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Research Article

The Students' Perceptions on Blended Learning: A Q Method Analysis*

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Abstract

The purpose of this study was to reveal the students' perceptions on blended learning through the Q method. The originality of the research stems from determining whether the students have a general tendency towards the blended learning process and evaluating the whole process through identifying its prominent components. The research data was compiled through the Q-Sort and the judgemental statements created by the researchers from 31 students attending the 3rd and 4th classes of the Faculty of Education during the 2016-2017 academic year. The data analysis ascertained that the students were in affirmative consensus on blended learning and the prominent components of the process were listed as teaching staff, face-to-face classes, student roles and the features of online course materials. The findings obtained were discussed within the frame of the relevant literature and the suggestions were made on blended course design.

Keywords

Blended learning • The Q method • Students' perceptions

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The terms "mixed mode instruction", "hybrid learning" or "blended learning" in the international literature are used as "hybrid learning" or "blended learning" in Turkish literature. For the first time, blended learning appeared as a method in 1999 during the introduction of the foundation called Interactive Learning Centers (computer skills certificate and software training program in Atlanta) which lately turned to EPIC Learning (Friesen, 2012). However, it was indicated that the emergence of blended learning was poorly understood that based on Benton Harbor High School principal's program named "supervised correspondence study" in the 1920s (Moore, 2002). Güzer and Caner (2014) have categorized the years between 1999-2002 as the first attempt period of blended learning, the years between 2003-2006 as its definition period and the years between 2007-2009 as the period of popularity.

In his report on the projects of "supervised correspondence study", Noffsinger (1938) suggested that the program was fairly appropriate to address the fundamental problems experienced in distance learning such as lack of face-to-face interaction. What's more, blended learning offers a solution to the space and time limitations of face-to-face lessons (Graham, 2006). In this regard, blended learning can be defined as an eclectic model built on the minimization of the negative aspects of online and face-to-face learning environments and the convergence of the advantages of both approaches (Finn & Bucceri, 2004; Graham, 2006; Harding, Kaczynski, & Wood, 2005; Whitelock & Jelfs, 2003; Williams, Bland, & Christie, 2008). In blended learning, the student attends some part of the course in a place outside the house and accompanied by an instructor while the rest is self-learning at his/her own pace through electronic, online or other means (e.g. learning management systems) at any time and place (Horn & Staker, 2011; Staker, 2011).

There are a great many of definitions in the literature related to blended learning (Driscoll, 2002; Garrison & Kanuka, 2004; Jonas & Burns, 2010; Osguthorpe & Graham, 2003; Williams et al., 2008; Yen & Lee, 2011). It is pointed out that as any and every study in the literature has its own frame, there is not a single finite definition and all the present identifications have common features (Bliuc, Goodyear, & Ellis, 2007; Osgerby, 2013; Picciano, Dziuban, & Graham, 2013; Sharpe, Benfield, Roberts, & Francis, 2006). Indeed, the diversity of the definitions in the literature has led the researchers to classify them (e.g. Graham, Allen, & Ure, 2003; Kaur, 2013). While some simply define blended learning as the convergence of face-to-face and online learning environments (Allen & Seaman, 2014; Bielawski & Metcalf, 2003), the others lay emphasis on pedagogy in particular (Lim & Morris, 2009).

It can be noticed that numerous advantages of blended learning have been listed in the literature such as enhancing learning opportunities, offering effective learning experiences, facilitating learners' access to the resources, motivating learners

through communication, collaboration and interaction, and supplementing the course management activities through giving feedback and grading (Bath & Bourke, 2010; Saliba, Rankine, & Cortez, 2013; Smyth, Houghton, Cooney, & Casey, 2012). These advantages made blended learning such a focus of interest and more widespread that the scholars begin to call attention to its potential to spread throughout the world (Horn & Staker, 2011). It is prescribed that blended learning will become the dominant model of the future, will be more popular than face-to-face or online learning alone and its definition will be accepted as the learning itself (Bonk, Kim, Oh, Teng, & Son, 2007; Kim & Bonk, 2006; Watson, 2008; Yen & Lee, 2011). As a matter of fact, Döş (2014) listed the present examples of blended learning in both educational institutions and in the business world (e.g. Canberra University, Siemens).

The research on blended learning seem to focus on student learning (Dziuban, Hartman, Juge, Moskal, & Sorg, 2006; Ekwunife-Orakwue & Teng, 2014; Garnham & Kaleta, 2002; Herloa, 2015; Lim & Morris, 2009; López-Pérez, Pérez-López, & Rodríguez-Ariza, 2011; O'Toole & Absalom, 2003; Twigg, 2003; Williams et al., 2008; Wang, Shen, Novak, & Pan, 2009). Meta-analyses also clearly demonstrate the effectiveness of blended learning on student achievement when compared to online and face-to-face learning (Batdı, 2014; Çırak-Kurt, Yıldırım, & Cücük, 2017; Means, Toyama, Murphy, Bakia, & Jones, 2009). Besides, there are studies addressing blended learning from different perspectives (Geçer, 2013; Kocaman-Karoğlu, Kiraz, & Özden, 2014; López-Pérez et al., 2011; Poon, 2012) and those investigating the effects of blended learning environments enriched via various methods such as gamification and 5E (Kurt, 2012; Meşe, 2016; Yıldırım, 2016). It was also concluded that blended learning research conducted in Turkey were mainly postgraduate dissertations examining the effects of the blended learning on certain variables such as motivation (Aygün, 2011; Cabi, 2009), attitude (Çiftçi & Dönmez 2015), anxiety reduction (Horzum & Çakır Balta, 2008), permanence (Aksoğan, 2011), self-regulatory learning skills (Ateş Çobanoğlu, 2013; Güler, 2013), professional know-how (Kaya 2014; Sungur, 2014), critical thinking and creative skills (Umar, 2014) and self-efficacy (Demirer, 2009) and the majority of those revealed positive variations on the aforementioned variables.

The components of the blended learning process, having a great deal of positive impact upon several variables, have also been heavily discussed, and different studies have been conducted on the effective components in the blended learning process (Delialioğlu, 2004; Saliba et al., 2013; So, 2009). Although the literature includes theoretical frameworks developed for the effectiveness of online (Reeves & Reeves, 1997) and face-to-face learning environments (Chickering & Gamson, 1987), a theoretical framework examining the effective components of the blended learning holistically has never been encountered. The research on the effective components of

the blended learning process can be summarized as follows: The findings of Delialioğlu (2004) showed that the original learning activities, the need for metacognitive support, the amount of information provided in the website for the course content, the source and the type of motivation, collaborative learning, internet access and individual learning were crucial for student learning in a blended course. In their study, Ginns & Ellis (2007) identified four dimensions with several items for the components of the online part of the blended learning as high quality e-resources (appealing materials, harmony between face-to-face and online lessons), high quality e-learning (teacher's giving feedback, activating interaction, motivating, communicating and so on), proper workload and student interaction. Lim & Morris (2009) listed four important components in a blended course design as the nature of learning activity, the characteristics of the teacher, the workload and learning support. The interviews in So's (2009) study also demonstrated that the overall success of the blended courses was linked to the correct integration of the components of course instructor, face-to-face interaction, technology and cooperative learning. Naaj, Nachouki, and Ankit (2012) pointed out that student satisfaction was vital for determining the quality of blended learning and that student satisfaction was influenced by the components of instructor, interaction, technology, classroom management and teaching. As a result of her research, Çırak (2016) identified nine effective components for blended learning as teacher roles, activities in design, LMS, face-to-face lessons, online course materials, interaction between students, assessment and evaluations, learner roles and online sharing. All these results from different studies suggest that similar components such as teacher, the characteristics of course materials, interaction, technology, face-to-face lessons are effective in blended courses. Apart from those listed above, similar results can also be found in different research (Döş, 2014; Geçer, 2013; Kocaman Karoğlu et al., 2014; Poon, 2012).

The studies examining how students perceive blended learning also take place in the literature (e.g. López-Pérez et al., 2011; Poon, 2012). However, not even a study has been found to reveal the students' perceptions on the blended learning process with the Q method and to find out more in depth conclusions in this sense. The Q method can be used to identify the points where the participating students in the study are in agreement / disagreement about the blended learning process and to evaluate the course design by determining the order of importance as to the effective components of the blended learning process.

This study aimed to reveal how the blended learning was perceived by the students, whether the students met on a common ground about blended learning and what the prominent components of blended learning were. Within the scope of this research, the following questions were sought: (i) Do the students' opinions on blended learning differentiate into different groups? (ii) What do the group of students mean in the blended learning process? (iii) What is the general tendency of students on blended learning?

It can be claimed that this study is original in terms of its contributions to the literature, as it is one of the studies that adapts the Q method, which is a research methodology used by different disciplines, to the field of educational sciences. On the other hand, it can be alleged that the obtained research results are crucial in guiding those who want to design blended learning lessons and for leading researchers to work on similar topics.

Method

In this study, the Q method was used among mixed research methods. Through the Q methodology, which started to be used in the field of psychology in the 1930s and later applied to the field of social sciences, it is attempted to reveal the subjective perspectives, perceptions, attitudes and beliefs from the participants' own discourses (Demir & Kul, 2011; McKeown & Thomas, 1988; cited in Coogan & Herrington, 2011). The Q method can be seen as an advantageous technique allowing to reveal whether the research group meet on a common ground on a particular topic and in what direction it is if that is the case, and to rank among common ideas.

In the Q method, there is a directory called the Q-Sort and the judgemental statements under the headings determined within the research context. In the Q methodology, it is intended to collect data based on the order of statements on the Q- Sort in line with the individuals' agreement / disagreement choices with the items under the headings. The Q method is a practicable research method notably for the measurement of perception related to a certain phenomenon, and is a synthesis of qualitative and quantitative methods (Brown, 1980; Coogan & Herrington, 2011; Van Exel & De Graaf, 2005).

In this study, it was aimed to determine the students' perceptions on blended learning through the participants' placing the total of 18 judgemental statements including nine affirmative and nine negative expressions on the Q-Sort. Within the scope of the study, while the quantitative calculations serve as the quantitative aspect of the study, each participant's freely declaring his/her own ideas represents the qualitative part.

Working group of the study

The working group of this study comprised of 31 students who volunteered to participate in the Q method procedure and studying at 3rd and 4th grades of Elementary Mathematics Teaching in a state university located in south-eastern Turkey in the spring semester of 2016-2017 academic year. The participants have previously had the courses of "Instructional Principles and Methods" and "Measurement and Evaluation in Education" in blended learning design through open source LMSs such

as Moodle or Edmodo. Having a blended course beforehand was determined as the main criteria for the selection of the total of 31 students, including 11 males and 20 females. Therefore, it is clear that the criterion sampling method has been used in determining the research sample.

The participants of this study who previously had different lessons with blended learning design have actively used the online environment in their lessons by sharing the course materials dealing with the outline of the weekly schedule, answering weekly quizzes, writing blogs about the topic of the lesson, announcing the grades, communication and reviewing in some weeks; they obtained detailed information about the course in face-to-face lessons by discussing and working in groups, and they did more and more practice about the topic of the lesson in the class.

Data collection instrument

The judgemental statements included in the instrument of the study were connected with the fundamental components identified in the literature for the blended learning processes for the lesson. As the study aimed to determine the effective components of the blended learning for a specific lesson, the components required for institutional level blending such as institutional support were ignored. To illustrate, even though Poon (2012) concluded that institutional support was of great importance in his study, this component has been neglected as it was considered necessary for the research on the adoption of blended learning institutionally. All the components related to blended learning conducted in course-specific studies were included in the scope of the study, and any other components never ignored. The relevant components of the study consisted of the general review of the literature, each of which was defined operationally and unambiguously by the researchers. The components included in this study determined as teaching staff (Delialioğlu, 2004), process-based measurement and evaluation (Geçer & Dağ, 2012), out-of-class sharing (Çırak, 2016), face-to-face lessons (Poon, 2012), design-specific activities, LMS used (Köse, 2010), the features of online course materials (Döş, 2014), student role (Geçer, 2013), student-student interaction (Kocaman Karoğlu et al., 2014). The other references for each component were presented in the discussion section of the study. The judgemental statements contained expressions to determine the students' opinions under the aforementioned nine headings. The students were asked to place the total of 18 judgemental statements (nine affirmative and nine negative) in the Q-Sort according to their level of agreement and the research data were collected in this way. Despite the fact that the judgemental statements in the instrument were based on the literature, as the headings were determined by the researchers, non-structural design was claimed to be used. The relevant statements were presented in Table 1.

Table 1
Nine Headings Used in the Instrument and Their Items

Teaching staff	The way the lecturer organizes the teaching process is important in arousing my interest in a lecture **(1)** The role of instructor in blended learning is negligible **(7)**
Process-based measurement and evaluation	I am motivated by the fact that all the activities in the teaching process are included in my grade level of achievement **(11)** I prefer to be assessed with only midterm + final grades in blended courses **(2)**
Out-of-class sharing	It is unnecessary to include extracurricular sharing (videos, pictures, words) in the distance education phase of the course **(15)** Sharing on LMS, which are not directly related to the course such as photographs, texts, videos, raises my interest in a course **(8)**
Face-to-face lessons	Face-to-face lessons in blended learning have a key role on my learning **(3)** I may succeed on equal footing if the lessons are just in the form of distance learning **(17)**
Design-specific activities	The enrichment of blended learning processes with different activities such as the announcement of our scores online, the creation of discussion environments, giving group assignments and some awards increases my motivation towards the lesson **(12)** Only the use of blended model in a course is enough for my engagement **(4)**
LMS used	The features of LMS used (Moodle, Edmodo, Beyazpano etc.) raise my interest in blended lectures **(9)** The important thing in blended learning is how to use LMS not which one to use (Moodle, Edmodo, Beyazpano etc.) **(16)**
The features of online course materials	The speller type, intensity, visuality and the like features of the online course material are influential on my desire to work **(5)** The features of online materials given do not affect my interest in a course **(13)**
Student role	Fulfilling the tasks of the course has a great impact upon my level of learning **(10)** Active participation in the blended learning process is an insignificant detail **(6)**
Student-student interaction	I am motivated by the fact that I interact with my friends both on the internet and face-to-face in the learning process **(14)** It is not important for me to establish social relations in the course of a blended lecture **(18)**

Then, the mandatory distribution and the scale between -3 and +3 were used to make the participants place all the 18 statements and to crystallize their opinions. The Q-Sort used in the research was given in Figure 1.

I do not agree			Neutral			I agree
-3	-2	-1	0	+1	+2	+3

Figure 1. The Scale Used in the Q Method Study.

It has been aimed to clarify the participants' opinions by ensuring that affirmative and negative phrases are placed in a small number of boxes located at the very ends of the scale that is very similar to the normal distribution curve. Through the scale, it has been attempted to determine which expressions are more or less important for each participant. The following questions were included at the bottom of the data collection instrument to delineate the students' opinions: (i) Why did you place the

statements in +3?, (ii) Why did you place the statements in -3?, (iii) Is there something you care regarding the subject matter but not mentioned among the statements?, (iv) Are there any statements that bother or hurt you?

Subsequently, the final instrument was submitted to the two academicians who had the Q method studies in the discipline of educational sciences to request their opinions. Some arrangements were made in accordance with the feedback from the academicians, and then the preliminary implementation was carried out with seven participants. The statements were finalized in line with the feedback from the pilot study.

Data Analysis

PQMethod 2.35 software package was used during the data analysis process. At the first stage of the analysis, factor loadings were estimated and the critical significance limit value (0.60) was determined with the formula of "(1/square root N). 2,58" including N = the number of judgemental statements. The necessary rotations were carried out through principal component analysis, and the students' perceptions about the process were attempted to be revealed. The answers given by the students to the open-ended questions were submitted together with the qualitative findings of the research in order to support the quantitative findings. The data analysis in the Q method is similar to the explanatory factor analysis in a scale development process, with a few fundamental differences. While it is attempted to determine the relevant items with the factors through the principal component analysis of explanatory factor analysis, the Q method tries to group people through the principal component analysis. In other words, the factors in which the items are gathered together in the explanatory factor analysis refer to the groups of people with similar ideas in the Q method.

Findings and Comments

It was first examined whether the students have a common ground on blended learning on a general basis when analysing the students' opinions who previously had different blended lessons. Therefore, principal components analysis was conducted to determine on which factors the data were gathered together and the students' general perceptions on blended learning were clarified. The participants were named p1, p2, ... and the obtained results were shown in Table 2.

As can be seen in Table 2, the opinions of 30 of the 31 students, who were familiar with blended learning, were collected under one factor and only the participant called p20 gave statistically non-inclusive responses to any group. The fact that 97% of the participating students' being in consensus on blended learning process shows that their opinions are in similar vein. The Z values indicating the degree of importance of the expressions for the respondents have also been estimated to have a deeper understanding

Table 2
Factor Loading Table for the Participants

Participant Factor 1	Participant Factor 1
p1 **0.6650X**	p17 **0.8543X**
p2 **0.5963X**	p18 **0.8802X**
p3 **0.7897X**	p19 **0.8337X**
p4 **0.7053X**	p20 0.5659
p5 **0.8024X**	p21 **0.7880X**
p6 **0.8146X**	p22 **0.8546X**
p7 **0.7073X**	p23 **0.7419X**
p8 **0.9187X**	p24 **0.6690X**
p9 **0.6189X**	p25 **0.8572X**
p10 **0.8202X**	p26 **0.7315X**
p11 **0.9425X**	p27 **0.7873X**
p12 **0.8662X**	p28 **0.6942X**
p13 **0.6978X**	p29 **0.7546X**
p14 **0.8030X**	p30 **0.7908X**
p15 **0.8921X**	p31 **0.8168X**
p16 **0.8069X**	
Explained variance 61%	

about the students' opinions gathered under a single factor and the loading values for each item are presented in Table 3 in line with the ranking obtained from Z scores. The plus and minus signs next to the expressions in the heading column give an idea about whether the expression is affirmative or negative. The direct quotations from the student views for each item are also presented to support the findings in Table 3. These quotations were obtained from the answers to the questions of "Why did you place the statements at +3?" or "Why did you place the statements at -3?".

Table 3
Z Values for the Items Ranked According to the Order of Importance and Student Quotations

No	Heading	Item	Z value	Student Quotation Example
1	Teaching staff +	The way the lecturer organizes the teaching process is important in arousing my interest in a lecture.	1.733	"If there is order, my learning self-discipline increases. It signals that the instructor cares about the lesson and it is also valuable for me and it demonstrates that he/she cares about me and he/she is making an effort for my learning and it motivates me." p17
2	Student role +	Fulfilling the tasks of the course has a great impact upon my level of learning.	1.371	"No matter how good a teaching method is, the most precious thing in the world can cause it to be worthless unless I do my part. In addition, teaching style is valuable as long as it is a tool, not a purpose." p1
3	Face-to-face lessons +	Face-to-face lessons in blended learning have a key role on my learning.	1.102	"A well-organized course is more efficient. The internet environment solely is distressing and boring, face-to-face learning is socially more important and effective." p4

Table 3
Z Values for the Items Ranked According to the Order of Importance and Student Quotations

No	Heading	Item	Z value	Student Quotation Example
4	The features of online course materials +	The speller type, intensity, visuality and the like features of the online course material are influential on my desire to work.	0.839	"The speller type, intensity and visuality of the course material are also very important in terms of the attractiveness of the course." p7
5	LMS used +	The features of LMS used (Moodle, Edmodo, Beyazpano etc.) raise my interest in blended lectures.	0.652	"I think that different LMS used in lecturing will enrich teaching. I think that it contributes to the necessary planning to learn the lesson as it encourages participation both in and out of class environments." p9
6	Design-specific activities +	The enrichment of blended learning processes with different activities such as the announcement of our scores online, the creation of discussion environments, giving group assignments and some awards increases my motivation towards the lesson.	0.576	"The fact that the lesson associated with everyday life becomes more permanent and it is important to tell anecdotes on cultural matters for students during the lectures." p5
7	Process-based measurement and evaluation +	I am motivated by the fact that all the activities in the teaching process are included in my grade level of achievement.	0.553	"Assessments made with midterms + finals are only result-based evaluations. In this way, nobody cares about the process. There were lots of lessons that I passed through just studying in the weeks of midterms and finals and don't remember even a word about them since then. Process-based evaluations should be highlighted in education anymore rather than result-based assessments." p26
8	LMS used -	The important thing in blended learning is how to use LMS not which one to use (Moodle, Edmodo, Beyazpano etc.).	0.450	"It is important how a teacher conveys the information to us (the students), no matter which book he/she uses. Therefore, the important thing is that how the lesson is instructed so that it will be most productive not which of the distance education programs is preferred." p6
9	Student-student interaction +	I am motivated by the fact that I interact with my friends both on the internet and face-to-face in the learning process.	0.290	"I do not attach importance to social relations in the learning process and I think that interesting incidences should be mentioned to maintain the students' attention." p27
10	Out-of-class sharing +	Sharing on LMS, which are not directly related to the course such as photographs, texts, videos, raises my interest in a course.	0.085	"The lecturer can keep the lesson alive by sharing photos and videos that are not related to the lesson, and it also allows us to learn extraordinary things. Even a movie or a website recommended by the instructor encourages students to engage in both in-class and extracurricular activities." p25
11	Design-specific activities -	Only the use of blended model in a course is enough for my engagement.	-0.300	

Table 3
Z Values for the Items Ranked According to the Order of Importance and Student Quotations

No	Heading	Item	Z value	Student Quotation Example
12	Student-student interaction -	It is not important for me to establish social relations in the course of a blended lecture.	-0.684	"Social relationships should certainly established for the development of the learners in every aspect." p1
13	Process-based measurement and evaluation -	I prefer to be assessed with only midterm + final grades in blended courses.	-0.740	
14	Face-to-face lessons -	I may succeed on equal footing if the lessons are just in the form of distance learning.	-0.840	
15	Out-of-class sharing -	It is unnecessary to include extracurricular sharing (videos, pictures, words) in the distance education phase of the course.	-0.863	"Extracurricular activities help students to get disembarrass of boredom." p31
16	The features of online course materials -	The features of online materials given do not affect my interest in a course.	-0.937	
17	Student role -	Active participation in the blended learning process is an insignificant detail.	-1.609	"Active participation indicates the degree of student engagement. If the student does not feel himself belong to the classroom, then he cannot become efficient. Here, the teaching staff gains importance. The instructor's influence is important in terms of drawing the student's attention. This does not mean that the teaching staff should use direct instruction technique. The instructor and the student should have a full-time educational process in cooperation with each other." p22
18	Teaching staff -	The role of instructor in blended learning is negligible.	-1.679	

The statements in table were ranked according to the Z scores and as can be understood from the Z scores, the ranking begins from the most affirmative expression to the most negative one. In Table 3, it can be observed that the item loading values of the group included in Factor 1 are positive in all of the affirmative expressions and negative in eight out of nine negative expressions. Only the affirmative and negative expressions related to LMS have positive item loading values. Accordingly, the majority of students opine that it is sufficient to use any kind of LMS, while less think that how to use is much more important. It can be regarded as the students are in consensus on the whole course procedure and they have positive attitudes. This finding can be confirmed with the responses of the three participating students in response to the

question of "Is there something you care regarding the subject matter but not mentioned among the statements? For instance, p22 expressed the following opinion about the blended learning process: *"One thing that I care about the subject matter is that I want blended learning to spread over a wider audience. I am aware its advantages as I have benefited from this type of education during my university education and I would like other students to exploit it."* While p6 opined that: *"Unfortunately, the degree of our exploiting blended learning in Education Faculties is inadequate and this fact makes it impossible to educate the students with the awareness of blended learning. Some studies should be carried out with respect to this."* Similarly, p26 summarized his/her satisfaction with the blended learning process as: *"Blended teaching process is a system allowing more activities related to the course, highlighting the teaching process rather than the outcome and providing the examination of more information and resources. Unfortunately, in our system, what is done in the process is ignored and the results are exalted. Of course, the best example is the KPSS (public personnel selection examination in Turkey) exam system. […] I am sure they do not remember much after KPSS or they cannot implement what they know. In other words, blended teaching process is a system that encourages to participate in the process and suggest what is done in the process is as important as the ones for the results."*

The examination of the students' opinions indicates that the most favourable expression of the 30-person group in Factor 1 is "The way the lecturer organizes the teaching process is important in arousing my interest in a lecture" while the least one is "The role of instructor in blended learning is negligible." When the ranking of nine titles determined within the context of the Q Method for the blended learning approach is examined, the most important factor for the 30 students who met on a common ground in Factor 1 is the role of the instructor. Then, student role, face-to-face lessons, the features of online course materials, LMS used, design-specific activities, process-based measurement and evaluation, student-student interaction and out-of-class sharing were regarded significant by the students respectively. In other words, while the teaching staff and the student's role are the most effective components on the students in the aforementioned factor, student-student interaction and out-of-class sharing have lesser influence when compared to the others.

Conclusions, Discussion and Recommendations

This study was conducted with the Q method to find out how the blended learning for a specific lesson was perceived by the students, whether the students met on a common ground about blended learning and what the prominent components of blended learning were. The working group of the study comprised of 31 students who had blended learning experience for at least two different cases and studying at 3rd and 4th grades of Elementary Mathematics Teaching. The research data were collected through 18

judgemental statements including nine affirmative and nine negative expressions in line with the predetermined nine different headings. In this regard, it can be inferred that the research results were limited to the data collected by means of the Q method and the blending design for the lectures of the 31 students in Faculty of Education.

The research results indicate that the opinions of the participating 30 students are gathered together under one factor, that is to say the study group do have a general tendency and the students are in an affirmative consensus (97%) on the blended learning process. This finding of the study is in parallel with many research results (Donnelly, 2010; Poon, 2012) showing that the students are satisfied with the blended learning process. As a matter of fact, this kind of an evidence is also supported by the answers of the students who expressed their opinions in response to the open-ended questions in the instrument. However, the students' expressions about blended learning's still not being prevalent and their aspirations about it to become more widespread given the benefits it provides can be taken as the proof of the backwardness of Turkey with regard to blended learning, which is projected to be the only learning method of the future in the international literature (Bonk et al., 2007; Kim & Bonk, 2006; Watson, 2008; Yen & Lee, 2011) and have already started to be implemented in both educational institutions and in the business world (e.g. Canberra University, Siemens, cited in Döş, 2014). Therefore, as for the researchers, it can be claimed that blended learning providing student satisfaction and proven to have positive effects on many variables should be more widespread throughout our country. Accordingly, it can be stated that the findings obtained within the scope of the present study are very important for the designers of blended learning lessons.

Another result of the study is about the prominent components of the blended learning process. The students are mostly concerned with the role of the instructor and their own role in the blended learning process. Then, the prominent components in the process have been identified as face-to-face lessons, the features of online course materials, LMS used, design-specific activities, process-based measurement and evaluation, student-student interaction and out-of-class sharing respectively. These results point out the importance of the instructor in organizing the whole process, the students' requirement of fulfilling their responsibilities, face-to-face courses' being an integral part of the blended learning process and the valuableness of the features of online course materials. On the other hand, it can be alleged that the instructor's being the planner of the entire components of the process is in accord with the students' first order considerations about the role of the lecturer. The participating students' course instructors in their previous blended courses organized various activities both online and face-to-face for the students to be active individually or in groups, developed online course materials to attract the students' attention without overloading information, included the level of students' participation in both online and face-to-face activities

into their assessment and evaluations and tried to keep the online environment alive by sharing not only course materials but also extracurricular videos and pictures.

In the literature, there are similar studies suggesting the importance of teaching staff (Delialioğlu, 2004; Ginns & Ellis, 2007; Sloman, 2007; So, 2009) and student role (Geçer, 2013; Lim & Morris, 2009) for the success of the blended courses. The participants of the present study are actively involved in both online activities through answering quizzes and writing blogs about the course and in-class activities and discussions. No matter how organized the blended course is designed, the students consider that the ultimate boom cannot be realized without the active participation of the students in the process. Indeed, the learners' being active in the teaching process also affects their satisfaction and learning (Lim & Morris, 2009). This finding of the research completely overlaps with those of Çırak (2016) and the relevant literature contains the details about teacher and student roles (Ekwunife-Orakwue & Teng, 2014; Garnham & Kaleta, 2002; Geçer, 2013; Lim & Morris, 2009; Nazarenko, 2015). In the literature, face-to-face lessons, the third most important component of blended learning, are seemed to complement the blended courses (Balcı, 2008; Chandra & Fisher, 2009; Geçer, 2013; Kocaman Karoğlu et al., 2014; So & Brush, 2008). For example, in Poon's (2012) research, the students have also stated that they want to maintain face-to-face interaction with their teachers in any case.

The participating students of this study were supplied with online materials that highlight the crucial points to be discussed in the relevant week, avoid overloading information and designed with appealing colours and visuals for student engagement. According to research results, the features of online course materials follow the first three components for the students. This finding is corroborated with the relevant literature (Döş, 2014; Lim & Kim, 2003; Nazarenko, 2015; Poon, 2012). To illustrate, as a result of his research, Delialioğlu (2004) concludes that the amount of content information should not be redundant. Ginns and Ellis (2007) emphasize that online materials should help learners explain the topic and make sense of face-to-face lessons. According to Johnson (2014), online elements in blended learning environments should also be an integral part of the whole course to attain the learning objectives more easily.

In the study, the students exclusively found favourable both affirmative and negative expressions under the heading of LMS used. While some students regard the features of the LMSs that are the part of blended learning environments as significant, the others consider that the effective use of LMS are important rather than their features. The findings confirming each of the judgments could be found in the literature. For example, Nazarenko (2015) states that the new generation is quite sensitive and enthusiastic towards new technologies and so the learners need to be motivated through the use of new technologies. On the other hand, it was noted that participants were satisfied with the interface having ease-of-use, had easy access

to the materials and pleased with the interactions during the discussions by 96% in the same research. Similar findings were also reported in the study of Geçer & Dağ (2012). The blended learning model implemented by Köse (2010) concluded that the students enjoyed the learning activities with Web 2.0 technologies in the model; they learnt better through the use of Web 2.0 technologies and the learning activities did increase student achievement. When considering that the activities were organized for the students to be active online and that communication and interaction processes were also available outside the classroom in blended courses offered to the participating students of this study, it can be asserted that each kind of online environment should be used in an active manner as it will not be useful without exploiting all its features, no matter how good the online environment is.

In the study of Geçer & Dağ (2012), the students found favourable the inclusion of the tasks they perform within the context of blended learning into their grade point averages. In another study, it was also concluded that the inclusion of online activities into student assessment encourages students to participate in online discussions (Beadle & Santy, 2008). It can be inferred that these results support the finding obtained in the present study that the participating students consider the process based assessment and evaluation as significant in the course of blended learning. As a matter of fact, student participation in both online and face-to-face activities has been included into student evaluations in the two blended learning designs.

The notion of interaction, which is frequently used for online and blended learning environments, is the essence of learning and is synonymous with the concept of learning (Donnelly, 2010). In his study, Donnelly (2010) refers to a number of well-respected scholars who state that increasing the level of interaction implies positive attitudes towards learning, greater satisfaction with teaching process, more meaningful and profound learning, higher level of achievement and increased motivation. This explanation and the results of similar research on student interaction in the literature (Davies & Graff, 2005; Kocaman Karoğlu et al., 2014; Wang, 2010) corroborate the research finding that student-student interaction is among the effective components of blended learning. The participants of this study both joined in some of the activities within the class in groups and they made their interpretations by seeing each other's opinions via blogs and repetitions they wrote in online courses. The blended learning environments designed in this way can be alleged to increase the students' learning from each other and satisfaction of the blended courses. However, the lesser emphasis on student-student interaction and extracurricular sharing components in this study when compared to the other blended learning components overlaps with the findings of Çırak (2016). It can be explained as the fact that the students in the study group mostly emphasize *learning* and that their perceptions tend to be positive when they are active both individually and in the group during the lesson and when face-to-face classes are the integral part of the procedure.

When all the research findings are taken into consideration, it can be asserted that the role of the instructor should be considered in the context of the following for all those who want to design blended learning lessons: The activities should be planned for the students in blended classes to be active in both online and face-to-face environments, face-to-face lessons should be integrated into the process in such a way as to integrate online lessons and lead to deeper learning, online course materials should be designed according to the students' characteristics in terms of colouring, quantity and so on and process-based measurement and evaluation should be integrated.

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