



# Learning through Blogging: Use of Blogs to Enhance the Perceived Learning of Pre-service ICT Teachers

Eylem KILIÇ<sup>a</sup>  
Yüzüncü Yıl University

İbrahim GÖKDAŞ<sup>b</sup>  
Adnan Menderes University

## Abstract

Blogging has become an increasingly popular technological tool within an educational context. Even though the potential of blog use in increasing student interactivity and collaboration has been explored by many educators, the research conducted on the effectiveness of blog use in an educational context is still quite limited and is considered as a contradictory research area. Therefore, this study aims to investigate the effectiveness of blogging as an educational tool in an undergraduate course for pre-service ICT teachers. For this study, the survey research design method was used and 75 sophomore pre-service teachers (22 female and 53 male) participated in this study. A blogging survey instrument which measured the sense of community and perceived learning was used to collect data. This data was then analyzed using an independent sample t-test, a one way Analysis of Variance (ANOVA) and a linear multiple regression. The result of this study revealed that there was a significant difference in the perceived learning between the pre-service ICT teacher with a low sense of community and those with a high sense of community. In addition, the Sense of Community and User Friendliness of blogs were identified as independent predictors of perceived learning while controlling computer expertise. The implication of this study will now be discussed.

## Key Words

Blog, ICT Teacher, Perceived Learning, Sense of Community, User Friendly.

With the rapid advancement of information and communication technology, almost all of the higher education institutions and schools have equipped themselves with new technological tools. Hence all instructors and teachers are faced with the challenge of integrating these tools into the classroom setting for effective teaching and learning. It is well known that if teachers do not have enough technological and pedagogical knowledge, they cannot fully utilize these tools for improving the teaching and learning processes. Even though the institution provides theoretical knowledge about how to use these technological tools, it is not possible

to say that pre-service teachers have enough opportunities to practice this knowledge during their undergraduate education, or that instructors use these tools adequately enough because of their large work load and class size. It is important, however, to use these tools in the higher education setting so that pre-service teachers know how to use these tools in an actual classroom effectively. Recently, Web 2.0 technologies have widely been used in the educational environment, and just as a widely used Web 2.0 technology, blogs too can be used as an educational tool in a technologically rich classroom.

- a** Eylem KILIÇ, Ph.D., is currently an assistant professor of Computer Education and Instructional Technology. Her research interests are multimedia design, cognitive load theory, human memory and human-computer interaction. *Correspondence:* Yüzüncü Yıl University, Faculty of Education, Department of Computer Education and Instructional Technologies, Van, Turkey. Email: keylem@gmail.com
- b** İbrahim GÖKDAŞ, Ph.D., is an assistant professor of Computer Education and Instructional Technology. Contact: Adnan Menderes University, Faculty of Education, Department of Computer Education and Instructional Technologies, Aydın, Turkey. Email: igokdas@gmail.com

Blogs provide opportunities for people to publish their thoughts, opinions and feelings in an online environment (Deng & Yuen, 2011). There is no need for special technological skills to develop, update and publish entries while using blogs (Lang, 2005). Blogs generally share the following features: individual ownership, posted updates displayed in reverse chronological order and the archival of old posts (Sim & Hew, 2010). Blogs have some features that distinguish it from a web page. It allows for easy creation of a page, easy filtering of content for presentation by date or category, and it allows the blog creator to invite and add other authors to the blogs (Nedeva & Nedev, 2010). The technological and functional features of blogs allow them to be used for different purposes (reflective thinking, collaboration, interactivity, etc.) as an educational tool.

### **Perceived Learning through Blogging**

Blogs have been widely used as one of the Web 2.0 tools in both higher education and the K-12 settings, and it can be seen as one of the major tools for sharing knowledge (Hsu & Lin, 2008). It should not be considered as a tool that is used just for providing information online, rather, it can be considered as a tool for learning in an educational context (Hall & Davison, 2007). Goktas and Demirel (2012) find that integrating blogs as a tool for learning can positively influence the learners' Information and Communication Technology (ICT) perception as well as the acquisition of ICT competencies. A study was conducted on 113 computer science students who were writing blogs for their projects. It found that blogging can help instructors and learners develop a variety of cognitive, social and self-directed learning skills. For example, the posting features of blog can increase self-directed learning by generating their own goal for the project. Also, the commenting features of a blog can help social learning by enabling learners to support their peers. However, the learners do not coach each other for higher order skills (Robertson, 2011). It is known that the most significant factor predicting the learner's perceived learning is the interaction between the learner and the instructor in an online learning environment (Jiang & Ting, 1999). Higher perceived levels of collaboration result in higher levels of perceived learning being reported by students (Halic, Lee, Paulus, & Spence, 2010). In addition, many studies have found that the interaction that takes place between teachers and learners as well as the interaction of the learner

with peer learners both enhance the perceived learning of the learners (Kreijns, Kirschner, & Jochems, 2002; So & Brush, 2008). In the current study, it is found that there is a correlation between many of the pre-service teachers' characteristics and perceptions; however, the main construct that can explain the teachers' learning perception is a sense of community (Halic et al., 2010; Top, 2012). On the contrary, there is a negative correlation between social intimacy which is related to social interaction and the learners' perceived learning (Kang & Imt, 2013).

Blogs can be used to enhance reflective thinking because blog posts are sequenced chronologically and allow users to see how their thinking has changed over time (Ellison & Wu, 2008). Reflection can be defined as an internal change brought on by thinking or writing, and by exchanging ideas and reflecting together with others (Clarke, 2003). It helps students to express themselves and to practice valuable knowledge and skills. In a study, it was found that using blogs is an effective tool for engaging teachers in reflection and communication with their colleagues (Ray & Hocutt, 2006). Recently, considerable research has been conducted to find out the value of blog use in the educational context. Hew and Cheung (2013) made a review about the use of Web 2.0 in K-12 and higher education. They reviewed six studies that examined the impact of blog use and made a tentative conclusion that the use of blogs enhances students writing and critical thinking skills rather than learning psycho-motor skills. In another study, it was found that blogging contributes to perceived learning for students in different contexts (Churchill, 2009; Halic et al., 2010).

### **Sense of Community**

McMillan and Chavis (1986) defined sense of community as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (p. 9). As pointed out by Kang, Bonk, and Kim (2011), social constructivist and Web 2.0 technology advocates can find value in blog-related educational activities and experiences. The interactive features of blogs allow users to share their learning experiences by posting articles, accepting comments, providing links and getting feedback (Kim, 2008). Blogs also allows social and peer interaction among pre-service teachers and their instructors. Halic

et al. (2010) also stated that “blogging provides a means for students to connect in smaller groups to overcome the anonymity of a large lecture hall, working together to create a community of learning.” (p. 208). In one study, it was found that interactivity positively influences blog users’ perception of value (Pi, Liao, Liu, & Hseih, 2010). Blogs also have the potential to enhance social networking and meaningful discussion among practicing teachers (Luehmann & Tinelli, 2008). Pre-service teachers can interact with each other by letting their peers and instructors add comments to their blog entries. So they not only can create their own personal site, but they also can create a highly collaborative one (Kang et al., 2011). A study conducted on 104 MBA students showed that most of the students expressed that blogs have the potential to increase interactivity and meaningful intellectual exchange between students (Williams & Jacobs, 2004). However, the value of peer feedback was not considered valuable for learning in some studies (Ellison & Wu, 2008; Halic et al., 2010).

Even though the potential of blog use in increasing student interactivity and collaboration has been explored by many educators, research conducted on the effectiveness of blog use in the educational context is still quite limited and considered as a contradictory research area. In other words, some research results shows that blogs are an effective tool for enhancing students’ online engagement in online activity. However, it is also considered a learning tool that does not increase students’ involvement in online activity (Kim, 2008). In a recent study that reviewed blog studies, the authors concluded that the six reviewed studies have some limitations in drawing reliable evidence based on the practice information about the use of blogging (Hew & Cheung, 2013). These limitations are as follows: there is no clear information about whether the prior ability of students was equivalent to their post blog abilities (Arslan & Sahin-Kizil, 2010; El Tantawi, 2008 as cited in Hew & Cheung, 2013) and it is not possible to say that the gains reported in studies could be credited to the use of blogs alone (Salam & Hew, 2010; Wong & Hew, 2010 as cited in Hew & Cheung, 2013). Based on this review, the authors inferred that blogs can enhance students’ narrative writing and critical thinking abilities when it is used with some scaffolding strategies (writing guide, Socratic question).

This research aims to suggest a way to integrate blogs for improving the teaching and learning process. Every year, a course or lesson is developed

by using the instructional design model as part of this course. It can be said, however, that pre-service teachers do not benefit enough from this application. To state another way, they say that there isn’t enough time to examine the courses or lessons developed by their peers, and the feedback made by their peers was not sufficient to reflect on their practice. In addition, instructors could not give enough feedback to their students because of large class sizes. Therefore, they felt they did not learn enough from the traditional method. As a result, blogs have been used to overcome this barrier in that it aims to allow pre-service teachers enough time to examine the developed course with different instructional models by using their classmates to get feedback from their peers. Using blogs also allows an instructor to better understand their students’ struggles with the course. It also encourages students to engage in deep and productive reflection during their studies so as to be competent in their subject matter. It might be expected that as they compose their own blog entries about instructional design, pre-service teachers have the opportunity to reflect on their individual experiences and understandings. This, in turn, encourages them to modify their own beliefs and behaviors in relation to the subject studied. Blogs were used in this study as part of an undergraduate course during one semester. With this study, the researchers aim to not only provide opportunities for pre-service teachers to use blogs in their course but also to show them how it can be used in a pedagogically sound way in the actual classroom. This study will also provide valuable insight to allow instructors to design ways to overcome the barriers and evaluate the effectiveness of blog use with regard to pre-service teachers’ perceptions.

## Method

Survey research design was used for the current study. The following research questions were guided the current research:

- How do students perceive learning with blogs in instructional design course?
- What pre-service ICT teachers’ variables influence perceived learning?
- How does learning with blogs impact students’ sense of community in instructional design course?
- Does sense of community and user friendliness of blog predict perceived learning after controlling computer experiences in instructional design course?

## Participants

75 sophomore students (22 female and 53 male) from first and secondary education in the Department of Computer Education and Instructional Technology at the Faculty of Education participated in the current study. Most of the participants were between the ages of 20 and 25 ( $n=55$ , 76.4%). 57 of the students (76%) stated that they had not used blogs before this course. 44 of them (59.5%) stated that their level of expertise with blogs was at the intermediate level, 25 of them (33.8%) at the advanced level, and 4 of them (5.4%) at the expert level after using blogs in this course. 53 of them (71.6%) expressed that it is important for blogs to be user-friendly. 24 of the students (32.4%) expressed that blogs cannot replace class lectures, while 28 of them (37.9%) believe that blogs can replace class lectures. 22 of them (29.7%) were neutral on this issue.

## Data Collection

**Blogging Instrument:** A blogging survey instrument developed by Halic et al. (2010) was used to collect data. The instrument consists of two dimensions, *perceived learning* and *sense of community*, with 13 five-point Likert type (from 1 to 5 recorded as strongly disagree to strongly agree) items. There is also another part with 15 Likert type questions and self-reported items. These items were about age, year at university, major, length of previous experiences with blogging, the grade they expected from this course (self-reported items). Some items related to blog use were incorporated. The instrument was translated from English to Turkish by two experts with PhD's in Educational Science. Then, an English teacher translated it from Turkish back to English. Minor changes were done and the survey was rearranged for the current study. Factor analysis was made after translating the items from English to Turkish. Some items interchanged between factors. For example, three items (three, four and five) belong to sense of community loaded on perceived learning and three items (eleven, twelve, thirteen) belong to perceived learning loaded on sense of community. Three experts from the field of Educational Science discussed items that interchanged between factors and it was decided that the items can interchange between factors because of cultural differences and the way that blogs are integrated into the study. The content validity was confirmed by three experts in the field of Educational Science and one expert in the field of Psychology.

To ensure the validity of the instrument, preliminary principal axis factoring extraction with Varimax rotation was used to determine the number of factors in the original study. Then, confirmatory factor analysis with principal axis factoring extraction and Varimax rotation was performed on the items by extracting two factors. Exploratory factor analysis with principal component and Varimax rotation was performed for the current study. The sense of community scale consists of six items which are related to community building via blogs. The reliability of the original scale was found to be high, 0.87. The perceived learning scale has seven items for revealing student perceptions of learning through the use of blogs. The reliability of the original scale was found to be high, 0.87. An internal consistency estimate of reliability was calculated separately for the two dimensions of the survey in the current study. Cronbach's alpha for the *Perceived Learning* dimension was 0.76, while the *Sense of Community* dimension produced a similar reliability estimate of .75. Both values indicate good reliability. The data was collected after students finished their projects.

**Context:** The instructional design course consisted of two hours of theoretical lecture and two hours practice. The pre-service teachers were required to design a course, a unit, or a one hour lesson using an instructional design model through blogging. As a part of their course, 75% of their final grade was from the course design with blogging. Also, they were required to post messages to their classmates' blog and the other 25% of their final grade came from these posts. The course instructors explained the fundamentals of instructional design theory and models, and they provided many activities showing them how to use this knowledge. After that, pre-service teachers worked in pairs or individually for six weeks. The first four weeks, the pre-service teachers were required to design a course/lesson using an instructional design model and the last two weeks they had to post messages to their classmates' blogs. The instructors acted as a blog facilitators, commenting on posts and answering questions. The students developed blogs using an instructional design model. They were required to select a course or topic and then design it. Most of the students used ADDIE or ASSURE for an instructional design model. The instructor provided them opportunities to develop content using ADDIE and ASSURE models during their lectures, and this is probably the reason students generally selected these models for their assignment. Two groups used Seels and Glasgow models to design their course content.

Some examples from the blogs developed by the participants of the study are presented below. One of the students used the ADDIE model to teach 4th grade students the names of furniture and parts of the house in English. Since she knows computers and how to program, she developed her own instructional material for teaching students concepts related to the course content. 39 messages were posted by other students taking this course. Part of her blog is presented in Figure 1.

## Result

### Factor Analysis

Factorial analysis was conducted to ensure validity of the instrument because the survey translated from foreign language to Turkish. The result shows that the Kaiser-Meyer-Olkin measure of sampling adequacy, which was 0,82 suggesting the absence of multi-colinearity. Also, Bartlett's test for sphericity was performed and the approximate chi-square of 269.13,  $p < .000$ , indicates that the correlation matrix was not

## ANALİZ

**Konu:** İngilizce Evin Eşyaları ve Bölümleri

**Hedef Kitle:** İlköğretim 4. Sınıf Öğrencileri

**Neyi Öğrenmeye İhtiyaçları Var? :** Evin bölümlerini ve ev içersinde kullanılan eşyaların isimlerini öğrenme bunları yazabilme ve sınıflandırma...

e

Fatma Nur AKTAŞ - Hatice ŞİMŞEK 6 Haziran 2011 06:02

materyallerinde çizgi film karakterlerini kullanman öğrencilerinin yaş ortalamasının küçük olmasından dolayı dikkatlerini konunun üzerine çekecektir buda sen dersi anlatırken öğrencilerin başka şeylerle uğramasını engelleyip işini kolaylaştırcağıdır iyi bir seçim:)

Yanıtla

Ferhat Selişter ve Nejla Uyanık 6 Haziran 2011 10:45

merhaba eylem modeli konuya gayet güzel uygulamışsın:) ama bazı noktalar eksik sanki mesela ilk aşamada mevcut durum ile olması gereken durum arasındaki farkın analizini yapsan ve değerlendirme kısımlarını analizden sonra tüm basamaklara uygulaysaydın bu dönüt alman için iyi olurdu ve hemen düzeltmeye yönelik geribildirim uygulayabilirdin seçtiğin materyaller öğrencilerin seviyesine uygun olmuş bu sayede ders bi oyunmuş gibi geçeceğinden daha eğlenceli olacaktır. bunun yanında eşleştirme bulmacalarda seçebilirsin..

Yanıtla

## GELİŞTİRME

Figure 1.

An Example of Blog: Learning English with the ADDIE Model

an identity matrix. These two tests provide evidence that factorial analysis is appropriate for this set of data. Exploratory factor analysis was conducted with principal component analysis using Varimax rotation. These two factors together account for 47.026% of the total variance. Cut-off loading for items was accepted at .40. Even if item two and item ten were cross-loaded into two factors, the higher value was accepted to determine which item belonged to which factor. In other words, to ensure the construct validity it had been decided that keeping these items in the analysis was more appropriate (Erkus, 2012). The factorial analysis showed different patterns from the original instrument such that some items were exchanged between two dimensions. The factorial loading of the items is presented in Table 1.

**Table 1.**  
*Factor Loading for Perceived Learning (F<sub>1</sub>) and Sense of Community (F<sub>2</sub>) of Survey*

Items	F <sub>1</sub>	F <sub>2</sub>
<b>Perceived Learning Items</b>		
1. The blog discussions help me to share my knowledge and experience with my peers.	.81	.07
2. I believe that incorporating blogs with teaching can enhance my learning experience in general.	.51	.46
3. I have been stimulated to do additional readings or research on topics discussed on the blog.	.52	.36
4. In comparison to my other classes, the amount of my interaction with other students in this class has increased due to the blog.	.58	.29
5. In comparison to my other classes, the quality of interaction with other students in this class has increased due to the blog.	.55	.38
6. My point of view has been acknowledged by my peers and/or discussion leader in this course.	.75	.02
7. Overall using the blog has helped me learn.	.42	.26
<b>Sense of Community Items</b>		
8. I visit our instructional design blog more than required by my instructor.	.04	.48
9. The blog helps me feel connected to other students in this course.	.40	.63
10. Due to the class blog, I feel that I am an important part of our classroom community.	.45	.53
11. Other students' comments on my blog posts are important.	.27	.55
12. Blog discussions help me understand other points of view.	.16	.72
13. Blog discussions have made me think about instructional design concepts outside of this class	.01	.79

**Descriptive Analysis**

The preliminary analysis shows that 75% of pre-service teachers stated that blogs enhance their

overall learning. Descriptive statistics reveal that 80% of them expressed that blog discussions help them to share their knowledge and experiences with their peers. 74.7% of the participants reported that blogs have increased their learning in general. 85.3% of them expressed that other students' comments on their blog posts are important and 84% of them stated that blog discussions help them understand other points of view. 80% of the participants stated that using the blog has helped them to learn overall. Student perception was divided between agreement (52.1%) and neutral (35.6%) with regard to the acknowledgment of their point of view by peers and the discussion leader.

With regard to the items on sense of community, 78.7% of them stated that they visit the instructional design blog more than required by the instructor of the course. 81.3% of the participants stated that the blog helps them feel connected to other students in the course. 61.4% of them said that in comparison to their other classes, the amount of their interaction with other students in this class has increased due to the blog. 68% of them said that they have been stimulated to do additional reading and research on topics discussed on the blog.

In line with the first research question, for each item of the survey, mean and standard deviation values were computed. The analysis showed that the participants' perceived learning level (M=3.84) with blogs is high and they feel a high sense of community (M=4.06) learning with blogs. Frequency analysis showed that 70% of them reported that they feel a high sense of community (values of 4 and higher) through blogging. The mean and standard deviation for each item is presented in Table 2.

To answer the second research question, an independent sample t-test was conducted to find out the effect of gender on perceived learning. The t-test result produced a non-significant result, showing that there is no difference in perceived learning based on gender. One-way ANOVA was conducted to investigate the effects of computer expertise on perceived learning. The ANOVA yielded non-significant results, showing that there is no difference in students' perceived learning based on computer expertise. To answer the third research question, the difference in perceived learning between the pre-service teachers with a high sense of community (values of 4 and higher) and the pre-service teachers with a low sense of community (values of 3 and lower) was also investigated using an independent sample t-test. The t-test revealed

that there was a significant difference ( $t=-2.14$ ,  $p<0.05$ ) in perceived learning between the pre-service ICT teacher with a low sense of community ( $M=3.28$ ,  $SD=0.79$ ) and those with a high sense of community ( $M=3.88$ ,  $SD=0.58$ ).

**Table 2.**  
Mean and Standard Deviation of Each Item

Items	M	SD
<b>Perceived Learning Items</b>		
1. The blog discussions help me to share my knowledge and experience with my peers.	4.32	0.88
2. I believe that incorporating blogs with teaching can enhance my learning experience in general.	3.94	0.78
3. I have been stimulated to do additional readings or research on topics discussed on the blog.	3.88	0.91
4. In comparison to my other classes, the amount of my interaction with other students in this class has increased due to the blog.	3.67	1.06
5. In comparison to my other classes, the quality of interaction with other students in this class has increased due to the blog.	3.41	1.05
6. My point of view has been acknowledged by my peers and/or discussion leader in this course.	3.49	1.01
7. Overall using the blog has helped me learn.	4.2	0.92
<b>Sense of Community Items</b>		
8. I visit our instructional design blog more than required by my instructor.	4.05	1.03
9. The blog helps me feel connected to other students in this course.	4.22	0.83
10. Due to the class blog, I feel that I am an important part of our classroom community.	3.59	1.02
11. Other students' comments on my blog posts are important.	4.32	0.9
12. Blog discussions help me understand other points of view.	4.29	0.75
13. Blog discussions have made me think about instructional design concepts outside of this class	3.86	0.97

In line with the last research question, a linear multiple regression analysis was conducted with Sense of Community and user-friendliness as predictors of perceived learning. Sense of Community and user-friendliness were identified as independent predictors of perceived learning ( $b=0.63$ ,  $p<0.001$  and  $b=.83$ ,  $p<0.05$ ) respectively) after controlling computer expertise (Table 3). A one unit increase in self-reported sense of community leads to a .63 increase in the score of perceived learning. In addition, a one unit increase in self-reported user-friendliness leads to a .83 increase in the score of perceived learning. The coefficient determination was .56, indicated that the model explained 56% of the variance in the perceived learning score.

**Table 3.**  
Multiple Regression of Sense of Community, User Friendliness and Computer Experiences

Model	Non-standardized Coefficients		Standardized Coefficients	t
	B	SE B		
Constant	10,08	2,06		4,99*
Sense of Com	0,63	0,07	,674	8,24*
Computer Experience	0,20	0,23	0,70	0,88**
User Friendly	0,83	0,35	0,19	2,37*

$R=.75$ ,  $R^2=.56$ , Adjusted  $R^2=.54$

$p<0,05^*$

$p>0,05^{**}$

## Conclusion

The results of this study show that pre-service teachers' perceptions of learning depend upon their sense of community in that when their sense of community was higher, students reported higher levels of learning and vice-versa. Blogs are seen as a good tool for establishing a sense of community in Halic et al. (2010) and Top's (2012) study. They also found that there is a positive relationship between perceived learning and sense of community. In reference to the sociocultural constructivist theoretical framework, it is known that knowledge is personally created and it can be increased socially (Windschitl, 2000). It is also known that the constructivist approach promotes collaboration and social skills. So, it can be said that blogs have helped the pre-service teachers to create their own course content following an ID model and then to increase their knowledge via peer comments. That is why their perceived learning increases in line with their sense of community.

The majority of pre-service teachers reported that their blog experiences were positive and that blogs have enhanced their overall learning. They also reported that blog discussions helped them to share their knowledge and experiences with others. Also important to note, the majority of them acknowledge that other students' comments on their blog posts are important and blog discussion helped them understand others' points of view. The result is consistent with the study conducted by Churchill (2009) and Hall and Davison (2007) in that they found student support for peer feedback on their blog post. However, the reverse result was found in Halic et al.'s (2010) study and only one-fourth of them value peer comments. A similar result was found in Xie, Ke, and Sharma (2008) in that peer feedback does not support the expected outcome for learning. Interestingly, being user-

friendly was found as a significant predictor of perceived learning. In an earlier study, it is revealed that ease of use (Hsu & Lin, 2008) and perceived usefulness are important factors affecting the use of a blog (Pi et al., 2010). It can be inferred from these studies that ease of use can be an important factor affecting perceived learning from the blogs. Although the participants of this study are from CEIT department and their level of computer experiences is high, above half of them had never used a blog before. Also, almost half of them expressed that a blog should be user-friendly. Actually, blogger (Blogger.com) was used for the current study. It does not have a user-friendly interface and language support was really weak at the time the study took place. This might be the reason that the user-friendliness of a blog had a significant effect on the perceived learning of the learners.

Investigating how ICT pre-service teacher implement various instructional technology may support other ICT educators in global contexts. The study shows how CEIT educators have succeeded in tying the blogs as an instructional tool to ways in which the pre-service teachers may use it in their future occupational roles as ICT teachers. It might be expected that as they compose their own blog entries about instructional design, pre-service teachers have the opportunity to reflect on their individual experiences and understanding. This, in turn, encourages them to modify their own beliefs and behavior in relation to the subject studied.

For further research studies, it is suggested that a different, more user-friendly, blog service provider be used to increase the usefulness of blogs for learning. In addition, the construct "sense of community" depends of cultural entity so rather than using items that have already been developed, it would be more appropriate to develop a scale which represents Turkish culture.

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