Social Networking Literacy Scale: A Study of Validity and Reliability

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ABSTRACT

The concept of social networking literacy emerged with the advent of Web 2.0. This study aims to develop a scale to measure the social networking literacy proficiencies of individuals. An item pool was created after a thorough review of the literature and taking experts views, and then application form prepared. The scale was applied to students of the Faculty of Education of Sakarya University, and reliability and validity analyses were conducted on the data gathered from 313 students, using the SPSS 20 statistical software. Exploratory factor analysis (EFA) was used to examine the construct validity of the scale, and the internal consistency coefficient (Cronbach's Alpha) was used to examine the reliability of the scale.

The analyses conducted showed that the scale consisted of 40 items under a single factor which explained 61.179% of the total variance, and the Cronbach's Alpha value calculated to examine the reliability of the scale was .98. In conclusion, analyses conducted to examine the reliability and the validity of the Social Networking Literacy Scale (SNLS) show that it is an efficient measurement tool to assess social networking literacy levels of the individuals.

Keywords: *Social Media, Social Networking, Web 2.0, Social Networking Literacy*

INTRODUCTION

As a result of recent technological developments, technology has come to be frequently used for socialization purposes. The advent of internet technology, in particular, and the web technologies that accompany it, offered new ways of communication and interaction. The socialization effect of the internet and web technologies started with what is termed Web 1.0 technology, and is currently in its Web 4.0 phase.

The word "social", which was used to describe the transition from Web 1.0 to Web 2.0, appears today in many contexts in which online environments are involved and technological change is observed. In the era of Web 1.0, internet was a network of closed systems used primarily for information collection, and web content could not be edited by individuals, organizations, or groups making up the audience; the era of Web 2.0, first defined by O'Reilly Media vice president Dale Dougherty in 2004, arrived when all major internet and communication technologies became "socialized" (Ferguson, 2010).

Web 2.0 or social media are environments consisting of applications that enable their users to simultaneously and mutually interact, cooperate and share without any time or space limitations (Pascu, 2008, cited by Redecter, Ala-Mutka, Bacigalupo, Ferrari, Punie, 2009). Some of these digital and social applications are Social Networking Services, Blogs, Wikis (cooperative content), Social Tagging (such as Deli.cio.us), Social Bookmarking and Folksonomies, Media Sharing Services, Multimedia Sharing (such as

Flickr and YouTube), Podcasts and Vodcasts, Social Networks (such as MySpace and Facebook), Virtual Worlds and Three Dimensional Environments, and Online Social Games (such as Second Life).

Web 2.0 or social media applications enable their users to communicate and cooperate in different ways. These different environments help learners to act together and to collectively create knowledge based upon specialized needs. (Owen et al., 2006, cited by Redecter, Ala-Mutka, Bacigalupo, Ferrari, Punie, 2009). Web 2.0 or social media are defined, besides offering learners these environments, by three characteristics (Dunn, 2009):

a) Offering online content,

b) Being designed to start a meeting or continue a present one,

c) Enabling users to communicate and interact with one another.

Social networking services, then, are web-based services that enable individuals (1) to create public or semi-public profiles within a limited system, (2) to make the list of other users public when a link is shared, and (3) to revise and switch between links and create them with others in the system (Boyd& Ellison, 2007; Ferguson, 2010; Safran, 2010).

Social networking services involves social relations among people(Light, 2014). Social networking services are defined as social space based internet or mobile tools designed to facilitate communication, cooperation and content sharing between networks. These services enable their users to connect with their friends and colleagues, to send e-mail and instant messages, to blog, to meet new people, and to send personal information profiles that contain blogs, photos, videos, pictures and audio content. Social networking services also allow their users to make their interests public, to connect and communicate with other users, and to form groups on specific topics (Redecter, Ala-Mutka, Bacigalupo, Ferrari, Punie, 2009).

The concepts of social media and Web 2.0 refer to a multitude of online media tools that allow people to easily share their thoughts, knowledge and experiences with others, whereas social networking services are a specific type of social media that are based upon user generated content (Ferguson, 2010). Defined as a specific type of social media, social networking services are web-based services created to visualize and manage the social networks of their users. There are some benefits of social networking services including "delivering educational outcomes; facilitating supportive relationships; identity formation; and, promoting a sense of belonging and self-esteem" besides the risks including "cyber bullying, privacy breaches and predation" (Fetaji, Fetaji, Abazi, Ebibi, 2015).

With the rapid and continuous development of technology, the number of social networking services offered has increased, and as a result, more and more individuals have come to make use of these services. This increase also means that individuals need to have certain skills to be able to use social networking services. These skills are defined by Murphy and Moulaison (2009:328) as understanding and articulating social networking sites and their roles, creating content, evaluating information, applying information ethically, searching and navigating, interaction, teaching, providing services and flexibility. Power and Phillips-Wren (2011) also highlighted the impact of social media on decision-making behavior while Frisch, Borycki, Mickelson, Atherton, Novak-Lauscher, Hooker and Ho(2012) stated that the use of social media and Web 2.0 has increased knowledge and skills.

These skills are collectively referred to as "social networking literacy". Social networking literacy is one of the component of online media literacy (Tang, Sun, Wang, Yang, 2009; Collin, Rahilly, Richardson, Third, 2011).The skills that social networking literate individuals need to possess are listed by Fahser-Herro and Steinkuehler (2009:59) as follows:

- Simulation: the ability to interpret and construct dynamic models of real-world processes.

- Appropriation: the ability to meaningfully sample and remix media content.

- Judgment: the ability to evaluate the reliability and credibility of different information.

- Transmedia navigation: the ability to follow the flow of stories and information across multiple modalities.

- Negotiation: the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.

For individuals to be able to make efficient and effective use of social networking services, they need to have these competencies. Only then can social networking services enable communication, interaction, cooperation and content sharing between individuals, and only then can individuals easily access social networking services.

Academic literature on social networking services focuses on the rapid development of social networking sites, the privacy, identity and naming issues involved, and the role these services play in the accumulation and management of resources, such as social capital. These services usually allow users to individually connect their profiles with the profiles of other users. Thus, being social network friends means more than making a couple of mouse clicks, it represents a conversation or social support of sorts, which indicates that the definition of friendship on social networking services is a different one (Stefanone, Lackaff, Rosen, 2010). As friendship is differently defined, the characteristics of individuals on social networks are also different. In this context, the characteristics of social networking literate individuals emerge as an important new area of research.

Studies on the use of social networking services and social networking literacy approach the issue from various angles. For example, some studies focus on how factors, such as race, religion or gender affect the use of social networking services and social networking literacy. Other studies from the perspectives of economics, psychology and pedagogy, among others, have also been conducted.

Livingstone(2014) analysed children experience in social networking sites and social media literacy. The findings showed that children aged 9-11 are researching what is real and fake on social networks, at the age of 11-13 what is real on social networks, at the age of 14-16 and what they find more valuable for themselves on social networks.

In a study on Facebook and social media markets, Threat (2009) uses an online scale. This scale, however, is not used for social networking literacy but more generally to assess the use of Facebook and social networks, the benefits of social media tools, and the economic effects of Web 2.0 tools. The findings of this study indicate that many internet users are also users of social networking services, such as Facebook, and that they make online purchases based upon ads displayed on these services.

İşman, Kıyıcı, Tercan, Kiper and İşbulan (2010) examined the reasons why prospective teachers use social networks. The scale they used was prepared by the researchers themselves on the basis of expert opinion. They developed a 47-item social network usage questionnaire, and found that prospective teachers make effective use of social networks. They also found that prospective teachers use Facebook mostly for communication purposes, and secondly as a pastime.

Studies on social networking usage and literacy usually focus on the use of services like Facebook, use of social media, and the factors that lead to using social networks, and are mostly conducted at schools, universities and libraries. Studies on social media in general, and on social media literacy in particular exist under the names of Web 2.0 literacy (Fahser-Herro & Steinkuehler, 2009), information literacy 2.0 (Spiranec & Zorica, 2009) or Learning 2.0 (Redecker, Ala-Mutka, Bacigalupo, Ferrari & Punie, 2009). Most of these studies were conducted online and the scales were presented to the participants over the web. However, these studies do not make clear the process of the development of the scales they used, and to the best of our knowledge, no scale specifically on social networking literacy has been developed to this day. Thus, this study aims to develop a social networking literacy scale. The scale to be developed can be used in future studies on education as well, since social networks are increasingly used in education for purposes of communication, interaction, cooperation and content sharing. The social networking literacy of individuals

will probably play a more prominent role in their education.

RESEARCH METHOD

Research Model

This study aims to develop a scale. As part of the study, an item pool was created after reviewing the literature and acquiring expert opinion. Then, the scale was applied and psychometric characteristics were examined. In what follows, the population of the study, the sample used, and the analyses conducted are presented.

Participants

Students of the Faculty of Education of Sakarya University constitute the population of this study on a social networking literacy scale (SNLS). The population consists of a total of 3793 students, 526 of them from the undergraduate program in Computer Education and Instructional Technology, 409 from the undergraduate program in Elementary Teaching, 386 from the undergraduate program in Science Teaching, 336 from the undergraduate program in Pre-school Teaching, 394 from the undergraduate program in Social Science Education, 408 from the undergraduate program in Turkish Teaching, 180 from the undergraduate program in Teaching the Mentally Disabled, 129 from the undergraduate program in Physical Education, 471 from the undergraduate program in Psychological Counseling and Guidance, 357 from the undergraduate program in Elementary Math Teaching, and 46 from the undergraduate program in English Language Teaching. Büyüköztürk, Kılıç, Akgün, Karadeniz and Demirel (2010) report that the sample size for a population of this size, with a .05 significance level, is around 345. To reach this sample size, we planned to have at least 10 students from each class fill out the SNLS. However, because participation in the study was on a voluntary basis, students in some programs did not participate in the study. Thus, the sampling method used in the study is more properly defined as convenience sampling. A total of 315 students filled out the questionnaires. Of these, two were not filled out in accordance with the instructions, and the analyses were conducted using the remaining 313.

39.2% of the participants (122 students) were male, 60.8% (189 students) were female, and two of the students did not identify their gender. There were 118 freshmen, 81 sophomore, 57 junior and 57 senior students in the sample. The youngest participant was 17 years of age and the oldest was 35. The mean age was 20. A total of 198 of the students who participated in the study were enrolled in day programs, and 115 were enrolled in evening programs.

The scale was developed on the basis of the statistical analyses conducted on the data gathered from the sample.

Data Collection Tool

To develop the Social Networking Literacy Scale (SNLS), first, the literature was reviewed, and then meetings were held with the students. Based on the literature review and meetings with the students, an item pool was created. This item pool contained 60 items.

To analyze face validity and content validity, expert opinion was acquired on the 60-item scale. Ten faculty members in computer education and instructional technology and measurement and evaluation examined the initial form of the scale and shared their opinions. Following corrections and adjustments on the basis of the expert opinions received, a new scale for pre-application with 40 items was created. It was this scale that was applied to the participants and on which reliability and validity analyses were conducted.

The 40-item scale that was developed in line with expert opinion consisted of statements on proficiency in the use of social networks, and the students were asked to choose one of the "Not proficient at all", "Somewhat proficient", "Proficient", "Quite proficient", and "Very proficient" options.

Data Analysis

To perform construct validity and reliability analyses, SPSS 20 statistical software was used. Principal component analysis and exploratory factor analysis were used to examine construct validity. In the exploratory factor analysis, the following criteria were used: items to be included had to have eigenvalues of 1 or higher and factor loadings of .30 or higher, and they had to be clearly placed under a single factor. When items were placed under two factors, one of the factor loadings had to be at least .10 higher than the other (Büyüköztürk, 2007).

To examine the reliability of the scale, internal consistency coefficients were used.

FINDINGS

In developing the Social Networking Literacy Scale (SNLS), first, the construct validity of the scale was examined. In addition, corrected item total correlations were calculated and the difference between the upper and lower 27% were examined. In what follows, the procedure for these statistical analyses and their results are presented.

Validity (Exploratory Factor Analysis)

To examine the construct validity of the SNLS, exploratory factor analysis was used. In exploratory factor analysis (EFA), first, Kaiser-Mayer-Olkin (KMO) coefficient and Bartlett sphericity test were used to examine whether the data are suitable for factor analysis. KMO coefficient provides information on whether the data matrix is suitable for factor analysis or not, and whether the data structure is suitable for factor extraction. This coefficient is expected to be over .60 for suitability (Büyüköztürk, 2007). The KMO value for the SNLS was found to be .95. The Bartlett test, on the other hand, examines whether the variables are related or not on the basis of partial correlations, and the chi-square statistic calculated is expected to be significant (Büyüköztürk, 2007). The chi square calculated by the Bartlett sphericity test was $\chi2 = 11229,945$, p.=.000 which indicates that there are significant differences. Taken together, these two findings indicate that the data gathered are suitable for factor analysis.

Results of the first exploratory factor analysis (EFA) show that items are categorized under four scales with eigenvalues over 1, and the communalities of the items varied between .588 and .820 (see Table 2).
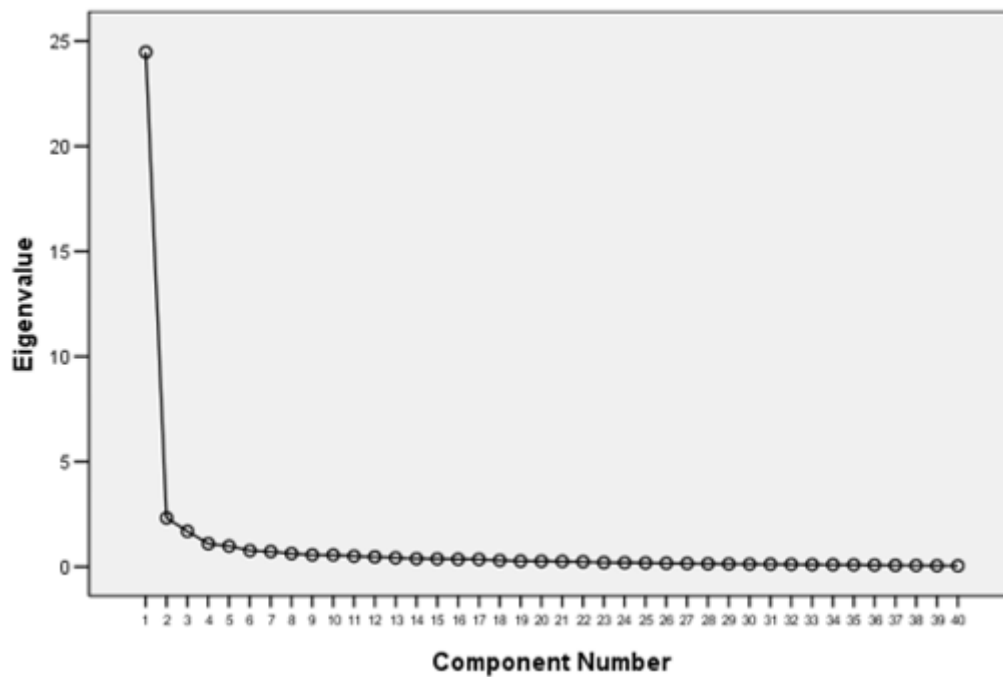
Figure 1: Eigenvalue-Component Number

The scree-plot (Figure 1) generated by the EFA analysis can be interpreted to mean that the scale consists of four factors. However, following Büyüköztürk (2007), the following can be taken as evidence that the scale consists of a single factor: a) extraction sums of squared loadings are high, b) the variance explained by the first factor is significant (61.179%), and c) the eigenvalue of the first factor is more than three times the eigenvalues of the other factors (Eigenvalue of the 1st factor=24.472; Eigenvalue of the 2nd factor=2.317, Eigenvalue of the 3rd factor=1.685; Eigenvalue of the 4th factor=1.095). Thus, SNLS can be treated as a single-factor scale. This factor is named "Social Networking Literacy".

In single-factor scales, the total variance explained needs to be 30% or more (Büyüköztürk, 2007). In the SNLS, the single factor (Social Networking Literacy) explains 61.179% of the total variance.

When the factor loadings are examined (Table 1), it can be seen that the lowest item factor loading is .619 and the highest item factor loading is .859. The total explained values of the scale and factor loadings show that the scale is successful in explaining social networking literacy.

Table 1: Results of the exploratory factor analysis

Item	Communalities	Component			
		Factor 1	Factor 2	Factor 3	Factor 4
m34	,821	,859			
m28	,752	,857			
m35	,871	,849			-,319
m33	,768	,844			
m29	,800	,840			
m25	,718	,840			
m27	,744	,840			
m26	,760	,837			
m20	,810	,835			
m38	,781	,828			

m37	,784	,827			
m11	,690	,826			
m32	,708	,824			
m39	,761	,823			
m30	,700	,822			
m36	,839	,814			-,304
m12	,682	,809			
m24	,783	,807		,328	
m15	,684	,805			
m10	,741	,798		-,314	
m22	,750	,796			
m31	,666	,792			
m13	,677	,789			
m17	,811	,786			,329
m21	,727	,785			
m14	,780	,784			
m19	,766	,772		,385	
m9	,700	,766			
m16	,762	,755			,315
m8	,663	,723	,374		
m4	,764	,722	,491		
m7	,636	,719	,334		
m3	,686	,711	,406		
m18	,738	,701		,414	
m23	,821	,697		,506	
m5	,782	,692	,543		
m1	,658	,680	,401		
m6	,682	,672	,462		
m2	,715	,639	,511		
m40	,588	,619		,443	

*Loadings are values above .30.

Reliability (Internal Consistency Coefficient)

Cronbach's Alpha internal consistency coefficient of the SNLS was calculated to examine the reliability of the scale. As the scale consisted of a single factor, a single internal consistency coefficient was calculated. The analysis made showed that the Cronbach's Alpha value of the scale is .98. Psychological scales are considered to be reliable when their internal consistency coefficients are .70 or higher (Büyüköztürk, 2007). Thus, the Social Networking Literacy Scale developed has a high reliability level.

In addition, corrected item-total correlation coefficients were examined (Table 2). When an item was removed, correlations in which the reliability coefficient decreases remained above .606. This finding also indicates that the scale is reliable.

Table 2: Corrected Item-Total Correlation and independent-sample t statistic (Upper %27-Lower %27)

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	t statistic (upper t%27-lower %27)*
m1	,669	,983	37,98
m2	,629	,983	46,84
m3	,702	,983	42,06
m4	,716	,983	37,10
m5	,686	,983	39,90
m6	,664	,983	30,66
m7	,709	,983	37,54
m8	,716	,983	34,53
m9	,751	,983	31,99
m10	,780	,983	26,89
m11	,814	,982	43,00
m12	,793	,982	41,34
m13	,770	,983	34,23
m14	,764	,983	39,21
m15	,794	,982	35,56
m16	,735	,983	27,96
m17	,767	,983	28,99
m18	,698	,983	41,35
m19	,766	,983	37,55
m20	,830	,982	34,00
m21	,766	,983	30,06
m22	,775	,983	34,01
m23	,694	,983	39,03
m24	,801	,982	34,79
m25	,829	,982	34,57
m26	,824	,982	32,99
m27	,827	,982	32,53
m28	,844	,982	32,66
m29	,821	,982	28,11
m30	,811	,982	34,10
m31	,774	,983	33,41
m32	,811	,982	32,89
m33	,830	,982	33,37
m34	,844	,982	36,72
m35	,831	,982	26,91
m36	,792	,982	26,97
m37	,815	,982	34,86
m38	,813	,982	30,78
m39	,808	,982	33,22
m40	,606	,983	56,96

*p<.01

To examine the items of the scale, mean values of the upper 27% and lower 27% scores from the scale were compared. Results of this analysis (Table 2) show that there is a significant difference. This finding indicates that the scale is able to distinguish between people with high social networking literacy and people with low social networking literacy.

DISCUSSION AND CONCLUSION

In this study, a scale was developed to measure the social networking literacy levels of students of a faculty of education. First, a 60-item pool was created for the Social Networking Literacy Scale after reviewing the literature, receiving expert opinion, and holding meetings with some students. Ten faculty members with master's degrees in Computer Education and Instructional Technologies examined the items created, and the number of items in the scale was brought down to 40 after revisions made on the basis of expert opinion.

The 40-item scale was then applied to students of the Faculty of education of Sakarya University. Reliability and validity analyses were conducted on the data gathered from 313 students.

To examine validity, exploratory factor analysis was used. The EFA conducted showed that all the items had high factor loadings under the same factor. The single factor in the SNLS explained 61.179% of the total variance. The total variance explained and the factor loadings show that the scale is successful in capturing social networking literacy. Thus, it can be safely argued that the scale provides a valid measure of social networking literacy.

To examine the reliability of the scale, the Cronbach's Alpha value was calculated. The value calculated was high (.98), which showed that the scale has high reliability.

In conclusion, the reliability and validity analyses conducted show that the SNLS developed is an effective measurement tool that can be used to study levels of social networking literacy. The scale can be used in studies on the social networking proficiency of students of education faculties, and its relationship with academic success, various aspects of professional life, and technology use.

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