireyi Tanımanın Önemi. Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi. c. 6, s. 2: 15-24.

Bryman, A. (2012). Social research methods (4th ed). Oxford University Press.

Buldu, M., & Erden, F. T. (2017). An Investigation of Turkish Early Childhood Teachers' Self-Reported Beliefs and Practices Regarding Assessment. Journal of Education and Future, (11), 29-49.

Büyükgöncü, N. (2013). Okul öncesi eğitim kurumlarında uygulanan bireyi tanıma tekniklerinin öğretmen görüşü açısından değerlendirilmesi. Yayınlanmamış Yüksek Lisans Tezi, Erciyes Üniversitesi, Kayseri.

Cilesiz, S. (2011). A phenomenological approach to experiences with technology: Current state, promise, and future directions for research. Educational Technology Research and Development, 59(4), 487-510. https://doi.org/10.1007/s11423-010-9173-2

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry & research design: Choosing among five approaches (Fourth edition). SAGE.

Damore, Sharon. 2004. The assessment puzzle or assessment 101. Montessori Life. c. 16, s. 3:22.

Deslandes, Rollande, Rivard Marie-Claude. 2013. A Pilot Study Aiming To Promote Parents' Understanding of Learning Assessments at the Elementary Level. School Community Journal. c. 23, s. 2: 9-31.

Dunphy, E. (2010). Assessing early learning through formative assessment: Key issues and considerations. Irish Educational Studies, 29(1), 41-56. https://doi.org/10.1080/03323310903522685

Durakoğlu, A. (2010). Maria Montessori'ye göre çocuğun doğası ve eğitimi. Yayınlanmamış Doktora Tezi. Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Ellis, M. L. (2015). The efficacy of classroom management software on parent-teacher communication.

Eren, T. (2007). A bridge between home and School, portfolio assessment in early childhood education. Unpublished master's thesis), Middle East Technical University, Ankara.

Griffin, P., Care, E., & McGaw, B. (2012). The changing role of education and schools. In Assessment and teaching of 21st century skills (pp. 1-15). Springer, Dordrecht.

Henry, J. W., & Stone, R. W. (1997). The development and validation of computer self-efficacy and outcome expectancy scales in a nonvolitional context. Behavior Research Methods, Instruments, & Computers, 29(4), 519-527.

Horton, C., & Bowman, B. T. (2002). Child Assessment at the Preprimary Level: Expert Opinion and State Trends. Occasional Paper.

Isaacs, B. (2007). Bringing the Montessori approach to your early years practice. Routledge. http://site.ebrary.com/id/10228441

Isaacs, B. (2010). Bringing the Montessori approach to your early years practice (2nd ed). Routledge.

Isaacs, B. (2018). Understanding the Montessori approach: Early years education in practice (Second edition). Routledge, Taylor & Francis Group.

Lacina, J. (2006). Technology in the classroom: Virtual record keeping: should teachers keep online grade books?. Childhood Education, 82(4), 252-254.

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2010). Methods in educational research: From theory to practice (Vol. 28). John Wiley & Sons.

Maxwell, J. A. (2012). Qualitative research design: An interactive approach (Vol. 41). Sage publications.

Migliorino, N. J., & Jeffrey, M. (2004). Educator attitudes toward electronic grading software. Journal of Research on Technology in Education, 36(3), 193-212.

Millî Eğitim Bakanlığı. [12.12.2020]. Millî Eğitim Bakanlığı Okul Öncesi Eğitim Programı. Ankara: MEB.

Miretzky, D. (2004). The communication requirements of democratic schools: Parent-teacher perspectives on their relationships. Teachers College Record, 106(4), 814-851

Montessori, M. (1991). The Advanced Montessori method: scientific pedagogy as applied to the education of children from seven to eleven years. Clio.

Moustakas, C. (1994). Phenomenological research methods. Sage Publications..

National Council for Curriculum and Assessment (NCCA). (2009). Aistear: The early childhood curriculum framework

Neumann Michelle M, Jason L. Anthony, Noe Erazo, David L. Neumann. 2019. Assessment and Technology: Mapping Future Directions in the Early Childhood Classroom. In Fronteries in Education. c. 4:116.

Önder, Alev. 2016. Okul Öncesi Dönemde Çocukları Değerlendirme ve Tanıma Teknikleri. 2. bs. Ankara: Anı Yayıncılık.

Özçelik-Demirel, Ayşe, Kübra, Eke. 2019. Eğitimde ve Endüstride 21. Yüzyıl Becerileri. ed. Ayşe Özçelik-Demirel, Mehmet Nur Tuğluk. Ankara: Pegem Yayınevi:137-159

Transparent Clasroom. [11.11.2020]. Tutorials. Transparent Clasroom. https://www.transparentclassroom.com/tutorials?locale=en.

Tuğluk, M. N., & Özkan, B. (2019). MEB 2013 Okul Öncesi Eğitim Programının 21. yüzyıl becerileri açısından analizi. Temel Eğitim, 1(4), 29-38.

Van Manen, M. (2016). Researching lived experience: Human science for an action sensitive pedagogy (Second Edition). Routledge, Taylor & Francis Group.

Wentworth, R. A. L. (1999). Montessori for the New Millennium. "Lawrence Erlbaum Associates, Inc." Alıntı: Wentworth, Roland A. Lubienski. "Montessori for the New Millennium". Apple Books.

Wheeler, Molly W. 2018. The Effects of Record-Keeping On Teacher Self-Efficacy and Student Self-Regulation in The Primary Montessori Classroom. Retrieved from Sophia, the St. Catherine University.

Wortham, S. C. (2014). Assessment in early childhood education. http://www.vlebooks.com/vleweb/product/openreader?id=none&isbn=9781292056074