The Contribution of the Activities Prepared with Web 2.0 Technologies to the Level of Learning[1]

La Contribución de las Actividades Elaboradas con Tecnologías Web 2.0 al Nivel de Aprendizaje

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Abstract

This research is aimed to evaluate the contribution of activities prepared with Web 2.0 technologies for the sound formation unit within the scope of a music lesson to the learning levels of students. The study group consists of 220 students in the 9th grade of Trabzon Affan Kitapçıoğlu Anatolian High School. A 9-question knowledge test was applied as a measurement tool to make determinations regarding the realization of the achievements in the unit of "formation of sound". In the study, interviews were conducted with a randomly selected group of 8 students from the study group. The content analysis technique was used to analyze the data obtained as a result of the interviews. In line with the findings obtained from this study, it was determined that the activities prepared with Web 2.0 technologies contributed to the students' self-knowledge, self-confidence, protection of voice, voice change, and field expert knowledge, which also provided ease of learning theoretical knowledge.

Key Words: Technology; web 2.0 tools; music education; z-generation; learning level; education

Resumen

Esta investigación tiene como objetivo evaluar la contribución de las actividades preparadas con tecnologías Web 2.0 para la unidad de formación de sonido en el ámbito de una lección de música a los niveles de aprendizaje de los estudiantes. El grupo de estudio consta de 220 estudiantes del noveno grado de la escuela secundaria Trabzon Affan Kitapçıoğlu Anatolian en Turquía. Se aplicó una prueba de conocimientos de 9 preguntas como herramienta de medición para realizar determinaciones respecto a la realización de los logros en la unidad de "formación del sonido". En el estudio, se realizaron entrevistas con un grupo seleccionado al azar de 8 estudiantes del grupo de estudio. Se utilizó la técnica de análisis de contenido para analizar los datos obtenidos como resultado de las entrevistas. En consonancia con los hallazgos obtenidos de este estudio, se determinó que las actividades elaboradas con tecnologías Web 2.0 contribuyeron al autoconocimiento, la confianza en sí mismos, la protección de la voz, el cambio de voz y el conocimiento experto de campo de los estudiantes, lo que también proporcionó facilidad de aprender conocimientos teóricos.

Palabras clave: tecnología; herramientas web 2.0; educación musical; generación z; nivel de aprendizaje, educación

Resumo

Esta pesquisa tem como objetivo avaliar a contribuição das atividades preparadas com tecnologias Web 2.0 para a unidade de formação de som no âmbito de uma lição de música aos níveis de aprendizagem dos estudantes. O grupo de estudo consta de 220 estudantes da nova série da escola secundaria Trabzon Affan Kitapçıoğlu Anatolian na Turquia. Aplicou-se uma prova de conhecimentos de 9 perguntas como ferramenta de medição para realizar determinações com relação à realização dos aproveitamentos na unidade de "formação do som". No estudo, realizaram-se entrevistas com um grupo selecionado aleatoriamente de 8 estudantes do grupo de estudo. Utilizou-se a técnica de análise de conteúdo para analisar os dados obtidos como resultado das entrevistas. Em consonância com as descobertas obtidas deste estudo, determinou-se que as atividades elaboradas com tecnologias Web 2.0 contribuíram ao autoconhecimento, a confiança em si mesmos, a proteção da voz, a mudança de voz e o conhecimento experto de campo dos estudantes, o que também proporcionou facilidade de aprender conhecimentos teóricos.

Palavras chave: tecnologia; ferramentas web 2.0; educação musical; geração z; nível de aprendizagem; educação

Introduction

Human beings try diverse ways according to their wishes and needs in their life; as a result of these trials, new inventions can emerge. These inventions show themselves in every aspect of human life and make significant contributions to technological developments.

It is an inevitable fact that technology, which is at the center of humanity's daily life, will also be used in educational environments (Yavaş, 2021; Yıldız, 2021; Devran & Bilgin, 2021; Günay, 2017; Shaban, 2017; Şenel & Gençoğlu, 2013). The use of today's technologies in these environments is seen as an important step in adjusting to the universal and contemporary. Technology is an important aid in creating the tools and equipment that will pave the way for effective and efficient education processes and help students reach the desired level of awareness (Burak & Çörekçi; 2021; Ardıç, 2021; Ledger & Fischetti, 2020). Today's technology allows today's z-generation students to be included in the education process, enabling them to take more active roles and access information directly; besides their cognitive and affective development, it helps them to socialize by enabling them to act in cooperation (Gürsan, 2021; Şafak, 2020; Aksoy, 2021; Kavan, 2021; Çakan Uzunkavak, 2020; Schmid, Ernst & Thiele, 2020; Yungul & Can, 2018).

Technology in educational environments, has become available thanks to web 2.0 tools (Köse, Bayram & Benzer, 2021; Dalgıç, Geldi, Güleş & Kartal, 2021, Şengür & Anagün, 2021; Bolliger & Shepherd, 2017). It is thought that applications that are considered as Web 2.0 tools such as Powerpoint, Powtoon, Canva, Kahoot, Edmodo, Linkedin, Mentimeter, Puzzlemarker, Plickers, Quizizz, Socrative, Triventy, SoundCloud, WhatsApp, Evernote, FlockDraw, MindMup, and Google Drive can be used in education and training environments (Çelik, 2021; Başaran & Kılınçarslan, 2021; Bugawa & Mirzal, 2018; Jena, Bhattacharjee, Devi & Barman, 2020; Johnson, Bledsoe, Pilgrim & Moore, 2019; Karvounidis, Chimos, Bersimis & Douligeris, 2018; Dellos, 2015; Moyer, Klopfer & Ernst, 2018).

Web 2.0 technology tools take students away from traditional classroom environments and enable them to be active, and to share, and develop their high-level thinking skills. Through these technologies, students also provide feedback, corrections, and opportunities for self-evaluation in online environments (Türegün Çoban & Adıgüzel, 2021; Kayaduman & Delialioğlu, 2021; Gündüzalp, 2021; Karakuş & Er, 2021; Gündüzalp, 2021b; Altunışık & Aktürk, 2021; Timur, Yılmaz & Küçük, 2021; Ledger & Fischetti, 2020).

Such technologies were investigated by Can (2021) who examined the use of Edmodo-supported conceptual cartoons, one of the web 2.0 tools, in a 5th-grade science lesson, and as a result of the research, he determined that the application in

question contributed to the effective, permanent, and rapid learning of the students. In Batıbay (2019) examined the educational function of the Kahoot application in a Turkish lesson; he determined that the application has a positive effect on the motivation of students by transforming the question-solving action into a game, students are actively involved in the education process, it enables peer learning, and that it offers an effective learning environment suitable for the 21st-century education system understanding. In their study, Jong and Tan (2021) examined the effects of using Padlet, one of the web 2.0 tools, on students' writing skills. They concluded that the Padlet application is suitable for use as an easy, interesting, and practical writing tool in the education process; In Padlet, the writing progress is observable and open to feedback correction; it provides a student-centered learning platform, and has a positive effect on the professional development of teachers. Studies show that activities prepared with web 2.0 technologies contribute to students' learning levels and motivation, create effective and productive learning environments, make lessons fun and enable peer learning. Stefancik & Stradiotova (2020) examined the effect of using podcasts, one of the web 2.0 tools, on foreign language teaching in their study. They found that podcasts can help students improve their listening skills significantly. In their study, Afach, Kiwan & Semaan (2018) aimed to convey life tips to students with special needs in an easy way by using the web 2.0 tool EdPuzzle. They determined that students with special needs were motivated, perceived the conveyed messages, felt comfortable, and understood the lesson without asking their teacher.

It is thought that activities prepared with Web 2.0 technologies will contribute significantly to the achievements of music lessons, and increase learning speed by embodying abstract concepts; the activities prepared by considering the interests and wishes of today's generationz students will positively affect their attitudes and motivations towards the lesson. In this research, it is aimed to evaluate the contribution of activities prepared with Web 2.0 technologies for the sound formation unit within the scope of the music lesson to the learning levels of students. Depending on the purpose of the research, answers to the following questions were sought:

1. To what extent does the activity prepared with Web 2.0 technologies contribute to the learning level?

2. What are the students' views on the activity prepared with Web 2.0 technologies?

Method

Research model

The mixed-method is a research model that was used in this study in which the researcher collects both quantitative and qualitative data, analyzes and integrates the data with both methods to reach answers (Creswell, 2017; Yıldırım & Şimşek, 2021; Strijker, Bosworth & Bowter, 2020).

During the design of this research the sequential explanatory design was usedand is aimed to support the data obtained using quantitative methods with qualitative methods and to analyze the results of the research in-depth (Creswell, 2017; Çepni, 2021; Yıldırım & Şimşek, 2021).

For this purpose, the quantitative research method was used to determine the contribution of the activity prepared with web 2.0 technologies to the learning level of the students. To support the data in the research, data were obtained by semi-structured interview form and knowledge test.

Application: At this stage, The activity called "What Is This Sound?" was held for 2 hours (80 minutes) and was prepared by the researcher using web 2.0 technology tools for the "formation of sound" unit in the 9th-grade music curriculum prepared by the Ministry of National Education. At the end of the activity, the knowledge test prepared by the researcher was applied.

Study group

The study group of the research consists of 220 students studying in the 9th grade of Anatolian High School. The demographic information of the students participating in the research is given in Table 1.

Table 1. Findings of the Demographic Information of the Students Participating in the Research

Gender	f	%
Female	126	57,3
Male	94	42,7
Total	220	100

Age	f	%
13	33	15
14	166	75,45
15	20	9,1
16	1	0,45
Total	220	100

As seen in Table 1, it was determined that 57.3% of the students were girls and 42.7% were boys; 15% of them are 13 years old, 75.45% of them are 14 years old, 9.1% of them were in the age group of 15, and 0.45% of them were in the age group of 16.Interviews were also conducted with a group of eight students in the study groupwho were randomly selected.

Data Collection Tools

Two types of data collection tools were used in the study. For quantitative data, a "knowledge test" was prepared for the study group by the researcher to determine the realization status of the achievements in the "formation of sound" unit after the activity.

To determine the qualitative data of the research a semi-structured interview technique, one of the interview technique types, was used. . The questions in the semi-structured interview form were written by the researcher to determine the opinions of the participants about the activity prepared through web 2.0 technologies. To ensure the validity of the prepared interview questions, they were presented to the expert opinion, questions and items that should be removed and added were corrected, and the interview form was finalized at the end of the expert opinion.

Data Collection and Analysis

Mean, frequency, and percentage calculations were used for the analysis of the data including demographic information and the data obtained from the knowledge test. Knowledge test success point values were determined according to the item of evaluation with points in line with the general principles of measurement and evaluation of the Secondary Education Institutions Regulation of the Ministry of National Education (Ministry of National Education [MEB], 2013).

The qualitative data collection in the research were made using a semi-structured interview form and interview technique. The semi-structured interview form consisted of 7 open-ended questions, and the data were obtained as a result of one-on-one interviews with eight students in the study group. The obtained data were analyzed and interpreted by content analysis, and direct quotations were included to reflect the views of the students (Adhabi & Blash Anozie, 2017; Yıldırım & Şimşek, 2021).

The qualitative data obtained in the research were coded, then divided into themes and interpreted. While quoting, the names of the students were coded with abbreviations as student 1 (S1) and student 2 (S2).

To ensure the reliability of the qualitative data of the research, the data in question was presented to the opinion of two field experts, and consistency analysis was carried out. Consensus and differences of opinion were determined during the interviews, and the percentage of consistency was calculated by using the reliability calculation formula P (Percent Consistency) = Na (Number of items coded the same in two forms)*100/Nt (Total number of items in one form) (Çepni, 2021). The agreement between the evaluations of the experts was 85.19. Since this value is 70 or above, it is considered sufficient for data analysis, and it is concluded that reliability is provided (Miles & Huberman, 1994: cited in Baş, 2014).

Findings

In this section, the findings obtained from the data collection tools are given.

Table 2 shows the success rates obtained from the knowledge test after the "What is this sound" activity of the students who participated in the research. The data obtained from the knowledge test are given in Table 2.

Table 2. Knowledge Test Success Results

Success Point Value	f	%
85-100	58	26,36
70-74,99	101	45,91
60-69,99	35	15,92
50-59,99	12	5,45
0-49,99	14	6,36
Total	220	100

As seen in Table 2, it was determined that 26.36% of the students scored 85-100; 45.91% of them scored 70-74.99 points; 15.92% of them scored 60-69.99 points; 5.45% of them were in the range of 50-59.99 points, and 6.36% of them were in the range of 0-49.99 points. The findings regarding the answers given by the students to the knowledge test are as follows:

Table 3. Table of Students' Answers to Knowledge Test

Question Number	Question Type		f	%
1. Question	Gap-filling		208	94,5
			12	5,5
2. Question	Multiple choice		140	63,6
			80	36,4
3. Question	Multiple choice		215	97,7
			5	2,3
4. Question	Gap-filling		187	85
			33	15
5. Question	Matching	A	187	85
			33	15
		B	204	92,7
			16	7,3
		C	201	91,6
			19	8,4
		D	210	95,5
			10	4,5
		E	211	95,9
			9	4,1
		F	211	95,9
			9	5,1

		A	194	88,1
			26	11,9
		B	187	85
			33	15
		C	193	87,8
			27	12,2
		D	184	83,7
6. Question	Matching		36	16,3
		E	181	82,2
			39	17,8
		F	195	88,6
			25	11,4
		G	168	76,4
			52	23,6
		H	166	75,5
			54	24,5
7. Question	True/ False		211	96
			9	4
8. Question	Gap-filling		184	83,6
			36	16,4
9. Question	Gap-filling		106	48,1
			114	51,9
Total			**220**	**100**

Table 3 shows that the third question of the knowledge test is the one with the most correct answers (97.7%); the second question (36.4%) and the 9th question (51.9%) were the most incorrectly answered questions. In addition, it is seen that 94.5% of the students answered the 1st question of the knowledge test correctly, 97.7% of them answered the 3rd question correctly, and 96.4% of them answered the 5th question correctly. However, it was determined that the students gave more wrong answers to the A option (15%) of the 5th question and the H option of the 6th question (24.5%), which are in the matching question type.

Students were asked to express their opinions on the contribution of the activity, which was prepared through Web 2.0 technologies, to their education. The codes and themes created from the data obtained are given in Table.

Table 4. Student Views on Contribution of the Activity to Personal Education

Theme	Sub-Theme	Code	Participants
Personal Education	Self Awareness	Voice Health	S1, S3, S4, S5, S6, S8
		Confidence Gain	S2,S7
		Foresight	S2,S4
	Knowledge Level	Anatomical Awareness	S7,S8
		Obtaining Theoretical Knowledge	S2, S3, S6

As can be seen in Table 4, there are students who expressed their opinions about the contribution of the activity to personal education. it was determined that they expressed opinions in the direction of voice health (6), self-confidence gain (2), and foresight (2); regarding the "level of knowledge" sub-theme they expressed opinions in the direction of anatomical awareness (2) and obtaining theoretical knowledge (3). Some of the students' views on this theme are given below.

"…I think about working with music. I will pay more attention to my voice" (S1).

"…I learned my sound level. Human voices are divided into thin-medium-thick. My voice will be thin or medium" (S2).

Students were asked to express their opinions on the attractiveness of the activity, which was prepared through Web 2.0 technologies. The codes and themes created from the data obtained are given in Table 5.

Table 5. Student Opinions on the Attractiveness of the Activity

Theme	Sub-Theme	Code	Participants
Attractiveness	Contents	Sound Types	S1
		Surgery videos	S1, S2, S4, S7, S8
		Vocal Cords Structure	S3, S8, S6
		Opera	S6
		Sound Protection	S5, S8
	Active Learning	Peer Interaction	S2
		Place	S4

As can be seen in Table 5, it was determined that the students expressed their opinions about the sound types (1), surgery videos (5), vocal cord structure (3), opera (1), preservation of the voice (2) regarding the "content" sub-theme of the "attractiveness" theme; regarding the "active learning" sub-theme, students expressed their opinions about peer interaction and space (1). Some of the students' views on this theme are given below.

"Vocal cord surgery! I saw it for the first time, it was very interesting for me" (S8).

"I've seen it in movies before. Opera is a beautiful piece of music. There is such a genre of music. I watched and listened for the first time" (S6).

Students were asked to express their opinions on the difference between the activity prepared through Web 2.0 technologies and the music lesson. The codes and themes created from the data obtained are given in Table 6.

Table 6. Student Opinions on the Difference Between the Activity and the Music Lesson

	Sub-Theme	Code	Participants
Differences	Content	Concerning Life	S1
		Fun	S1, S3, S4, S6, S5, S7
		Attractiveness	S1, S8
	Physical Conditions	Attention-Raising Environment	S2, S8
		Location Factor	S4, S5, S3
	Effective Teaching	Active Learning	S5
		Interaction	S6, S7
		Memorability	S7, S8
		Focusing	S8
		Visual Support	S8

As can be seen in Table 6, it was determined that students expressed opinions regarding the "content" sub-theme of the "differences" theme in the direction of concerning life(1), fun (6), attractiveness (2); regarding the "physical conditions" sub-theme in the direction of the attention-enhancing environment (2), location factor (3); regarding the "effective teaching" sub-theme in the direction of active learning (1), interaction (2), memorability (2), focus (1), and visual support (1). Some of the students' views on this theme are given below.

"It is not effective in the classroom. But in this environment, all of my friends and I can participate. It is fun" (S6).

"Lessons in the classroom can be boring sometimes. I think the place where we learn is very important. Instead of the classroom environment, I prefer environments like here where everyone can participate" (S7).

"...we learned things that we should pay attention to in our daily life" (S1).

Students were asked to express their opinions on the awareness of the mutation period of the activity, which was prepared through Web 2.0 technologies. The codes and themes consisting of the data obtained are given in Table 7.

Table 7. Student Opinions on the Contribution of the Activity to Mutation Period Awareness

Theme	Code	Participants
Awareness	Self-Knowledge	S1, S2, S4, S5, S6, S7
	Self-Confidence	S1, S2
	Protecting the Sound	S1,S2,S3,S4,S5,S6,S7, S8
	Change of Voice	S1, S4, S6
	Consulting Field Expert	S3, S5

As can be seen in Table 7, there are students who expressed their opinions about the contribution of the activity to the awareness of the mutation period. It was determined that the students expressed their views on the theme of "awareness" in the direction of self-knowledge (6), self-confidence (2), protection of the voice (8), change of voice (3), and consulting a field expert (2). Some of the students' views on this theme are given below.

"… After this activity, I realized that I don't need to be afraid or ashamed while singing because everyone has it" (S1).

"I realized myself. How is my voice changing? What will happen in the future? What will happen if I don't pay attention? Now I know all of them" (S6).

Conclusion and Discussion

According to the results obtained from the knowledge test, it is thought that the activity prepared with web 2.0 technologies contributes to the knowledge level of the students, provides ease of learning the theoretical knowledge and is a reminder. From this point of view, it is considered important to use applications that can make permanent changes in students in the education process. It is thought that the inclusion of web 2.0 technologies in music education, which especially affects the aesthetic perspective and cultural level of the person, allows students to act together with the community and work in cooperation, will contribute positively to their learning levels.

In the literature, studies show that the lessons, which are carried out with activities prepared with web 2.0 technologies, have a positive contribution to the learning levels of the students. In his study, Can (2021) concluded that the Edmodo application contributed to the effective, permanent, and fast learning of the students, increased their motivation, and made the lessons fun. Similarly, Karadağ and Garip (2021) determined that the LearningApp application can be used in the course processes. Based on this, it is stated that the activities carried out with web 2.0 technologies in educational environments will contribute to the effective, permanent, and rapid learning of the students and it is also thought that it will increase their motivation towards the lessons. With this thought, it is considered important to organize and plan the said technologies in such a way that they can be used in teaching environments and to enrich the course content with activities prepared with web 2.0 technologies.

In line with the findings of this investigation, it was determined that the activity prepared with web 2.0 technologies contributed to individual awareness, students' knowledge levels,, and to the active learning of the physical environment in which the activity was carried out. In similar studies, it was concluded that activities carried out with web 2.0 technologies contributed to individual awareness and knowledge levels of students (Afach, Kiwan & Semaan, 2018; Stefancik & Stradiotova, 2020). From this point of view, it is thought that the more active use of these activities in the educational process will contribute to the cognitive development of students. For this reason, it is considered necessary to prepare activities with web 2.0 technologies in such a way that students can be active in the education process and increase their awareness levels.

The students who participated in the research thought that the activity carried out with web 2.0 technologies was different from the music lesson held in the classroom in terms of content, physical conditions, and teaching method; however, it has been determined that they expressed their opinion that the event contributed to their awareness of sound health and protection.

It has been determined that the activities prepared with Web 2.0 technologies contribute to the creation of a more effective learning environment in line with

the interests and wishes of the z-generation students and to transform the learning environments into a more equipped and enjoyable one. Similarly, studies have supported that the activities carried out with web 2.0 technologies contribute to the learning level of students (Arslan & Coştu, 2021; Ergül Sönmez & Çakır, 2021; Açıkgül Fırat & Fırat, 2020; Vanichvasin, 2021; Kazazoğlu & Bilir, 2021; Egüz, 2020; Karakaş & Kartal, 2020; Bolliger & Shephard, 2017; Şahin Topelcengiz & Yıldırım, 2020; Juškeviciene & Kurilovas, 2014; Azid, Hasan, Nazarudin & Ali, 2020; Jong & Tan, 2021). With this thought, it is necessary to use in-class and extra-curricular activities prepared with web 2.0 technologies that support educational environments.

In line with the findings obtained from the research, the following recommendations can be made:

An effective music lesson within the scope of general music education helps students to have an aesthetic point of view; it is also known to contribute to artistic and intellectual knowledge (Uçan, Yıldız & Bayraktar, 1999; Arslan & Gül, 2019). For this reason, the lesson planning of the music lessons held within the scope of general music education should not be neglected. In addition, it is considered very important for students in secondary education to be aware of the voice changes they will experience during the mutation period they are in, to overcome this period in a healty way and without damaging their vocal organs, and to have an awareness to protect their vocal health. For this reason, it is considered necessary to prepare the music education to be carried out within the scope of general music education so that students have the level of knowledge and awareness that they can get through the period they are in most healthily and consciously.

In the 21st century, where the way of accessing information is constantly changing, it is seen as very important to bring the education system of our country closer to the universal and contemporary, to bring the technology that students put at the center of their daily lives to their educational environments and to enable it to be used beneficially, with the intention that it will increase the quality and qualification of the education and training process. It is thought that it is necessary for teachers and students to actively use web 2.0 applications in order to adapt to the universal, to include technology in life, and to be involved in universal music studies. The fact that the course activities prepared with the support of Web 2.0 technology tools by the teachers in a planned and programmed process will contribute to the academic success of the students; it is also thought that it will have a positive effect on students' personal and social development. For this reason, it is considered necessary and important to use web 2.0 technology tools, which are almost at the center of our age, by teachers and students more actively. With this in mind, it is deemed necessary to organize in-service training programs, courses, and seminars not only with theoretical but also applied studies so that teachers can have the equipment to use these studies effectively and efficiently in learning environments. In addition, it is considered necessary to

support students with programs in which they can use web 2.0 technology tools within the framework of support and training courses to contribute to their education and training processes.

It is known that web 2.0 technologies, which started in the 1970s and developed from year to year, have been included in education programs at a universal level intensively (Günay & Özdemir, 2012). Especially recently, thanks to augmented reality applications, presenting abstract concepts to students concretely, has contributed to the achievement of the targeted gains and the differentiating expectations of the z-generation have become meetable.

It is known that digital technology is advancing day by day, applications are updated and technological tools are developed for new needs. It is thought that web 3.0 tools, that we have just been introduced to as of 2021, are about to be developed; the concept of "meta-verse", which we will encounter frequently in social media and similar online environments recently, can be used in education/training environments in the future. For this reason, it is considered important to provide school equipment that is suitable for the requirements of the 21st century and is shaped according to the interests and needs of the student profile of our age. It is considered necessary in terms of equality of opportunity in education that these types of equipment are accessible not only in private schools but also in public schools.

The disadvantages of Web 2.0 technologies and other digital technological content - in the education and training environment should not be ignored. The inadequacy of application knowledge of these technologies and contents, the lack of control that may be experienced in online learning environments, the inadequacy of materials for students, and other issues, reveal the necessity of being planned and programmed in the use of these technologies, since situations such as these can negatively affect the effectiveness of the education and training environment. In parallel with the science, internet and technology developments of our age, it is suggested that different studies be carried out in order to renew the education system of our country for these developments.

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