EXPERIENCES AND EXPECTATIONS OF STUDENTS AND TEACHERS IN THE FIELD OF USING E-LEARNING IN MUSIC EDUCATION

[a]LIBOR FRIDMAN, [b]ŠTEFAN PETRÍK, [c]PAVEL MARTINKA
[d]MICHAL BRODNIANSKY

Matej Bel University, Faculty of Education, Ružová 13, 974 11 Banská Bystrica, Slovakia
email: [a]libor.fridman@umb.sk, [b]stefan.petrik@umb.sk
[c]pavel.martinka@umb.sk, [d] michal.brodniansky@umb.sk

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Abstract: The paper reports a part of the results of a broader research, in which the evaluation of e-learning by music teachers was examined. As a part of the paper, we are presenting the research findings on the views of music teachers (n = 238), but also future music teachers - students (n = 117) on e-learning, perception of the use of electronic media and their effectiveness in the implementation of music education. The results of the empirical research confirm the openness of both music education teachers and students to these innovations in Music education, which are implemented through the use of e-learning and e-textbooks.

Keywords: e-learning, music education, electronic textbook, music art

1 Introduction

The present is characterized by the entry of electronic media and electronization into every area of our life. The electronic media are “modern means of communication and expression built on electronic technology - television, radio, internet, sometimes including video, DVD and the latest mobile phone.” (Mistrík, 2013) We use electronic elements in material form and in the form of user software and various forms of utility and entertainment applications. In everyday reality, we can observe the use of these resources throughout all generations, as well as the age group of all students. The frequent use of electronic means, regardless of their necessity or importance for the formation of personality, points to the high potential of using these technologies in the educational reality. The didactics of music art thus faces the challenge of implementing these new means into the educational process as its common part. The innovations in this direction are one of the tasks of innovative tendencies of didactics.

1.1 The concept of the e-learning in the USA

The origin of e-learning can be found in the USA, which was at the forefront of this new trend in the use of electronic means, and gave rise to several types of e-learning (according to Zlámalová, 2008. p. 128-129):

1. computer-assisted education (CBT computer-based training)
2. providing information, training materials and educational content through the various forms of the electronic media (internet, intranet, extranet, CD-ROM, satellite broadcasting, audio- or videotape, interactive TV)
3. technology-supported education (technology-based training)
4. e-learning understood as a subgroup of distance education - the principle is the interaction between the student and the source of information, which is physically stored in a distant location
5. e-learning which is understood as the education with the assistance of the web technologies (web-based training)
6. e-learning as a tool using network technologies to create, distribute, administrate and constant update of the educational materials

Thanks to the rapid development of the informatization, the USA has a leading world position in this field. This evaluation, which takes the example of the United States and Canada, summarizes policies, development plans, and major projects for the informatization of the education that have recently been introduced and are being implemented by governments. After a chronological comparison of all the policies and projects, we find four important features of the informatization of the education in the USA and Canada:

1. constant promotion of the development and transformation of the informatization infrastructures
2. focus on the increasing ability of teachers to computer-based teaching
3. paying attention to the research of the standards of education informatization
4. implementation of the strategies of education informatization leading to equality

1.2 The concept of the e-learning in the Europe

The use of ICT in education is also explained in details by a group of international organizations such as the OECD, UNESCO, the EU and its EURYDICE department, an information network on education in Europe, set up by the European Commission and Member States in 1980. (Brozmanová, 2015). Eurydice has published a publication *Information and Communication Technology in European Education Systems*, stating that the concept of ICT in education includes computers, a computer network, multimedia and other technical means. At the same time, we understand ICT as a tool or a source of education, not as a subject of study. (Eurydice 2001) The European Commission defines e-learning (digital education) in two levels:

1. development of the digital competences by pupils / students and teachers
2. educational use of the digital technologies to support and improve teaching, learning and evaluation.

The European Commission's Digital Education Action Plan for 2018 formulates e-learning as "a way to make better use of innovation and digital technologies in education and training systems and to support the development of digital competences needed to live and work in a time of rapid digital change" (Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digita lEducation Action Plan, COM/2018/22 final).

The United Kingdom is among the countries of the European Union that support the development of the computer-based learning at schools, where a five-year government program has begun in 1997.*National Grid for Learning*. The following results are expected there:

- all teachers will master and use ICT,
- all educational institutions will be connected to the National Network for Education,
- most urban centers will be connected to the National Education Network,
- 75% of all teachers and 50% of all pupils and students will have their e-mail
- mailbox,
- all school graduates will be competent and able to use ICT,
- communication between schools and school authorities will be exclusively electronic.

Finland connected all schools and public libraries to the Internet by the end of 2000, the French government adopted a three-year plan to introduce ICT in schools in 1997. (Bílek, Semrádová, 2004)

1.3 E-learning in the context of the Slovak cultural environment

In Slovakia, the creation of the Infovek project has been the first step toward the succesful use of ICT in the teaching process, and the most of the work also refers to it. The project was established in 1999 as a result of the activities of a non-profit organization

called the Infovek Project Association for the purpose of modernizing and supporting the teaching process using ICT. Katarína Mandíková, Tibor Papp, Martin Hauptvogel and Peter Sýkora are its founding members. The first Infovek 1999 conference took place on 14 January 1999 and thenwas sponsored by the Chairman of the NRSR. The conference was attended by top government officials, experts from universities and executives of companies in the field of ICT. The vision of the project was presented for the first time at the conference and there was a rich discussion between all the participants. (Brezina, 2009) Outside Europe, the United States are the one of the countries with a flexible response in the field of computer technology development, where there are the most organizations dealing with computer-assisted learning. Leading American expert in computer-assisted teaching, Sam Reese, states that 78% of American students aged 10 to 17 already had a computer at home in 2001 and 73% of them had direct access to the Internet.2 In comparison to Slovakia in 2006, only 26% of pupils were connected to the Internet at home, the difference is significant. The number and scope of the publications published on computer-assisted music education also dominates the United States, and yet the authors often wonder to what extent it is necessary to use a computer in the teaching process. (Brezina, 2009).

In addition to foreign authors, ICT in the education has also been defined by Slovak authors Kučerová and Pálušová, who describe information technologies as "computing and communication tools that support study and other activities in the field of education." (Kučerová, Palušová 2006, p. 250). In 2006, there are ideas that support the use of ICT during the educational process and define ICT as supporting components that help to increase the quality and effectiveness of the education. The authors see the importance of using the technologies mentioned above and try to categorize them as modern teaching aids which teachers will work in the future with.

Thus, ICTs are technologies that are in some ways related to the collection, recording and exchange of information. They use these activities:

- personal computers with multimedia support,
- means of digitization,
- internet and its services,
- e-mail,
- the media (television, video, radio)
- integrated educational programs and others (Kučerová, Palušová 2006)

In recent years, in the professional literature, we frequently encounter the concept of digital technology, which includes an information component (information acquisition) and a construction component (knowledge construction). (Šašala, 2017) Kalaš understands digital technologies in the context of education as a synonym for information and communication technologies, ie as "a wide range of means, tools, environments and procedures (coming from the field of computers) that we use to support learning and learning, communication and collaboration, expression, creation, etc., ie for the comprehensive support of all developmental domains of children, students and learners of all ages ", so it highlights the" design side of new technologies for the development of the design aspect of the cognitive process. "(Kalaš 2013, p. 14)

Jiří Zounek defines digital technologies as “a product of human culture and technology co-creating the current society and life of all people, and thus life in schools. Technology is not neutral, because it has already caused many changes in education and enabled activities that would not be possible without technology. "(Neumajer, Rohlíková, Zounek 2015, s.15)

When implementing ICT in education, it is therefore necessary to perceive these two levels as inseparable and interdependent. Technologies will be part of society forever, and therefore we consider it appropriate to use them as aids in the educational process. The school, as an educational institution, has always been the most effective facility designed to educate as many people as possible. With its working methods, it must adapt to the newly created conditions, in the form of ICT, otherwise there is a risk that new information and communication technologies will surpass it. (Koreňová 2000) Eger (2004) characterizes e-learning as computer-based education, web-based education, internet-based education, and real-time communication using computer and internet-based communication. According to J. Zounek, e-learning is “an educational process in which ICTs working with data in electronic form are used. The way in which ICT is used depends primarily on the goals and content of the education, the nature of the educational environment and the possibilities of all actors in the educational process. " (Zounek, 2006, s. 400) *Resource-basedlearning* puts technology (such as multimedia, the Internet) at the forefront as a source of information and completely replaces the teacher in this position.

ICT is also important in so-called blended learning, which is a combination of full-time and distance learning. Examples of blended learning can be seminars combined with video conferencing, courses with a permanent e-mail connection, etc. (Brozmanová 2015) Also videoconferences have become very popular, especially in the tertiary education. They allow you transfering the lectures to any distance. Such interactive communication ensures the transmission of audio and video (video) in real time. ICTs make it possible to shift the teacher-student communication channel from the traditional transmission and reception to a modern collaboration and so discover new information. As a result, a student can work independently, at an individual pace, choose their own procedures (develop logical thinking), the sources of information (develop critical thinking, determine availability, conduct the first research), voluntarily cooperate with classmates (cooperation, comparison), present their results (presentation skills, feedback,). From the point of view of didactics, a teacher can act as a coordinator of their students, a counselor, or a tutor. The individual work of a student with the use of ICT allows teacher to devote more time to individuals or groups, to have a more effective approach to individual feedback, diagnosis or evaluation.

2 Music Education in the context of the use of ICT - Music education in the context of e-learning

Since its formation as a separate subject, music education has undergone several changes, reflecting mainly technological development. The initial form of music education was also reflected in its name - singing, where the students or teachers were the only source of music. At this stage, music education had a distinctly active character. This was later weakened due to the development of communication technologies. A significant achievement was the introduction of listening to the music in education in 1960.

Music education faces a challenge in the field of its innovation and modernization, which arises from the further development of technologies and their possibilities. Although these are gradually being implemented in the educational process, their potential has not still been fully exploited. Presentations (powerpoint, prezi and others) have already been a common part of teaching today, but in comparison with the current modern means they only replace the "paper" form of the textbook to the use of some aesthetic effects and do not have a significant impact on improving the quality of education. *"Institutionalized education should not be stylized either in the position of opponents who believe that social networks are just a fad, nor in the position of enthusiasts who are eager to take advantage of the new trend, but rather try to understand this new medium in favor of new opportunities to work with web, to place it in the context ... "(Vrábľová, Ľ. 2013, p. 76. In Fridman et al. 2013)* needs of music education. The reflection of these changes is also constituted in the cross-sectional topics of the ISCED State Educational Program: media education, personal and social development, project creation and presentation skills. The issue of implementing ICT in music education has so far been addressed by several personalities (Belo Felix, Eva Langsteinová, Jaroslav Herden, Marián Janek, Hana Váňová, Libor Fridman, Ľubomíra Vrábľová, Oľga Brozmanová, on a

global scale e.g. Uwe Buermann, M. Salavuo, K. Jenningsa and others). The research brings mostly positive results in contradiction with some negatives or indifferent results (Vrábľová, In Fridman, 2013), which put us ahead of the next task of finding the causes of failure in the innovated models and the possibility of eliminating possible shortcomings.

The curriculum as a carrier of information that the student works with is standardly differentiated into three qualitatively and quantitatively different forms: basic, key and expanding. Compared to classic textbooks, the e-learning platform allows us to organize this material logically without the student or teacher being distracted by the other content. The organization of the curriculum must respect the educational goals and their taxonomic levels. Classical, paper, textbooks contain such a structured subject matter, but it is limited by a two-dimensional graphic presentation, which must include all items on the same surface of the medium. The E-learning allows us to structure the curriculum according to the requirements of individual taxonomic levels without the processes and tasks (and especially the materials needed for this) related to the fulfillment of higher taxonomic levels to draw our attention to the problem just solved.

However, what we must emphasize in the creation of electronic textbooks is the active nature of the process of music education, which is its essence. Music education cannot be limited to the passive reception of information from a graphically attractive visual media platform. So far, we have commented mainly on the arrangement of content recorded graphically (written text, sheet music) or auditory (audiovisual) in the case of musical samples or entire compositions.

While adhering to the principle of activity, the creation of electronic learning material raises a fundamental question of the overall concept of the final product. Based on the didactic concept of L. Fridman (2013), we present three types of information on the music educational process:

1. musical information (primarily, dominant in the music-educational process, their essence is music in its sound form)
2. music-related information (information with a direct link to music - a specific work / phenomenon. In particular, it is didactically processed musicological information defined in the contents of music theory, history, aesthetics, etc.)
3. non-musical information (information of a motivational nature with a historical and general-Educational context) (according to Fridman, L. 2013, s. 7)

For the needs of music education, it is necessary to select content so that it is primarily focused on music (musical information) as a phenomenon and not on information about music, or just related to music. „*Music as a subject of cognition and education contains elements that can be analyzed and defined objectively on the basis of artistic-scientific and aesthetic-professional criteria.*“ (Fridman, 2013, p. 7) In connection with this, it is necessary to select the content to be functional in fulfilling educational goals.

3 Research methodology

The frequent use of the electronic means in the field of education sets a great challenge to the didactics of music art in the implementation of new means into the educational process. Adequate use of the innovations and their relevant implementation in the teaching of music education, e.g. in the form of electronic textbooks is highly dependent on current as well as future teachers of music education. Based on the facts mentioned above, our goal was to examine the differences of the opinion between the music education teachers and music education students (hereinafter referred to as students) on the use of e-learning and electronic textbooks in music education. Based on the set goal, we focused on the following research questions within the implemented research:

Q1: Is there a difference in the perceptions of the e-learning in music education between music education teachers and students?

Q2: Is there a difference of the opinion between teachers and students regarding to the use of e-textbooks in teaching music education?

Q3: Is there a difference in the perception of the effectiveness of e-textbooks between music education teachers and students?

3.1 Characteristics of research methodology

We were collecting the empirical data from pedagogical staff in December 2019 to September 2020 throughout our own questionnaire containing the items focused on perceptions of the effectiveness of e-textbooks, opinions on the use of e-textbooks in music education and perceptions of e-learning in music education. When designing the scales, we used Fridman (2013), who has categorized e-learning tools within music education. When respondents perceived the effectiveness of the electronic textbooks, we used a scale of: 4 - completely effective, 3 - effective, 2 - inefficient, 1 - completely ineffective. For the opinions concerning the use of electronic textbooks in teaching music education, we used a range of: 4 - strongly agree, 3 - agree, 2 - disagree, 1 - strongly disagree. To determine the perception of e-learning in music education, we used a scale of: 4 - strongly agree, 3 - agree, 2 - disagree, 1 - strongly disagree.

3.2 Characteristics of the research sample

The research sample consisted of a total of N = 355 respondents, of which n = 238 teachers of music education and 117 students - future teachers who complete courses in the field of music education. When selecting respondents, we used an available selection, the questionnaire was distributed online. The average age of the research sample of music teachers was (AM = 34.64), while the average age of students (AM = 20.36). In the research group of teachers, the largest group consisted of teachers working in primary schools (AM). Respondents in terms of the length of pedagogical practice were mostly in the range of years: 21-23 years (65.1%), 24-26 years (50.4%) 17-20 years of experience (39.9%). The research sample of students consisted of 61% of bachelor's degree students and 39% of master's degree students, 79% of female respondents and 21% of male gender.

4 Results of the empirical findings

In the research, we focused on a finding the difference between music education teachers and students: in the perception of the effectiveness of electronic textbooks (ET), in the opinions on the use of e-textbooks in teaching music education, in the perception of e-learning in music education. We are presenting the results of empirical research in T1 to T3.

We are presenting the results of empirical research in Tables T1 to T3. They have used the methods of descriptive and inferential statistics to process the obtained empirical data. The normality of the division of the research set and sub-sets was verified using the Kolmogorov-Smirnov and Shapir-Wilk test ($p < 0.05$). Since the examined variables have not shown the normality of the distribution for the file and subfiles, we used the nonparametric significance test of the Mann-Whitney U test.

Table 1: The Opinion on e-learning in teaching of music education

Teachers vs. students		Teachers	Students	MannWhitney U test	P- value
The Opinion on e-learning in teaching of music education					
E-learning is a more effective way of teaching theoretical subjects than a classic lesson	N	238	117	11544.500	.004
	AM	3.56	2.79		
	Me	4.00	3.00		
	SD	0.707	0.726		
	Min	1	1		
	Max	4	4		
E-learning is a more effective way of teaching practical musical (singing. playing. dancing. ...) activities than a classical lesson	N	238	117	12085.000	.029
	AM	3.46	2.26		
	Me	3.00	2.00		
	SD	0.790	0.760		
	Min	1	1		
	Max	4	4		
E-learning gives me more options than printed publications	N	238	117	13691.000	.766
	AM	2.87	2.91		
	Me	3.00	3.00		
	SD	0.659	0.629		
	Min	1	1		
	Max	4	4		
E-learning wastes my time	N	238	117	13850.500	.928
	AM	2.18	2.19		
	Me	2.00	2.00		
	SD	0.711	0.642		
	Min	1	1		
	Max	4	4		
E-learning makes it easier for me to orientate myself in the issue	N	238	117	13656.500	.708
	AM	2.85	2.85		
	Me	3.00	3.00		
	SD	0.583	0.596		
	Min	1	1		
	Max	4	4		
E-learning makes my learning process easier	N	238	117	13880.500	.956
	AM	2.83	2.84		
	Me	3.00	3.00		
	SD	0.656	0.707		
	Min	1	1		
	Max	4	4		
E-learning increases my demands for the preparation	N	238	117	12768.000	.164
	AM	2.08	2.31		
	Me	2.00	2.00		
	SD	0.625	0.688		
	Min	1	1		
	Max	4	4		
E-learning distracts me from the meaning of the subject	N	238	117	11428.500	.001
	AM	1.56	2.74		
	Me	1.00	3.00		
	SD	0.943	1.409		
	Min	1	1		
	Max	5	6		
E-learning will help me better prepare for teaching	N	238	117	12131.000	.022
	AM	3.84	2.68		
	Me	4.00	3.00		
	SD	0.634	0.739		
	Min	1	1		
	Max	4	4		

Legend: AM – arithmetic mean, Me – median, SD – standard deviation, Min – minimal value, Max – maximal value
Scale used: 4 - strongly agree, 3 - strongly agree, 2 - disagree, 1 - strongly disagree

In the first research area, we focused on finding differences of opinion on e-learning in teaching music between music teachers and students of music art teaching. From T1 it can be observed that a statistically significant difference ($p = 0.004$) was confirmed in the field of perception of e-learning as a more effective way of teaching theoretical subjects than a classical lesson. The students achieved a lower average score and median (AM = 2.79; Me = 3.00) than the music teachers (AM = 3.56; Me = 4.00). There is also a statistically significant difference between the respondents ($p = 0.029$) in the area of perception of the e-learning as a more effective way of teaching practical musical activities (singing, playing, dancing, ...) than a classical lesson. The music education teachers achieved higher average scores (AM = 3.46) and medians (Me = 3.00) than the students (AM = 2.26; Me = 2.00). The music education teachers do not perceive the e-learning as distracting from the meaning of the subject (AM = 1.56; Me = 1.00). The students had different opinion, as it is evidenced by the average score achieved(AM = 2.74) and median (Me = 3.00). The mentioned differences in the perception of e-learning as a distracting element from the

meaning of the subject among the respondents are statistically significant (p = 0.001). In the area of perception of e-learning as an aid in the better preparation for teaching, there are statistically significant differences between the respondents (p = 0.022). The teachers perceive e-learning as an aid in preparing for teaching to a greater extent (AM = 3.84; Me = 4.00) than students (AM = 2.68; Me = 3.00).

Table 2: Area of using electronic textbooks in teaching of music education

Teachers vs. students / **Area of use of the electronic textbooks (ET) in teaching of music education**		Teachers	Students	MannWhitney U test	P – value
music theory	N	238	117	11384.000	.001
	AM	3.12	2.91		
	Me	3.00	3.00		
	SD	0.667	0.731		
	Min	1	1		
	Max	4	4		
means of expression of music	N	238	117	11538.000	.002
	AM	3.13	2.91		
	Me	3.00	3.00		
	SD	0.676	0.677		
	Min	1	1		
	Max	4	4		
history of music	N	238	117	12255.500	.036
	AM	3.30	3.17		
	Me	3.00	3.00		
	SD	0.644	0.620		
	Min	1	1		
	Max	4	4		
modern popular music	N	238	117	11792.500	.008
	AM	3.37	3.19		
	Me	3.00	3.00		
	SD	0.655	0.681		
	Min	1	1		
	Max	4	4		
singing	N	238	117	9513.500	.000
	AM	2.71	2.24		
	Me	3.00	2.00		
	SD	0.844	0.773		
	Min	1	1		
	Max	4	4		
instrumental play	N	238	117	9378.000	.000
	AM	2.66	2.18		
	Me	3.00	2.00		
	SD	0.830	0.795		
	Min	1	1		
	Max	4	4		
musical interpretation	N	238	117	10623.000	.000
	AM	2.83	2.35		
	Me	3.00	2.00		
	SD	0.740	0.771		
	Min	1	1		
	Max	4	4		
other interpretation of music	N	238	117	10970.500	.000
	AM	2.88	1.83		
	Me	3.00	2.00		
	SD	0.692	0.647		
	Min	1	1		
	Max	4	4		
By the fixation of music-theoretical competencies	N	238	117	11390.000	.001
	AM	3.46	2.97		
	Me	4.00	3.00		
	SD	0.658	0.586		
	Min	1	1		
	Max	4	4		

Legend: AM – arithmetic mean, Me – median, SD – standard deviation, Min – minimal value, Max – maximal value
Scale used: 4 - strongly agree, 3 - strongly agree, 2 - strongly disagree, 1 - strongly disagree

In the next research area, we focused on comparing the points of view of the music education teachers and students on the use of the electronic textbooks in music education. From the empirical data presented in T2, it is observable that there is a statistically significant difference between the respondents in all areas examined, namely in the field of teaching: music theory (p = 0.001 AM = 3.12; 2.91; Me = 3.00), expressive means of music (p = 0.002; AM = 3.13; 2.91; Me = 3), history of music (p = 0.036; AM = 3.30; 3.17; Me = 3), singing (p = 0.000; AM = 2.71; 2.24; Me = 3.00; 2.00), instrumental play (p = 0.000; AM = 2.66; 2.18; Me = 3.00; 2.00), musical interpretation (p = 0.000; AM = 2.83; 2.35; Me = 3.00; 2.00), another interpretation of music (p = 0.000; AM = 2.88; 1.83; Me = 3.00 ; 2.00) and also in the fixation of music-theoretical competencies (p = 0.001; AM = 3.46; 2.97; Me = 4.00; 3.00). In the context of the above-mentioned average scores and medians, we can state that the most significant differences between the music education teachers and students in the perception of the use of the ET in music education exist in the areas of teaching singing, instrumental playing, music interpretation, other interpretation and the fixation of music-theoretical competencies.

Table 3: Perceived effectiveness of electronic textbooks in music education

Teachers vs students		Teachers	Students	MannWhitney U test	P – value
The effectiveness of the electronic textbook in music education					
ET containing exclusively digitized text	N	238	117	10576.500	.000
	AM	3.78	2.46		
	Me	4.00	3.00		
	SD	0.715	0.574		
	Min	1	1		
	Max	4	4		
ET containing text with images and digital graphics directly in the text.	N	238	117	11678.000	.001
	AM	2.89	3.49		
	Me	3.00	4.00		
	SD	0.582	0.538		
	Min	1	2		
	Max	4	4		
ET containing text using digital display means different from a text editor.	N	238	117	13624.500	.673
	AM	2.87	2.92		
	Me	3.00	3.00		
	SD	0.584	0.544		
	Min	1	2		
	Max	4	4		
ET containing text and embedded stable multimedia resources (music, images, videos, animation, graphics)	N	238	117	13601.500	.687
	AM	3.30	3.36		
	Me	3.00	3.00		
	SD	0.657	0.549		
	Min	1	2		
	Max	4	4		
ET containing text and hypertext links to various information and media links	N	238	117	13656.000	.737
	AM	1.69	3.79		
	Me	1.00	4.00		
	SD	1.061	1.063		
	Min	1	1		
	Max	5	6		
ET without text dominance using illustrative and presentational means of content processing.	N	238	117	13592.000	.663
	AM	3.02	3.00		
	Me	3.00	3.00		
	SD	0.630	0.630		
	Min	1	1		
	Max	4	4		
ET as a complete interactive model of cognition and learning (a completely different principle than the printed form).	N	238	117	12216.500	.034
	AM	3.12	3.97		
	Me	3.00	4.00		
	SD	0.665	0.706		
	Min	1	1		
	Max	4	4		
ET in the form of a didactic test	N	238	117	13162.500	.323
	AM	2.88	2.83		
	Me	3,00	3.00		
	SD	0.692	0.647		
	Min	1	1		
	Max	4	4		

Legend: AM – arithmetic mean, Me – median, SD – standard deviation, Min – minimal value, Max – maximal value
Scale used: 4 - fully efficient, 3 - effective, 2 - inefficient, 1 - completely inefficient

In the last research area, we focused on finding differences between the music education teachers and the university students in the field of opinion on the effectiveness of e-learning music textbooks. From the empirical data presented in T3, it is observable that there is a statistically significant difference (p = 0.000) between the university students and the music education teachers in the area of perception of ET effectiveness, which contain exclusively text in digitized form. Teachers perceive an

ET containing exclusively digitized text to a greater extent than students. The difference in the perception of ET effectiveness among the respondents is indicated by the achieved average score (AM = 3.78; 2.46), as well as the median (Me = 4.00; 3.00). A statistically significant difference (p = 0.001) was also confirmed in the area of perception of the ET containing text with images and digital graphic elements directly in the text. The students achieved higher average arithmetic mean and median scores (AM = 3.49; Me = 4.00) than the music education teachers (AM = 2.89; Me = 3.00). The electronic textbook as a complete interactive model of cognition and learning (a completely different principle as the printed form) is perceived by both students and teachers of music education as effective. However, there is a statistically significant difference in their degree of perception of the effectiveness of the mentioned type of electronic textbook (p = 0.034). The students in this area expressed a higher level of perceived effectiveness (AM = 3.97; Me = 4.00) than the teachers of music education (AM = 3.12; Me = 3.00).

5 Discussion

ICT has been the subject of global research in the field of educational effectiveness and innovation since its inception in the educational process (Crook, 1998; Roussos, 1997; Seddon and Biasutti, 2009). From the beginning, scientists and teachers pointed out the possibilities and potential of e-learning in the field of increasing opportunities in music education (Digolo, AB & Adang, EA & Katuli, J. 2011, Illés, Pšenáková, Heizlerné-Bakonyi 2008, Faghil Azadehfar, Kateby 2013, Lecon, Hermann 2020, Freebern 2020). The anthology of the research of the projects on the use of e-learning in music by Eiksund & Angelo & Knigge (2020) is the result of these efforts. These projects are broadly focused: teaching instrumental music, composition, music, sound, conducting an ensemble, technology - network presence, electronic music (Eiksund & Angelo & Knigge 2020). The authors bring an exciting view of music education and disrupt the existing stereotypical view of music and music production. In terms of these researches, we considered it important to identify differences in views on e-learning, the use of e-textbooks in music education and opinions on the effectiveness of e-textbooks between the music teachers and students.

In the first research area, we focused on finding differences of opinion on the e-learning in the teaching of music education between music education teachers and students. The e-learning is perceived by music education teachers as a more effective way of teaching theoretical subjects compared to classical lessons. Teachers seem to be aware of the need to innovate music education. The positive impact of the use of ICT for achieving the educational goals of music education is confirmed by the research of Baker (2011, 2012), Brozmanová (2013), Vrábľová (2013), Ruokonen and Rusimäki (2016), Freebern (2020). Other research findings showed that students do not perceive the e-learning more effective in teaching practical musical (singing, playing, dancing, ...) activities than a classical lesson. In our opinion, this is due to the fact that students cannot imagine teaching practical activities (singing, playing, dancing, ...) through e-learning, but teachers are also aware of the need for innovation in this area. In this context, we consider it important to mention the research of teachers' opinions on e-learning in comparison with full-time teaching in aesthetically-oriented subjects, carried out by W. Baker (2012). The analysis of these data found out that teachers considered e-learning in art education to be very different from personal teaching, and also found different perceptions of equal opportunities for students in this mode, e.g. the online unit has been successful in preparing students to teach art at schools and in their active involvement (Baker, 2012). This confirms the unfounded concern of the research sample of our students. The mentioned contribution by W. Baker (2012) further highlighted important topics in the perception of e-learning of teachers in art education. These provide the researcher with an additional perspective to obtain data and further contribute to the understanding of more extensive empirical data on students' experiences in the same field. These findings are consistent with knowledge about preschool teachers, the importance of student involvement for students' success in the educational process (Baker & Pittaway, 2012) and the usefulness of videos in e-learning in art education (Baker, 2011 and). The perception of the differences between online and full-time teaching in art education, and in particular the problems associated with the potential for personal contact requires further direction in the field of design concepts for education and course creation, as well as research. The participation of students in the success that is the result of their personal potential and preconcepts embodied in student art and music is a critical task. This success is also a means of bridging the differences between individuals in the classroom, which provides interesting starting points for the goals and innovative design of the training course and research.

From empirical data, we also found out that teachers, unlike students, do not perceive e-learning as a distracting element of music education and perceive it more as an aid in better preparation for teaching. The use of e-learning can not only help them with preparation but also support the focus on teaching and it is also confirmed by research into the use of e-learning for students of e-learning disabilities Williams and Hanson-Baldauf (2010), who found out that people with *mild learning difficulties can be adept with web technology and music*. In dyslexia, rhythmic exercises are mainly used to understand the musical content (Heikkila &Knight, 2012) and multimedia content in IMLO learning and in exercises (R. S. Fadilahwati Abdul Rahman, Fattawi Mokhtar, Nor AziahAlias, 2012). Doyle and Arnedillo-Sánchez (2011) explored the possibilities of the influence of technology and the use of multimedia content on the formation of personalized social stories of children with autism. The findings of research has revealed an individualization of social stories (Drigas, Paraskevi 2016). Musical activities in the environment of virtual reality contribute to the social and emotional development as well as to the overall positive impact on individuals with autism (Lima, Castro, 2012). Based on this, taking into account our research findings, we consider the respondents' concerns to be unfounded and attribute them rather to the fact that they have not yet had relevant experience for the use of e-learning in music education.

In the second research area, we focused on finding a difference in opinions on the use of electronic textbooks in teaching music education. We managed to find out the most significant differences between music education teachers and students in the areas of teaching singing, instrumental playing, musical interpretation, other interpretations of music and the fixation of music-theoretical competencies. In all the mentioned areas, teachers, unlike students, has perceived the usability of electronic textbooks in teaching music education. We think this may be due to teachers' years of experience in teaching music education and so being open to the innovation through the use of ICT. As part of innovation, the use of electronic textbooks in teaching in the areas of music theory as well as the means of expression of music, music history, modern popular music, singing, instrumental play, musical interpretation, other music interpretation, but also in fixing music-theoretical competencies. These are the teachers of music education who have the task of showing how to implement effectively an electronic textbook in such areas of music education that students cannot imagine on the basis of research findings. These areas are singing, instrumental playing, musical interpretation, other interpretation of music and fixation of music-theoretical competencies. The research of Inkeri Ruokonen and Heikki Ruismäki (2016), who investigated the use of e-learning in the field of group music composition, also confirm that we find justification for the implementation of electronic books in the mentioned areas of music education. Their case study on a sample of 16 students explored the possibilities of creation a new mixed technology e-learning environment in the field of composition under the guidance of the present teacher. The biggest benefit of blended learning is the offer of several opportunities for independent and constructive education. The result of the research was that the greatest contribution was recorded by students with previous music education. The use of information and ICT has increased

students' attitudes towards independent learning about their musical skills. *„Traditional face-to-face based contact and contentis always precious in music education, bud blended learning with individual choices and enrichment can make it more dynamic and effective for a learner.* (Ruokonen, Ruismäki, 2016). The effectiveness of this mixed teaching is manifested especially in creative activities and planned group processes. This is confirmed by the research of Seddon and Biasutti, who explored the possibilities of using e-learning in the field of instrumental piano playing and creating their own 12-bar blues (Seddon & Biasutti, 2009). When learning the instrumental game, the effectiveness of Music Informational Retrieval was verified, within which 3 types of applications were developed and evaluated: Automatic Music Transcription of Arabian Woodwinds, MIR to serve Arabian Composition, and „query-by-playing" for Musical Libraries (Al-Ghawanmeh, M. T. & Haddad, R. N. & Al-Ghawanmeth, F. M. 2009). During the practice of playing the piano, the most effective evaluation came out blended real-time and time-shifted forms of communication (Shoemaker & Stam 2010).

In the last research area, we managed to find out that teachers perceive electronic textbooks, which contain exclusively a text in its digitized form, as less effective than students. We assume that teachers, due to the higher level of experience that they have managed to gain during the years of teaching music education, perceive electronic textbooks which contain only the text in its digitized form, therefore to a greater extent as effective because they do not have an adequate level of experience with e-learning textbooks. Because of several years they only worked with the print textbooks. For this reason, we assume that an electronic music textbook containing exclusively text in its digitized form will represent the smallest and perhaps most acceptable change for teachers to be compared to print versions of music education textbooks. This assumption is also confirmed by Hebert (2007, In Kamla-Raj, 2015) who states that music education is one of the disciplines that has not yet adapted to online learning. Much of the research, therefore, deals with the effectiveness of e-learning compared to face-to-face teaching (Hartley, 2007, Anvarovna Zaripova, 2018). On the contrary, students perceive electronic textbooks containing exclusively text as less effective, which in our opinion indicates that they expect a higher degree of innovation and change from the process of using electronic textbooks in music education. This is confirmed by other research results. In electronic textbooks containing text with images and digital elements directly in the text, we were able to find that students expressed a higher level of perception of effectiveness than teachers. In our opinion, this may be due to the fact that current students spend a significant amount of their free time on mobile phones, on which they use applications and social networks using pictorial elements in texts as a method of making the virtual environment more attractive. This experience may be required by students also in the educational process, when teaching music education through the electronic textbooks containing text with images and digital graphics, this condition is the attractiveness of the text, respectively. curriculum fulfilled. However, the readiness of students to work with similar electronic textbooks remains a question. In this context, Kamla-Raj (2015) addressed the preconceptions of future teachers in the field of ICT use and their readiness. He found out that the level of students' self-effectiveness in working on a PC is low, but he found higher values in working with mobile technologies. In the field of ICT literacy of students, Brozmanová (2013) also found out an insufficient level of ICT competencies. However, the motivations for these activities are very high, which increases the assumption of progress both within ICT competencies and the assumption of effective use of electronic textbooks in the teaching of music education. Students also perceive a higher degree of efficiency in electronic textbooks, which are conceived as a complete interactive model of cognition and learning (a completely different principle than the printed form). We hypothesize that this may be due to the fact that current students are used to implementing digital technologies into their daily lives. It is possible that they also perceive the implementation of digital technologies in music education positively, but in order to be perceived as effective, based on research findings it is necessary that electronic textbooks of music education will use digital images and will be interactive and completely different from classically designed print textbooks.

Based on the research of teachers - ICT users in music education, Brozmanová (2013) divided into a group of enthusiasts, pragmatists and skeptics, which partially correspond to the typology of EM Rogers: Innovators - enthusiasts, adopters - visionaries, Pragmatists, Conservatives, Skeptics (In: Brdlička, 2006). In connection with the mentioned division and the results of our findings, we can state that it is always up to music education teacher and how they decide to follow the path of innovator - enthusiast, adopter - visionary, or within the innovation of music education also using e-learning and electronic textbooks will remain a skeptic.

6 Conclusion

The empirical findings can serve as a starting point for a further research in e-learning in the field of music education. Based on the research results, we can state that the implementation of ICT and especially electronic textbooks has its sense, justification and, mainly its future, according to the researched sample of music education teachers and students, future music education teachers. Our research findings can be used as a starting point in further efforts to develop e-learning in the field of music education, even in the context of the current epidemiological situation associated with COVID-19.

In general, it can be stated that the research findings call for music education teachers, whether in primary, secondary or higher education, but also for future music education teachers, who will use the innovations in music education more frequently, which will provide ICT mainly in the form of implementation the e-learning and also with the help of the use of the electronic textbooks.

7 Limits

As part of the collection of empirical data, we were unable to reach a representative sample of teachers and students from all regions of the Slovak Republic. It would be ideal to increase the number of the research sample, both in the case of music teachers and in the case of students. Nevertheless, it should be noted that only teachers who teach music in their educational activities are represented in the research sample of teachers.

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Primary Paper Section: A

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