

Need Analysis of a Web 2.0 Tool to be Developed for Measurement and Evaluation in Education*

Ölçme Değerlendirme Amaçlı Geliştirilecek Bir Web 2.0 Aracına Yönelik İhtiyaç Tespiti

Zeynep TATLI** Şeyma TURAN*** Havva YAMAN**** Sibel ER-NAS*****

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ABSTRACT: The aim of this research is to reveal the features of a Web 2.0 tool for measurement and evaluation that will be developed for primary education teachers, in line with the opinions of experts from the Department of Computer Education and Instructional Technology (CEIT) and Primary Education (PE). Case study is one of the qualitative research methods used in this research. Participants consisted of 20 (CEIT: 10, PE: 10) field experts, with professional experiences ranging from 1 to 27 years. The opinions of the field experts were received through semi-structured interviews. The findings obtained in the research were evaluated in general. It has been determined that the measurement and evaluation Web 2.0 tool to be developed for the use of primary education teachers, should not only have a question/answer design with multimedia support, but also include awards/competition and teamwork' interaction in order to be preferred by students. Additionally, it should provide ease of use and be supported by stakeholders in order to be preferred by teachers. It is recommended that the specified Web 2.0 tool should include outcome-based and graphical-based reporting features. Especially in the Covid-19 pandemic, in order for parents to support their child and follow the student's progress, it is recommended that a detailed statistical development report be included in the parent interface limited to their children only.

Keywords: Measurement and evaluation, needs analysis, Web 2.0 tool.

ÖZ: Araştırmanın amacı, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü (BÖTE) ve Temel Eğitim alan uzmanlarının görüşleri doğrultusunda sınıf öğretmenleri için geliştirilecek bir Web 2.0 ölçme ve değerlendirme aracının özelliklerini ortaya koymaktır. Bu çalışmada durum çalışması yöntemi kullanılmıştır. Katılımcılar, mesleki deneyimleri 1 ile 27 yıl arasında değişen 10 BÖTE ve 10 Temel Eğitim Bölümü olmak üzere 20 alan uzmanından oluşmaktadır. Alan uzmanlarının görüşleri yarı yapılandırılmış görüşmeler yoluyla alınmıştır. Araştırmada elde edilen bulgular genel olarak değerlendirildiğinde sınıf öğretmenlerinin kullanımına yönelik geliştirilecek olan ölçme ve değerlendirme Web 2.0 aracının öğrenciler tarafından tercih edilmesi için kullanımı kolay bir arayüze ve multimedia destekli soru/cevap tasarımına sahip olması, ödül/yarışma ve takım çalışması etkileşimini içermesi gerektiği belirlenmiştir. Öğretmenler tarafından tercih edilmesi için ise kullanım kolaylığı sağlanmalı, MEB ve paydaşlar tarafından desteklenmesi belirtilmiştir. Geliştirilecek olan ölçme ve değerlendirme Web 2.0 aracının sonuca dayalı ve grafik tabanlı raporlama özelliklerini içermesi önerilmiştir. Özellikle Covid-19 pandemi sürecinde velilerin öğrencilere destek olabilmeleri ve öğrencinin gelişimini takip edebilmeleri için veli arayüzüne yer verilmesi ve bu arayüzde sadece kendi çocukları ile sınırlı olarak detaylı istatistiksel gelişim raporunun yer alması önerilmektedir.

Anahtar kelimeler: Ölçme ve değerlendirme, ihtiyaç tespiti, Web 2.0 aracı.

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**Department of Computer Education and Instructional Technology, Trabzon University, Trabzon, Turkey, zeynepktu@hotmail.com, <https://orcid.org/0000-0001-9503-3048>

***Department of Computer Education and Instructional Technology, Trabzon University, Trabzon, Turkey, seymakaya92@gmail.com, <https://orcid.org/0000-0001-5930-0495>

****Corresponding Author: Department of Mathematics and Science Education, Trabzon University, Trabzon, Turkey, yamanhavva9326@gmail.com, <https://orcid.org/0000-0003-2952-2075>

*****Department of Mathematics and Science Education, Trabzon University, Trabzon, Turkey, sibelernas@hotmail.com, <https://orcid.org/0000-0002-5970-2811>

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Serious changes have been experienced in all areas of life, especially in health and education, since the COVID-19 outbreak was declared as a “pandemic” by the World Health Organization on March 11, 2020 (WHO, 2020). Many countries have had to suspend face-to-face education. Globally, at least 1.5 billion students are affected by the COVID-19 pandemic (UNESCO, 2020a; UNICEF, 2020). Approximately 25 million students’ training has been carried out in Turkey with distance education (UNESCO, 2020b). Primary and secondary level educational activities have been carried out through national television broadcasts and the Education Information Network (EIN) (Özer, 2020). This distance learning process is considered “emergency distance education” (Eken et al., 2020; Hodges et al., 2020; Tatlı et al., 2021).

Emergency distance education can be defined as an effort to continue education with available opportunities until the crisis disappears (Hodges et al., 2020). One of the most important problems in this process is how to conduct measurement and evaluation (ME) activities with distance learning (Bozkurt et al., 2020). Due to the continuing effects of the pandemic, the students passed the class without conducting ME activities, as in many countries (Karadağ, 2020). ME activities which provide feedback about the educational process are extremely important in determining the effectiveness. However, process-oriented feedback or ME approaches could not be used sufficiently in the pandemic (Bozkurt, 2020; Can, 2020). In this context, giving feedback to students, families and teachers is of great importance in evaluating its effectiveness during the emergency distance education process (Bozkurt, 2020; Keskin & Kaya, 2020). Teachers mostly use digital documents (slides, essays, books, etc.), z books, videos, etc., in the emergency distance education process. Although they use teaching materials (Bakioğlu & Çevik, 2020; Burke & Dempsey, 2020), it is stated that they do not have the necessary skills, especially for ME (Adıgüzel, 2020; Durak & Seferoğlu, 2017). The most fundamental reasons for teachers’ technology usage inability are shown as deficiencies in technical support and their inadequacy in information and technology literacy (Elmahdi et al., 2018). Despite teachers’ shortcomings, students who are 21st-century learners use technology more effectively (Karaoğlan-Yılmaz & Binay-Eyüboğlu, 2018; Pamuk et al., 2012; Prensky, 2010).

The gap in technology usage skills between teachers and students can be reduced with the Web 2.0 tools that allow computer users to design and develop their own interactive tools (Tatlı, 2019). Web 2.0 tools offer users the opportunity to access, process and share information in different formats. Also, Web 2.0 tools are easy to create interactive content and rapid feedback, especially in the distance education process (Almazon et al., 2011; İnal & Arslanbaş, 2021). While learning-teaching environments are transferred to the digital platform in the distance education process, ME activities are mostly carried out with paper and pencil (Brader et al., 2014; Chiheb et al., 2011; Süral & Girmen, 2019). However, by using Web 2.0 tools, students can answer questions online, receive instant feedback and perform activities by enjoying the process (Tatlı, 2019). Web 2.0 tools for ME activities support different question types, such as game-based, multiple-choice, true/false, open-ended, gap-filling, puzzles. Moreover, questions developed in these tools allow the use of multimedia elements, such as text, sound, picture and video (Bower, 2015; Tatlı, 2019). In the literature, it is recommended that Web 2.0 tools be used for the ME process to support teachers’ and students’ knowledge, experience and skills (Amoroso, 2005; Bakar & Avan, 2019;

Elmahdi et al., 2018; Harvey, 2019; Süral & Girmen, 2019; Taşlıçay-Arslan, 2019; Yurdugül & Bayrak, 2014). In the education process, formative evaluation is important in terms of determining the contribution of activities to the development of students and monitoring the long-term development of students (Ministry of National Education [MoNE], 2020). Therefore, Web 2.0 tools come to the forefront in terms of providing feedback in the formative evaluation process (Çelebi & Satırlı, 2021; Çelik, 2021; Kayacan & Ulker, 2020; Özpınar, 2020). The number of Web 2.0 tools that teachers and students use for ME is increasing day by day, but a different feature of each tool stands out (Albion, 2008; Kapuler, 2014; Orhan-Göksün et al., 2018; Tatlı, 2019).

There are many Web 2.0 tools that can be used for ME. However, a different feature comes to the fore in each of them when these tools are examined. While some of these tools have a structure that allows for the preparation of different types of questions and the archiving of the prepared questions, some of them do not have the feature of editing the developed content, Turkish language support, multimedia support for feedback, free use and class-based analysis. Also, the features of student, teacher and parent interfaces differ in these different Web 2.0 tools. Among these tools, such as LearningApp and Wordwall stand out as they contain gamification elements in different question types, while detailed analysis information about the results is provided to both students and teachers in the Kubbu tool (Tatlı, 2019). While some of the Web 2.0 tools with different features offer Turkish language support (SurveyMonkey, LearningApps, Quizlet, Gradecam, Baamboozle, Classflow, Microsoft Forms), most of them do not. There are different paid (SurveyMonkey, Quizmaker) and free (LearningApp, Wordwall) versions of Web 2.0 tools. Most paid Web 2.0 tools offer limited time and fewer activities to their users as a free version. In addition, very few Web 2.0 tools have the ability to enrich the feedback with audio, visual and text (Quizizz). Apart from these, there are also Web 2.0 tools that only include visual feedback (Bamboozle, Clasflow, Classkick, Naiku, Quizalize). Considering the foreign language proficiency of primary school students, the limited number of Web 2.0 tools with a native language support appears as another limitation (Tatlı et al., 2019). Especially considering the characteristics of today's learners, providing written feedback to students who shorten the sentences, prefer symbols and emoji to be faster is a major limitation (Çakır & Topçu, 2005; Günther, 2007). Another striking limitation is that all Web 2.0 tools do not have the ability to create classes and archive student detailed data since the main purpose of online ME tools is to collect data from large groups (Evans & Mathur, 2005). Although Web 2.0 tools (Kubbu, Kahoot) inform the student and teacher about the outcome of the material, the parent is not included in this process. In most Web 2.0 tools developed for ME, materials are even sent to participants via links. Further, Web 2.0 tools (Quizizz, Socrative) that have the ability to create a class and assign students to the class within the application are quite limited.

Given the features mentioned above for ME purposes, there is a need for developing a new Web 2.0 tool for the primary school level, combining the advantages of existing Web 2.0 tools and excluding the negative features. It was considered appropriate to develop the Web 2.0 tool for this primary level, as it includes the fundamental cognitive objectives of different disciplines such as Science, Social Studies, Native Language, and Mathematics and it is also rich in developing materials for each discipline. The primary school level forms the basis of the future education life,

allows the use of different types of questions and basic lessons are shaped at this level, it is important to develop a Web 2.0 tool for ME for this level. Based on this need, it is aimed to reveal the features of the Web 2.0 tool that will be developed for primary education teachers, in line with the opinions of experts from the Department of Computer Education and Instructional Technology (CEIT) and Primary Education (PE). In this context, PE and CEIT field experts were consulted on the features that should be included in the design and feedback of the tool and their needs were required to increase the tool efficiency and interface design. Within the scope of primary education level, it was deemed appropriate to consult CEIT and PE field experts because of their knowledge and experience on the features of Web 2.0 tools. In the determination of the interviewed field experts, “the existence of a publication about Web 2.0 tools or the use of different Web 2.0 tools in teaching processes” was taken as a criterion. Thus, it is thought that this situation will contribute to obtaining more valid data by revealing the features of the Web 2.0 tool to be developed.

Based on all this, it is aimed to reveal the features of a Web 2.0 tool for ME that will be developed for PE teachers, in line with the opinions of CEIT and PE field experts in the research. Within the scope of this purpose, the sub-problems of the research are presented below.

In the Web 2.0 tool that will be developed for ME, according to field experts;

1. Which elements should be included in the design of the Web 2.0 tool?
2. How should the feedback be designed?
3. What should be considered in order to be preferred by students?
4. What should be considered in order to be preferred by teachers?
5. Which student information should be included in the student, teachers and parent interface?

Method

Research Design

Since it is aimed to reveal the features of a Web 2.0 tool for ME that will be developed for PE teachers, in line with the opinions of CEIT and PE field experts, case study was used in the research. Case study is a method in which one or more events, settings, programs, social groups or other interconnected systems are examined in depth (Yin, 2002). The most important advantage of this method is that it allows focusing on a specific situation of a problem. The use of case studies was deemed appropriate because it is a preferred method when asked what, how and why it differs from many research methods (Aytaçlı, 2012).

Participants

The opinions of CEIT field experts were taken regarding the basic features and design elements of the Web 2.0 tool for ME, which is planned to be used at the primary school level. The opinions of PE field experts were also consulted about the Web 2.0 tool’ features for meeting the needs of PE teachers and its suitability for the characteristics of primary school students. Field experts were selected by criterion sampling. Criterion sampling is the inclusion of people, events, objects or situations with the qualifications determined in relation to the problem (Büyüköztürk et al., 2015).

Criterion sampling was found appropriate since “the existence of a publication about Web 2.0 tools or the use of different Web 2.0 tools in teaching processes” was taken as a criterion in determining the participants of the research. The distribution of the participants according to their gender and professional experiences is given in Table 1. As seen in Table 1, 10 CEIT (3 female, 7 male) and 10 PE (4 female, 6 male) field experts with professional experiences ranging from 1 to 27 years were included in the research.

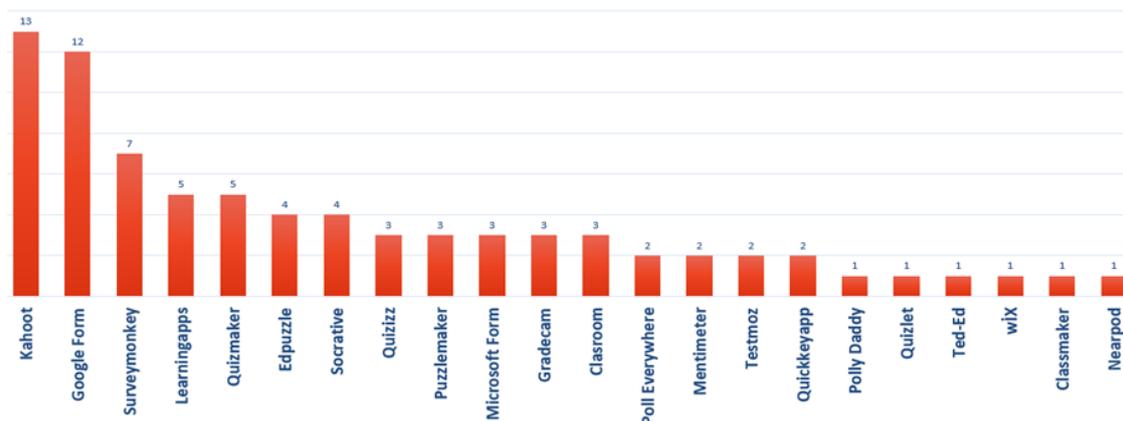
Table 1

The Participants of the Research

Computer education and instructional technology field experts			Primary education field experts		
Code	Gender	Professional experience	Code	Gender	Professional experience
B1	Male	8	T1	Male	11
B2	Male	18	T2	Male	23
B3	Male	11	T3	Male	26
B4	Female	4	T4	Male	18
B5	Male	6	T5	Male	9
B6	Male	8	T6	Female	27
B7	Male	8	T7	Female	14
B8	Female	14	T8	Male	16
B9	Male	9	T9	Female	4
B10	Female	17	T10	Female	1

The data collection process of the research started with the determination of the tools used by the field experts and the reasons for preferring these tools. Accordingly, Web 2.0 tools used by field experts for ME are presented in Figure 1.

Figure 1

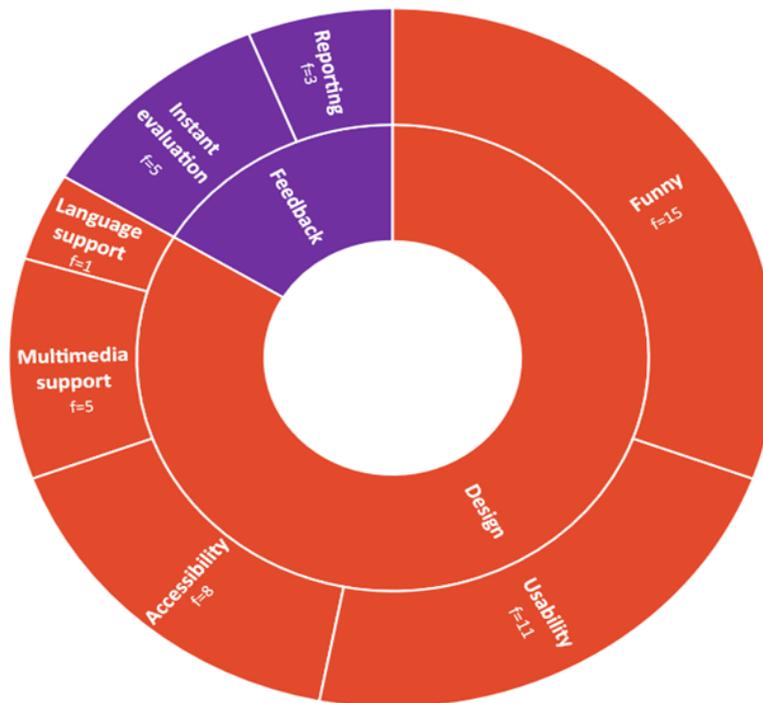
Web 2.0 Tools Used by Field Experts for ME

*Field experts were allowed to provide more than one opinion.

When Figure 1 is examined, it can be seen that field experts use a total of 22 different Web 2.0 tools for ME purposes. Among these tools, it is seen that they mostly prefer Kahoot ($f=13$), Google Form ($f=12$), SurveyMonkey ($f=7$), Learningapps ($f=5$), Quizmaker ($f=5$). The factors affecting the preferences of the field experts in the Web 2.0 tools they use for ME are presented in Figure 2.

Figure 2

The Factors Affecting the Preferences of the Field Experts in the Web 2.0 Tools They Use for ME



*Field experts were allowed to provide more than one opinion.

When Figure 2 is examined, the factors affecting the preferences of the field experts in the Web 2.0 tools they use for ME purposes are categorized under two main categories: “Design” ($f=40$) and “Feedback” ($f=8$). When examined specifically in the design category, it is seen that the specified tool is mostly funny ($f=15$), usability ($f=11$) and accessibility ($f=8$). While B5 expresses the preference of the tool because of its fun as “... because it creates a fun environment for all ages ...”, B6 explains its usefulness as “... it is very easy to make changes and prepare on it”. Under the feedback category, field experts indicate that they prefer the Web 2.0 tool, as it allows for instant evaluation. B3 expressed this situation as “It provides a quick and effective assessment in this process”.

Data Collection Tool

Within the scope of determining the features of the ME Web 2.0 tool to be developed for PE teachers in the research, the opinions of the field experts of the CEIT and the PE Teacher Department experts were received through semi-structured interviews. In the process of creating the form used in online interviews, a question pool was created by first examining the literature and a draft form was prepared. The developed draft interview questions were submitted to the opinions of eight field

experts ($f_{\text{CEIT}}=3, f_{\text{primary education}}=3, f_{\text{mathematics education}}=1, f_{\text{science education}}=1$) within the scope of the validity research. In order to examine the interview questions from a general framework, it was tried to ensure the diversity of the field experts. According to expert opinions, 3 questions were removed, 4 questions were combined, and probes were added to 2 questions. Two experts were consulted to check the suitability of the questions in terms of Turkish grammar and expression. The final form of the interview questions was given within the framework of expert opinions (Appendix 1).

After the final form of the interview questions was given, a pilot application was carried out with 3 field experts (not included in the participants). As a result of the pilot application, it was seen that field experts wanted an explanation about the concept of Web 2.0 for ME. For this reason, an information note about Web 2.0 tools has been added to the interview form.

Data Collection Process

Online interviews were conducted with field experts using Zoom and Google Meeting video conferencing platforms. While starting the interviews, the researcher introduced herself and explained the purpose of the research. The researcher gave information about the estimated duration (30-45 minutes) and content of the interview. Interviews were conducted after the approval of the field experts was obtained. Each interview lasted an average of 30-45 minutes. Only interview questions were asked to the participants. During the interview, the questions were respectively projected onto the screen via Zoom or Google Meeting platforms. Interviews were recorded. Later, the interview records were transcribed and subjected to analysis.

Data Analysis

The data obtained from the interviews were subjected to content analysis. With content analysis, it is aimed to reach the relationships and concepts that can explain the data collected (Yıldırım & Şimşek, 2011). In the content analysis, the data was coded. The data obtained within the scope of coding were divided into sections, and comparison and association were made between the data. The data were categorized by means of codes. As part of the content analysis, the data were coded and categorized, and themes were obtained. The data are organized by code and themes.

In qualitative research, the reliability of data analysis depends especially on the coding process. For the reliability of the analysis of the interview data, the data obtained were analyzed by two different coders. Analysis that was carried out independently of each other was brought together and examined by two different encoders. Codes and categories were clarified by comparing the codes and categories produced by two researchers. The frequencies of the clarified codes and categories are presented using figures. An equal number of field experts from departments of CEIT and PE were selected to support transferability. The interviews were recorded and transcribed within the knowledge of the participants, the transcribed contents were sent to the participants and then their approval was obtained. Thus, the data could be validated. In the findings, it was tried to ensure the trustworthiness of the data by quoting direct quotations from the statements of the participants. Coding reliability was checked to determine the consistency of the categories. The qualitative data of the study were subjected to content analysis by different researchers. As a result of the content analysis, the Kappa

coefficient was calculated as 0.79 with the codes created by two different researchers. Accordingly, it can be stated that the analysis is well-confirmed (Cohen, 1960; Landis & Koch, 1977). In the quantitative data of the research, reliability was supported by giving frequency values. It was presented to the reader by making direct quotations from the teachers' expressions to reflect the opinions of the field experts. In terms of research ethics, while CEIT field experts were coded as B1, B2, ... B10, PE field experts were coded as T1, T2, ... T10.

Findings

The data obtained from the semi-structured interviews conducted with field experts within the scope of the research are presented in this section.

The Elements Included in the Design of the Web 2.0 Tool

The elements included in the design of the Web 2.0 tool to be developed for ME are presented in Figure 3.

Figure 3

The Elements Included in the Design of the Web 2.0 Tool to Be Developed for ME



*Field experts were allowed to provide more than one opinion.

When Figure 3 is examined, the elements included in the design of the Web 2.0 tool for ME are “Feedback design” ($f=27$), “Question/answer design” ($f=24$), “Interface design” ($f=19$) and “Interaction design”. It is seen that it is grouped under four categories as “design” ($f=9$). When examined in terms of categories, in the field of

feedback design being visual ($f=8$), T2 said, “... even though the student is literate outside of the written language, the feedback should be given visually in my opinion”. Under the Question / Answer design category, T5, one of the experts who received the need for multimedia support ($f=11$), stated that “... there should be plenty of visuals, it should be multimedia, both sound and video...”. Under the interface design category, field experts stated that the tool should be easy to use ($f=10$) and visual design ($f=7$). To explain the importance of ease-of-use, B2 said, “... you should not put too much workload on the teacher. The easier it is, the easier it will be ...”, B8 stated the importance of visual design as “... a more visually based interface can be designed rather than a multi-text based interface that may contain more visual elements...”.

The Features in the Feedback Design of the Web 2.0 Tool

The features in the feedback design of the Web 2.0 tool to be developed for ME are presented in Figure 4.

Figure 4

The Features in the Feedback Design of the Web 2.0 Tool to Be Developed For ME



*Field experts were allowed to provide more than one opinion.

When Figure 4 is examined, the features in the feedback design of the Web 2.0 tool to be developed for ME purposes are “Reporting” ($f=42$), “Feedback notice” ($f=39$), “Reporting on usage” ($f=16$) and “Feedback format” ($f=9$). Under the reporting category, B2 indicates the outcome based feedback ($f=15$) as “... what are the topics that a student gives most wrong feedback can be given. It will also be very useful for teachers. Therefore, students can see more clearly in which subject they have

deficiencias...”. T8 states that it should be graphic based reporting ($f=12$) as “... she needs to see graphically, visually... in order to have information about the class...”. Finally, B2 explained that the number of correct/incorrect numbers ($f=11$) should be reported as “... feedback should be shared with the teacher, how accurately the given questions are answered or where they are wrong ...”. Under the Feedback notice category, there should be System messages ($f=17$), and B3 states that “... when a student teacher creates activities on the system, he/she can send a warning message...”. B8 states that there should be links ($f=12$) as “... such a homework was sent to your child, or such an activity was delivered to parents, maybe links can be sent to parents because it is difficult for young children to control over mobile phones ...”. Under the reporting on usage category, T9 says that answering time ($f=11$) should be reported as follows:

“... can be given in the time spent on each question. Because if the student spends too much time on that question and the whole class spends too much time on that question, it may mean that the question is difficult and selective, and it can be understood that it is distracting or not understood. The duration of the student’s stay in that question can be given...”.

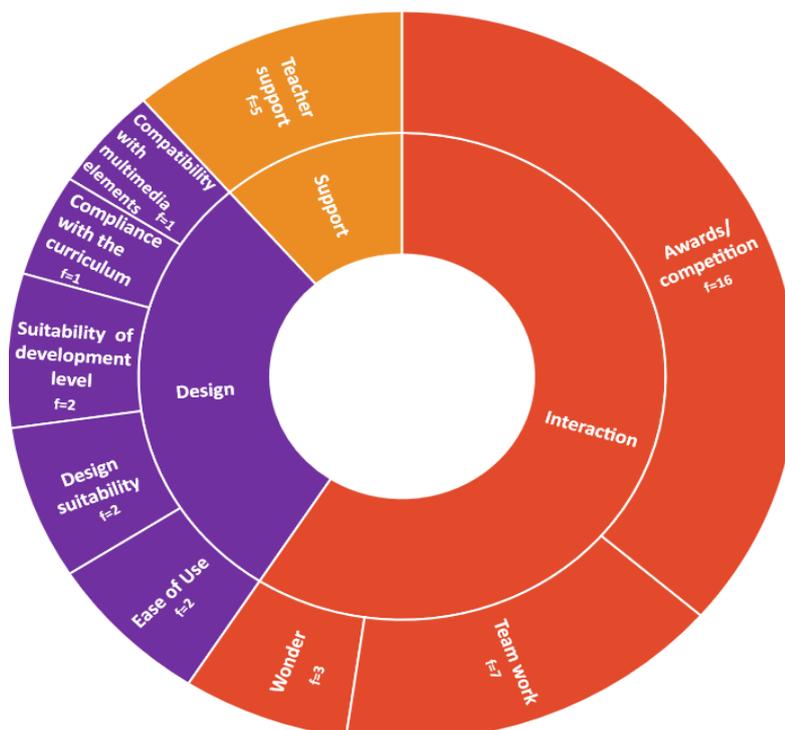
Finally, under the Feedback format category, it was stated by T8 that the feedback should be Instant ($f=6$): “...she should definitely see what the correct answer is instantly...”.

The Needs of Field Expert for Students’ Preference of the Web 2.0 Tool

The needs of field experts for students’ preference of the Web 2.0 tool to be developed for ME are presented in Figure 5.

Figure 5

The Needs of Field Expert for Students’ Preference of the Web 2.0 Tool to Be Developed for ME



*Field experts were allowed to provide more than one opinion.

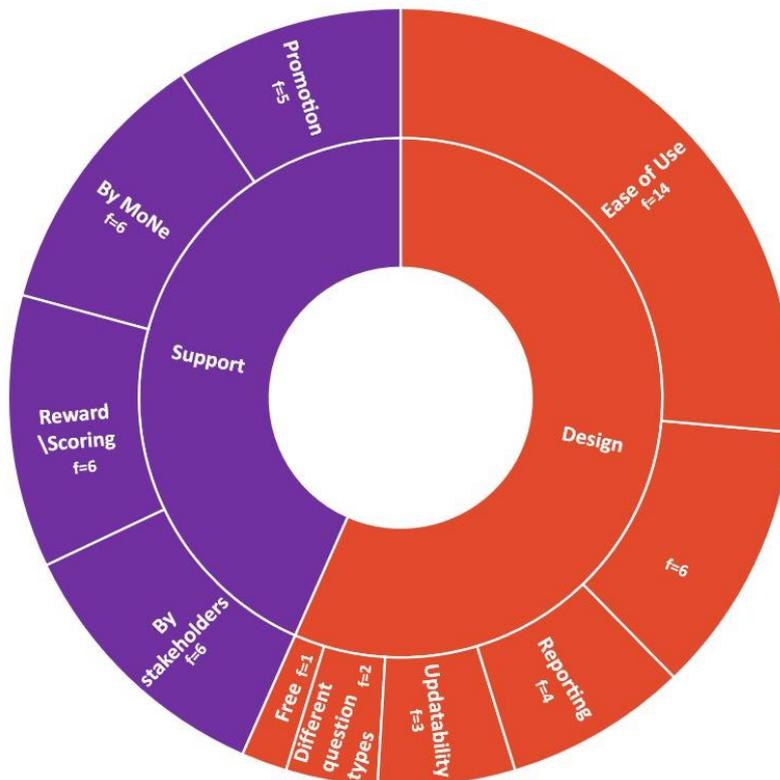
When Figure 5 is examined, the needs of the field experts for students' preference of the ME Web 2.0 tool are collected in three different categories as "Interaction" ($f=26$), "Design" ($f=8$) and "Support" ($f=5$). Under the "Interaction" category, B8 indicates that students should have Awards/competition ($f=16$) elements as "... as the student progresses, there is a sapling for the student in the system". Under the Design category, field experts stated that it should be Suitability of development level ($f=2$), Design suitability ($f=2$) and Ease of use ($f=2$). While B3 expresses the importance of Suitability of development level as "... we need to provide them with very simple, understandable, clear feedback...", T3 explains that there should be design conformity as "...the use of colors, the use of text buttons, the characters created with lines are easier to read...". T8 expresses the importance of the ease of use of the tool in order to be preferred by the student as "... it should be easy to use...". Finally, for teacher support ($f=5$), B1, who takes importance for the student, states that "... if the teacher uses it actively, the child will be very happy if he/she texts with his / her teacher from there...".

The Needs of Field Expert for PE Teachers' Preference of the Web 2.0 Tool

The needs of field experts for PE teachers' preference of the Web 2.0 tool to be developed for ME are presented in Figure 6.

Figure 6

The Needs of Field Expert for PE Teachers' Preference of the Web 2.0 Tool to Be Developed for ME



*Field experts were allowed to provide more than one opinion.

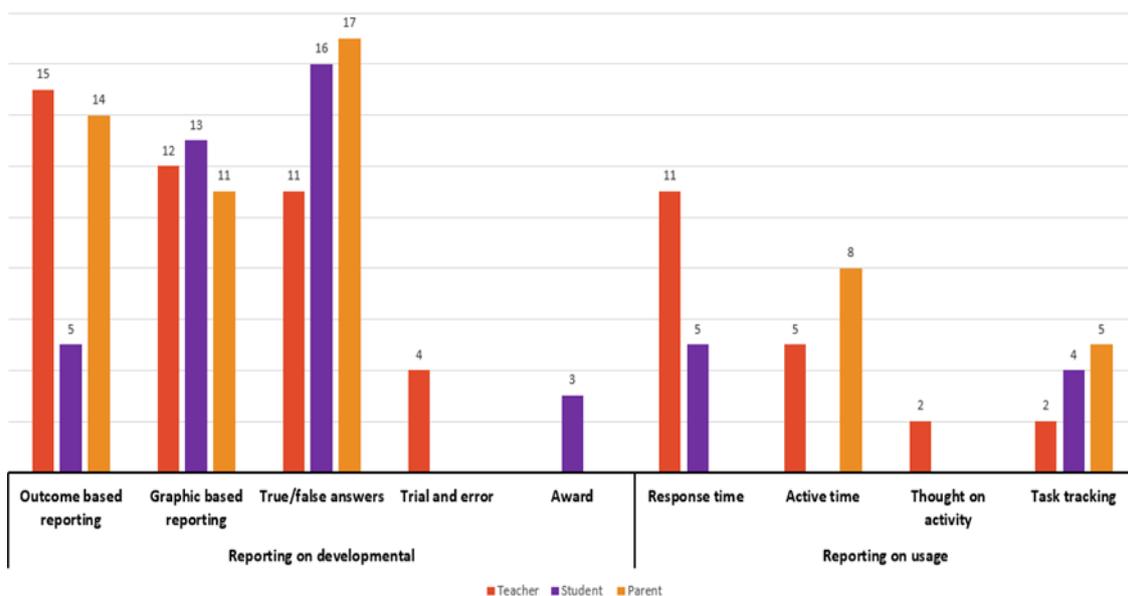
When Figure 6 is examined, the needs of the field experts for PE teachers' preference of the ME Web 2.0 tool are collected under two categories as "Design" ($f=30$) and "Support" ($f=23$). Under the design category, B5 states that the ease of use ($f=14$) affects the use of teachers by saying, "... if he uses your platform in a simple way compared to the measurement methods he uses in the classroom, his motivation will increase...". Under the Support category, it is stated that it is important to support By MoNE ($f=6$), Reward/Scoring ($f=6$) and By stakeholders ($f=6$) for PE teachers to prefer the ME Web 2.0 tool. B5, who took the importance of supporting the Ministry of National Education (MoNE), says, "... A plus can be given to the teachers from the MoNE wing. Awards may be given, but they may be in the form of the following course ..." while B1 attaches the importance of rewards/scoring by expressing "For example, when the teacher adds a question or when others like it, the teacher's score may increase ...". Finally, B1 who gave importance of the support provided by the stakeholders, states that "... for the teacher who will congratulate, encourage or be honored by you, what he has done has worked or will receive positive feedback from parents...".

Student Information Stated by Field Experts to be Included in the Student, Teacher and Parent Interface

Student information stated by field experts to be included in the student, teacher and parent interface is presented in Figure 7.

Figure 7

Student Information Stated by Field Experts to Be Included in the Student, Teacher and Parent Interface



* Field experts are allowed to give more than one opinion.

When Figure 7 is examined, the student information stated by field experts to be included in the student, teacher and parent interface are collected in two different

categories as “Reporting on development” and “Reporting on usage”. In terms of categories, field experts state that Outcome based reporting should be shared with teachers ($f=15$), true/ false answers with students ($f=16$), and true/false answers with parents. B2 expresses the importance of sharing outcome-based reporting with teacher by saying, “... *what are the topics that a student gives the most mistakes? It will also be very useful for teachers. Therefore, students can see more clearly in which subject they have deficiencies ...*”. While B3 explains the importance of sharing the true/false answers with the student as follows: “... *the information that the student answered correctly which questions should be available*”, T3 states that true/false answers should be shared both with students and parents as “... *it is absolutely necessary to send an evaluation to the parents individually, which one did wrong...*”.

Discussion and Conclusion

The current research aims to reveal the features of the Web 2.0 tool that will be developed for PE teachers, in line with the opinions of experts from the department of CEIT and PE. It is seen that field experts use Google Forms and Kahoot applications more for ME purposes (Figure 1). Field experts also emphasize these tools’ features as factors affecting their preferences. These detected Web 2.0 tools are preferred because they are fun, useful and easily accessible (Figure 2). Multimedia support and instant evaluation features of Web 2.0 tools used for ME are other dimensions that affect the preference. Rapid analysis is at the forefront of online ME tools since the main purpose of online ME tools is to collect data from large masses (Evans & Mathur, 2005). Thus, it can be asserted that field experts prefer such Web 2.0 tools that have an instant evaluation, multimedia support, usability, or accessibility features in order to facilitate communication with students in the process and to use time effectively. On the other hand, field experts may have chosen fun Web 2.0 tools to keep students active and motivated (Zarzycka-Piskorz, 2016).

The field experts state that the interface should be easy and have a visual design in the Web 2.0 tool to be developed for ME (Figure 3). It is thought that field experts emphasize ease of use in interface design in order to facilitate access to information and fulfill such requirements (Cho et al., 2009). Because it is known that intensive interface designs can distract users from using the application (Seo & Woo, 2010). In other words, too many links or content makes users uncertain about which link to choose and why, which may lead to giving up using the application. Multimedia support and entertainment/game support were emphasized in the question/answer design, while the visual and voice feature highlighted in the feedback design. It can be said that the field experts take into account the characteristics of today’s learners and talk about a design that the student can respond to questions by recording his/her voice or drawing a picture and uploading it to the system. Considering that today’s learners get bored quickly, prefer pictures and graphics instead of writing, and be reluctant to write although they know the answer (Hart, 2008), it is seen that field experts touch a necessary and very important point in both feedback and question/answer design. Because educational software is functional to the extent that it meets student needs and considers individual differences (Martínez-Villaseñor et al., 2014). As a matter of fact, providing different answer options to each student through multimedia support will undoubtedly increase

the quality of ME functionality and positively affect the academic success of students (Altınışık & Orhan, 2002; Buluş-Kırıkkaya et al., 2016).

Award/competition theme comes to the fore in students' preference of the specified Web 2.0 tool (Figure 5). It is thought that the field experts especially touch the award/competition theme in order to ensure the active participation of primary school students in the process. In web-based ME, there are serious problems in ensuring the intrinsic motivation of students and keeping them in practice, and these problems may result in cancellation of the students' use of the system (Tuluk & Yurdugül, 2020). For these reasons, referring the design element such as award/competition related to the performance situations of the students in the process or mentioning the teamwork that enables them to interact with the online practice can be interpreted as the experts offering solutions. The use of the specified Web 2.0 tool by students and teachers is one of the most important indicators of the tool's success. Field experts state that the Web 2.0 tool should be an easy-to-use design preferred by PE teachers (Figure 6). This consideration is important for PE teachers to both meet their needs and use the Web 2.0 tool efficiently. Because teachers' ability to prepare questions in a practical way affects their willingness to use the Web 2.0 tool (Acar, et al., 2020; Davis et al., 1989), shortens and facilitates the process of learning the application and enables them to be more effective in its use (Cesur & Yelken, 2015; Wang & Wang, 2009). The related literature indicates teachers' computer literacy is not sufficient (Akgül et al., 2015; Konan, 2010), they have problems in preparing computer-aided materials (Arslan & Şendurur, 2017; Drenoyianni & Selwood, 1998; Elmahdi et al., 2018; Pamuk et al., 2012) and they have low self-confidence in preparing computer-aided materials (Arslan & Şendurur, 2017; Ertmer et al., 1999; Handal, 2004; Sugar, 2002). For this reason, it is thought that the tool, which will be developed as a Web 2.0-supported and easy-to-use tool, can support teachers' competencies (Vitanova et al., 2015). Supporting the Web 2.0 tool with an award/scoring application made by MoNE and stakeholders' supports are among the needs for the use of teachers. These considerations support extrinsic motivation. Extrinsic motivation is necessary and important for teachers to develop positive attitudes towards technology (Guha, 2003). Therefore, it is thought that teachers will adopt this tool more with an application similar to the award/scoring of MoNE because a similar scoring is used for teachers in a similar online environment called as Interactive Information Network (IIN) under MoNE (Doğan & Koçak, 2020).

According to the student information to be directed in the student, teacher and parent interface, the directed information to students and parents is parallel (Figure 7). Field experts state that the number of true / false answers and graphic-based reporting regarding student information should be included. First of all, directing these two information to the students will support them to increase their awareness in order to know themselves better and overcome their learning deficiencies (Assessment Reform Group [ARG], 2002; Black & Wiliam, 1998). Similarly, sharing this information with parents enables parents to be a part of the teaching-learning process, to follow and learn about the student's progress (Lake & Olson, 2020; MoNE, 2020). On the other hand, sharing the graphical report of the student may cause a negative competitive environment among students as they see the names and the results of their friends. For this reason, it is important to share the student's own success orders rather than sharing the names and order of success of their peers. Otherwise, a negative competitive

environment may occur and this may cause a decrease in some students' motivations. In addition, it is stated that the graphical report is not sufficient to show the student individual development (MoNE, 2020). In this context, sharing the graphic-based report and the number of true/false answers together is a basic requirement for students to see their development.

The field experts state that the Web 2.0 tool, which will be developed for ME purposes in primary school, should include both the correct/wrong number and response time of the student in the teacher interface (Figure 7). They also repeat these features in the Web 2.0 tool's feedback design (Figure 4). The opinions of the field experts are that PE teachers will need this information to determine the students' learning level and follow their development because this mentioned information helps teachers obtain information and make decisions about the effectiveness of teaching. In this way, teachers can determine what kind of support they should offer, considering the student's difficulties (Black & Wiliam, 1998; Tuluk & Yurdugül, 2020). Field experts indicate that the outcome-based and graphic-based reporting feature should be included both in the teacher interface (Figure 7) and in the feedback of the Web 2.0 tool (Figure 4). In the ME process, various problems such as crowded class size, limited time, time-consuming assessment and reluctance of teachers are frequently encountered (Şimşek et al., 2017; Zhao, 2007). Thus, a Web 2.0 tool with the aforementioned features will be the solution to these problems. Including these considerations in the specified Web 2.0 tool will contribute to the correct determination of the outcome, the selection and application of the convenient ME tools for the outcomes, the determination of the students' reaching level of outcomes and the interpretation of these all information.

The findings obtained in the research are evaluated in general, the following main conclusions are reached. It is stated that the ME Web 2.0 tool to be developed for the use of PE teachers, should

- have an easy of use interface and a question/answer design with multimedia support.
- include awards/competition and teamwork' interaction in order to be preferred by students,
- ensure ease of use, be supported by MoNE and stakeholders in order to be preferred by teachers,
- share true/false answers and graphic-based reporting in the student interface and also present outcome-based reporting in the parent interface,
- provide true/false answers, response time, outcome-based and graphics-based reports both in the teacher interface and in the feedback design.

Implications

Given the results obtained in the current research, it is recommended to include an easy of use interface and multimedia support in the question/answer process within the scope of the needs determined from field experts for the Web 2.0 tool to be developed for ME in primary schools. In addition, it is recommended that the specified Web 2.0 tool include outcome-based and graphical-based reporting features. Especially in the Covid-19 pandemic, in order for parents to support their child and follow the student's progress, it is recommended that a detailed statistical development report be

included in the parent interface, restricting only to their children. Providing an environment where students view their success to focus on their development and prevent unwanted competition is also recommended. A statistical reporting system is proposed in the teacher interface, where the progress of all students can be examined in detail. It is also recommended to get the opinions of the PE teachers who will be the users of the Web 2.0 tool, which is planned to be developed for the PE level. Lastly, the Web 2.0 tool to be developed for the use of PE teachers can be integrated into the Interactive Information Network (IIN) portal supported by the MoNE.

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Statement of Responsibility

This study is one of the outputs of the TUBITAK 1001 project carried out by the first author Assoc. Prof. Dr. Zeynep TATLI. The authors took part in the team of the project and made significant contributions to the development of the process and the article. The 2nd and 3rd authors took part in the project as a scholarship student and the 4th author as a researcher. All authors were sufficiently involved in the work to take public responsibility for the design and implementation of the research, analysis of the data, writing or reviewing the manuscript.

Conflicts of Interest

The authors declare that there is no conflict of interest.

Author Bios

Zeynep Tatlı is Associate Professor of Computer and Instructional Technology Education at Trabzon University, Turkey. She has a wide range of research interests including technology integration models, web 2.0 technology, online assessment, virtual learning environment, virtual laboratory, digital storytelling.

Şeyma Turan completed her Master's Program in Computer and Instructional Technologies Education at Trabzon University.

Havva Yaman is a research assistant in the Department of Mathematics and Science Education at Fatih Faculty of Education, Trabzon University, Turkey. Her research interests focus on the affective development of elementary students and the use of diverse types of technologies in science education.

Sibel Er-Nas is Associate Professor of Science Education at Trabzon University, Turkey. She has several research interests including technology and science education, associating science concepts with daily life, nature of science, socio-scientific issues, conceptual understanding of science concepts, and evaluation of science textbooks.

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Appendix 1

Initial version of interview questions	Final version of interview questions after validity and reliability studies
Which of the Web 2.0 environments do you use for ME?	What Web 2.0 tools do you use for ME?
For what features do you prefer the ME Web 2.0 tools you have used?	For what features do you prefer the Web 2.0 tools you use for ME?
What features do you think a well-designed Web 2.0 tool should have?	Which features should be taken into account in the Web 2.0 tool that will be developed for ME? What information about student usage should be shared with the teacher?
Which of the Web 2.0 environments you use, do you like the feedback system? Why?	What information should be shared with students about their situation? What information should be shared with parents about their situation? What features should be included in the feedback system given to the student?
Added Interview Questions	Which motivational features should be included for students to prefer the Web 2.0 tool to be prepared for ME? Which motivational features should be included for PE teachers to prefer the Web 2.0 tool to be prepared for ME?



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