Exploring the Usefulness of Social Networking Websites: a Multidimensional Model

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Abstract: The rapid expansion of social networking websites is raising several issues concerning the influence on the individual and social behavior of users. Using SNW is growing rapidly among various groups of people. From an educational point of view it is important to know how to effectively use the opportunities offered/created by SNW. Unfortunately, the amount of empirical research to support SNW educational usefulness is limited. On the other hand, there is a need to have some reliable instruments to measure the various facets of SNW' usefulness. In this paper we present a hierarchical and multidimensional measurement model to explore the usefulness of these websites. The model was tested on one sample and cross validated on another sample. Both samples were collected from Lithuanian universities students, the former from Humanities faculties and the latter from Social sciences faculties. The results revealed four dimensions with a different weight in each sample. This suggests a relationship between the educational background of the users and how they perceive the relative importance of each facet.

Keywords: social networking websites (SNW), social usefulness, multidimensional models, structured equation modeling.

1. Introduction

Social networking websites are continuously expanding and changing in order to satisfy the various needs of their users. The use of social networking websites (SNW) has rapidly gained momentum. By late 2008, MySpace and Facebook each had 60 million U.S. users and accounted for 6%-8% of all time spent online [35].

Social networking website spread is encouraged, first of all, by the variety of information and communication technologies, that are constantly changing functions and possibilities. It is obvious, that technology and consumer interaction is bilateral – technologies encourage consumers to try new functions and possibilities, the latter in their own right raise new requirements to technology creators. Needless to say, that together with technological problems arise social Internet problems as well. Social networking websites (SNW) are closely related to economic, psychological, educational, valeological and other aspects. There is a lack of research based on socio-educational social networking website aspects. It is important to know not only how much time the consumers spend surfing the net, but how much time is allotted for communicating in social networking websites, which of them are the most popular and why, how the respondents evaluate social networking website functions, what in general they know about them, what advantages, disadvantages and threats they discern. Finally, it is important to find out whether the use of social networking websites makes information – communication abilities better in any way.

Social networking websites "move" into educational space as well. However, a great number of problems exist here. Nowadays teachers (speaking especially about Lithuanian situation) are not properly prepared in ICT field. Though ICT usage competences are being improved in general, however considerable gaps remain, the shortage of understanding is felt on how to apply information technologies, what their abilities are to make teaching/learning process easier, more effective and interesting for children. ICT in its own right changes rapidly, it is complicated to adjust to existing technological environment. On the other hand, nowadays children have grown up in ICT surroundings, in the environment more or less filled with technologies. This makes them more susceptible to technologies in general. Thus, teachers' society can't stay behind from ICT development either. Teachers themselves have to be ready for unpredictable future (or at least hardly predictable) and to convey this attitude to children. A continuous demand to improve becomes the cornerstone for every member of society [27].

The problem of motivation to learn and improve remains urgent. Despite education science achievements, the motivation encouragement problem remains one of the most serious ones. However, watching children and teenagers' activities using ICT, especially social networking websites, a very high motivation, a need to use SNW are fixated. Thus, it is important to capitalize on that motivation in educational sense, in other words, to make use of social networking websites' facilities for educational purposes.

Thus, can social networks effectively perform educational function? Can they become a proper professional development instrument? We can formulate a lot of questions. The phenomenon of social networking websites is new, complicated, and is rapidly changing. Therefore, exhaustive empiric researches are necessary, seeking to maximally use the SNW providing possibilities for educational purposes.

In a recent study, Lamanauskas et al. (2012) presented the results of a survey to ascertain how Lithuanian university students use social networking websites, how they value them, what opinion they have about various social networking websites, and what they know about them [26].

The goal of this paper is to further analyze the survey data collected in Lithuania in order to explore the social usefulness of these kinds of websites. We hypothesized that the social usefulness is a multidimensional construct having several facets that describe distinct aspects.

The rest of this paper is organized as follows. In the next section we present related work in the area of social networking websites. In Section 2 we present the research models. Next, we describe the method, including the samples and data analysis. The results of this study are presented in section 5. The paper ends with conclusion and future work.

2. Related Work

Over the last few years various research works devoted to SNW phenomenon analysis have appeared. It is necessary to point out, that the obtained results are rather controversial. Privacy questions [1, 23] and on the whole, the questions of social behaviour, habits, technology usage [13 and other are of great importance. Mendez et al. [30] investigated the

problematics of academic interaction in social networking websites. They stated, that students use social networking websites rather productively, however mostly for social communication purposes. In other words, a strategy remains to create personal relations and to develop them in virtual internet world, communicating through internet social networks. The use of the newest technologies is growing rapidly, though such growth is rather different in various countries. For example, in Japan both teachers at schools and teachers at Universities are trying to use as many technologies as they can in their direct work [37], however it remains unclear how students perceive themselves as technology consumers, what their views are in respect of technologies. Academic achievement question is relevant here. Rouis et al. [33] stated, that the use of social networking websites makes academic students' achievements worse. They claim, that Facebook negatively affects the performance of student academic duties and so on. The research carried out in Czech Republic also showed, that social parametres of using such websites engage SN consumers more (e.g., making friends, starting a new relationship and other), than solving academic questions or problems (e.g. finding out missing information, advice, recommendations and other) [21]. Despite the doubts, social networks have lots of unrevealed educational possibilities.

SN advantages and disadvantages are analysed in various aspects, more and more different level research is carried out. First of all, it remains unclear how the use of SN changes personality features and identity. The completed experimental research of Gentile et al. [14] showed, that the time spent in social networking websites influences the youth more positive self-evaluation, though it also depends on a concrete internet cafe.

The research carried out earlier revealed, that social networking websites is a very popular students' communication means, a powerful socialization instrument. On the other side, the mentioned research showed that the shortage of time and a big variety of SN are the hindering factors for the consumers to become envolved into social networking cafes [28]. In Childers opinion [8], internet social networking tools and other providing possibilities can be and have to be successfully used in academic work, e.g., communicating with colleagues and with the studying people. This is rather effective in

making students interested in writing activities or digital story-telling. As an example, the author gives the website http://education.skype.com as a perfect possibility of joining classes and sharing the teaching time. Kord and Wolf-Wendel [24] analyzed SN and academic integration questions in the population of the first year university students. It has been stated, that students spend 2.5 hours on average per day because of SN, mostly communicating with their contemporaries, friends and family. A minimal interaction with teachers and other university society members was observed. Once again that shows that the use of SN for academic purposes still remains problematic.

Despite the critics expressed in respect of SN, more and more research results are announced, showing the SN use possibilities for educational purposes. That is the use in teaching or learning foreign languages [36], exchanging teaching/learning ideas and experiences [9], creation of e-teaching systems based on SN [32], promoting digital libraries [5], and other. For example, the research carried out in 2010 showed, that post-secondary students who use Twitter for academic and co-curricular discussions were significantly more engaged than students who did not [20]. Research studies have been conducted, showing that university students, having used social networking websites, achieved higher final grades than those not using social networking tools [38].

It is interesting to note, that some research studies showed in their own right, that teachers who disclose more information about themselves on their social network appear as more credible to their students [19].

It is fairly obvious, that the use of SNW has negative moments as well, which are not analysed exhaustively. This can be clearly seen from the accomplished research results [39]. Speaking about the cognitive ability development, SNW positive influence is doubtful [3].

3. Research Model

In this study we propose a multidimensional and hierarchical model for the usefulness of social networking websites, as shown in Figure 1.
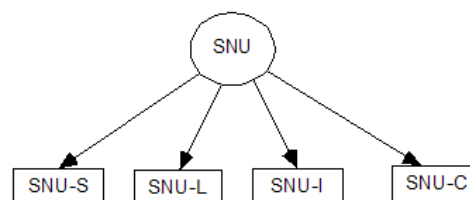

Figure 1. The research model

This model describes four dimensions of the construct SNU (Social Networking websites Usefulness) which was conceptualized as a second order construct. Each dimension was conceptualized as a first order construct.

−   SNU-S refers to the social usefulness of these websites: opportunities to learn, find national and international knowledge, and act more effectively [7, 16].

−   SNU-L refers to the usefulness for relaxation and leisure time [4, 22].

−   SNU-I refers to the possibilities to find useful information and news [12, 15].

−   SNU-C refers to the usefulness of these websites for communication with others, making friends, finding opportunities [10, 31].

The questionnaire items measuring the usefulness of social networks are detailed in Appendix 1.

4. Research Method

4.1 Samples and data analysis

In this study we analyzed two independent samples. Data from the first sample was used for establishing the optimal factor structure and for scale testing. Data from the second sample was used to cross-validate the structure derived from the first sample.

The 11 items from the questionnaire were phrased positively and were measured on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). We analyzed the data with SPSS 16.0 for Windows according to the recommendations from the literature [17].

The first sample consists of 158 university students from humanities faculties. After dropping responses with excessive missing data, 153 usable responses were obtained (response rate 98.7%).

Then the sample was examined for the presence of outliers. We identified two distinct

univariate outliers with z-scores of 3.85. We also identified four multivariate outliers by computing the Mahalanobis distance. Examination of the data revealed that there are not reasons for removing cases.

Also the normality of each of the 11 variables was investigated in terms of skewness and kurtosis. With one exception, the values were all within the robustness threshold [-1, +1] for normality as suggested by [17]. All mean scores were greater than 3.0 (i.e., midpoint on the five-point Likert scale), with a range of 3.44–4.23, indicating that variables were considered important when assessing a social network. The standard deviations ranged from 0.75 to 1.13, indicating that students responded consistently to the instrument.

The working sample has 153 observations from which 38 males (24.8%) and 115 females (75.2%). Most respondents have previous experience with social networks.

The second sample comes from several social sciences faculties. 238 questionnaires were returned. After dropping responses from incomplete questionnaires and those with excessive missing data, 222 usable responses were obtained (response rate 93.3%).

We identified nine distinct univariate outliers and six multivariate outliers above the critical value. After examining the data and carrying out several verification tests and analysis of results, eight cases were eliminated.

The data were investigated in terms of their skewness and kurtosis. With two exceptions, the values were all within the robustness threshold [-1, +1] for normality as suggested by [17]. All mean scores are greater than 3.0, with a range of 3.31–4.13 and the standard deviations range from 0.75 to 1.13.

The working sample has 214 observations from which 54 males (25.8%) and 160 females (74.8%). Most respondents have previous experience with social networks.

The size of each sample is acceptable, according to the recommendations from the literature [6].

4.2 Analytical procedures

In order to assess the proposed scale, a confirmatory factor analysis (CFA) using structural equation modeling (SEM) approach was conducted. The models were analyzed using the AMOS 7.0 software using a covariance matrix as input and maximum likelihood estimation method. Each construct was modeled as a reflective construct accounting for its indicators.

To analyze the measurement models and assess whether a second-order is plausible, various fit indices can be compared [25]. The overall fit of a model can be tested by using the chi-square (χ^2) statistic. Although the χ^2 statistic provides the best inferential test of overall model fit, it has been found sensitive to sample size and normality. Consequently, it is necessary to rely on other goodness of fit indices [6, 18]. The following goodness-of-fit measures were used in this study: normed chi-square (χ^2/DF, Tucker-Lewis index (TLI), comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA).

The next step was to assess the convergent and discriminant validity. Convergent validity can be assessed by examining the loading and their statistical significance through *t*-values, the item reliability, the construct reliability (composite reliability), and the average variance extracted [11]. To be considered adequate, the factor loadings of all standardized items should be greater than 0.50, ideally exceed 0.7 [18] and *t*-values greater than /2/ at 0.05 level. Item reliability indicates the amount of variance in an item due to the underlying construct rather than error and it should be greater than 0.50. The composite reliability (CR) measures the internal consistency on the indicators measuring given construct and should be at least 0.70 or 0.60 [11]. The average variance extracted (AVE) measures the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error and it should be greater than 0.50 [11]

Within the context of higher-order modeling, the first-order factors are expected to be highly correlated. When constructs are highly correlated, discriminant validity may be difficult to support [25]

5. Results

5.1 Study 1 (N=153)

In this study we tested two alternative measurement models. The first model (M1)

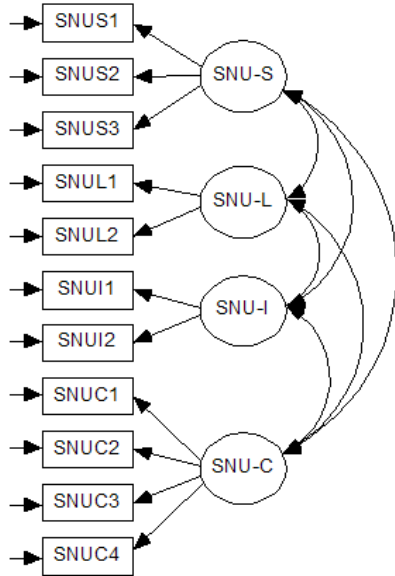hypothesizes four correlated first-order factors, as shown in Figure 2.

Figure 2. Four first-order correlated factors (M1)

The second model (M2) includes one second-order construct and four first-order factors with corresponding indicators, as shown in Figure 3.

The results for Model M1 indicate an acceptable level of fit of the proposed model with these data (χ^2=53.598, DF=38, *p*=0.048) and other indices indicated a good fit with χ^2/DF=1.410, TLI=0.958, CFI=0.971, SRMR = 0.054, RMSEA=0.052. The examination of the standardized residuals values of the covariance matrix has shown that these no exceed the value of |2.58|, and there is no need for re-specification. Also, the inspection of the modification indices and the completely standard expected change has shown that does not appear to be a reason for re-specification.

The correlations between first-order factors are moderate to high, with values ranging from 0.61 to 0.79. As argued by Koufteros et al. [25] in instances where first-order factors exhibit moderate correlations, a measurement model specification such as the one represented by our model would be advisable.

The results provided acceptable support for convergent validity. All standardized factor loading were statistically significant (*t*-values > 1.96), and ranged from 0.44 to 0.88. With the exception for SNUC3, other factor loading were above the minimally acceptable threshold of 0.50. The item reliability (R^2) values are above the suggested standard of 0.5 only for SNUL1, SNUL2, SNUI2, and SNUC2.
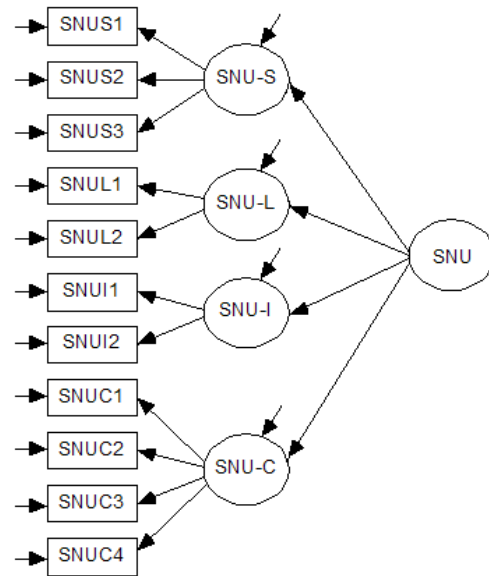

Figure 3. Four first-order factors, one second-order factor (M2)

The composite reliability (CR) of each construct is above the minimum level of 0.60. This suggests that the items are sufficiently representative on their respective construct. The values of average variance extracted (AVE) for SNU-L (0.74) and SNU-I (0.54) are above the suggested standard of 0.50 indicating that the variance captured by the respective construct is larger than the variance due to measurement error. These results suggest the strong relationships between respective items and constructs. The values of AVE for SNU-S (0.39) and SNU-C (0.40) are marginally acceptable.

Although several items did not meet the cut-off, these were retained considering that they were important indicators and the content validity associated with these items was high. This was also because other estimate such as factor loading and composite reliability remained satisfactory. Further, deleting these items would leave fewer items on some construct that might lead to subsequent identification problem [17].

The results for Model M2 indicate a good level of fit of the proposed model with sample data. Although the χ^2 test is significant (χ^2=61.646, DF=40, *p*=0.016), other fit indices indicated a good fit with to the data: χ^2/DF=1.541, SRMR=0.059, TLI=0.945, CFI=0.960, RMSEA = 0.060.

We also assessed the capacity of the second-order model to explain the covariation among the first-order factors. Target (T) coefficient, as suggested by Marsh & Hocevar [29], defined as

the ratio of the chi-square values for the first-order model and the second-order model, and was computed. Target coefficient has an upper bound of 1.0 with higher values (>0.8) implying that the relationship among first-order factors is sufficiently captured by the second-order factor. The calculated target coefficient between the first-order model and second-order model is 0.869 (T = 53.598 / 61.646) supporting that the second-order factor explains almost all of the covariation among first-order factors.

For second-order constructs with reflective dimensions, the convergent validity of the indicators of the first-order factors (dimensions) can be assessed as previously described for first-order measurement model. Estimates of item validity and reliability are not sensitive to the addition of a second-order factor. Conclusions concerning the validity and reliability of the items would be the same. The second-order model has the additional advantage of provide estimates of the validity and reliability of the dimensions.

Further empirical support for convergent validity and for acceptance of the second-order factor model is found in the magnitude and significance of estimated parameters as well as the amount of variance explained [25].

All standardized factor loadings (the gamma coefficients) of the first-order factors on the second-order factor are large and exhibit high *t*-values at the 0.001 significance level. Specifically, the results indicated that SNU-C (γ = 0.867, *t*-value = 7.55) was the strongest dimension of the second-order factor (SNUS), followed by SNU-L (γ=0.860, *t*-value=9.68), SNU-S (γ=0.827, *t*-value=6.61) and SNU-I (γ=0.748, *t*-value=5.49). These results suggests that the users evaluate the social network on the confirmed four dimensions, but they also viewed the social network as a higher-order factor that captured a meaning common to all the dimensions.

The reliability of each dimension was evaluated by examining the squared multiple correlation (SMC). The SMC values are above the suggested standard of 0.50 (from 0.56 SNU-I to 0.75 SNU-C) and indicate that the more than half of the variance in the each dimension is due to the second-order construct.

The construct reliability (CR) for the second-order construct is 0.89, above the minimum recommended level of 0.60. This suggests that

the dimensions are sufficiently representative on the second-order construct. The value of average variance extracted (AVE) for second-order construct is 0.684, above the minimum level of 0.50. These results suggest that, on average, a majority of the variance in the first-order dimensions is shared with second-order construct and thus provide evidence of convergent validity.

5.2 Study 2 (N=214)

The models M1 (four correlated first-order factors) and M2 (one second-order construct and four first-order factors) were tested with the second sample.

The results for Model M1 indicate an acceptable level of fit of the proposed model with these data (χ^2=61.244, DF=38, *p*=0.010) and other indices indicated a good fit with χ^2/DF=1.612, TLI=0.956, CFI= 0.969, SRMR = 0.0414, RMSEA=0.054. The examination of the standardized residuals values and the inspection of the modification indices have shown that there is no reason for re-specification.

The model showed a clean four-factor structure, with all items loading significantly onto their a priori dimension. The results also provided support for convergent validity, as all factor loadings were statistically significant, with critical *t* values ranging from 4.99 to 9.82 (p<.001) and the standardized factor loadings values ranging from .40 to .79. The correlations between first-order factors are high, with values ranging from 0.68 to 0.89.

The composite reliability (CR) of each construct is above the minimum level of 0.60, ranging from 0.67 to 0.75. The values of average variance extracted (AVE) for SNU-L (0.60) and SNU-I (0.58) are above the suggested standard of 0.50 and the values of AVE for SNU-S (0.46) and SNU-C (0.35) are marginally acceptable. Although several items did not meet the cut-off, these items were retained considering that they were important indicators and the content validity associated with these items was high [17].

The results for Model M2 also indicate a good level of fit with sample data. Although the χ^2 test is significant (χ^2=62.223, DF=40, *p*=0.014), other fit indices indicated a good fit with to the data: χ^2/DF=1.556, SRMR=0.041, TLI=0.960, CFI=0.971, RMSEA = 0.051.

The calculated target coefficient between the first-order model and second-order model is 0.98 (T=61.244/62.223) supporting that the second-order factor explains almost all of the covariation among first-order factors.

All standardized factor loadings (the gamma coefficients) of the first-order factors on the second-order factor are large and exhibit high t-values at the 0.001 level. Specifically, the results indicated that SNU-S ($\gamma = 0.97$, t-value = 11.91) was the strongest dimension of the second-order factor (SNUS), followed by SNU-I ($\gamma=0.90$, t-value=10.46), SNU-C ($\gamma=0.83$, t-value=8.33) and SNU-L ($\gamma=0.78$, t-value=9.12). The reliabilities of dimensions SNU-S, SNU-L, SNU-I, and SNU-C were .95, .60, .81, and .69, respectively.

For the second-order construct, CR is 0.93 and the value of AVE is 0.762. This suggests that the dimensions are sufficiently representative on the second-order construct and most of the variance in the first-order dimensions is shared with the second-order construct. In turn, this provides evidence for the convergent validity.

5.3 Discussion

The constructed SNU model revealed that the respondents of both samples, having participated in the research, highly value Social networking websites in all four dimensions (SNU-S, SNU-L, SNU-I and SNU-C). Both humanities and social sciences faculties' students acknowledge social networking websites' (SNW) usefulness as much for communication and leisure as for social and information getting needs.

However, some differences can be discerned among the evaluation results for each sample. From the results it can be seen, that in the group of the respondents from humanities faculties (sample1), communication (SNU-C) and leisure (SNU-L) factors are stronger expressed than social needs (SNU-S) and information getting (SNU-I). In the group of the respondents from social faculties (sample 2), social needs (SNU-S) and information getting (SNU-I) factors have stronger expression than communication (SNU-C) and leisure (SNU-L). It follows that Humanities faculties' students' value Social networking websites more as a means of communication and leisure. They acknowledge that participating in SNW is a good way for finding

friends, communicating with them, making your leisure time more diverse and having a rest. Whilst Social sciences faculties students, admitting that SNW is definitely a perfect means for communication and leisure, see greater benefit of using SNW for their social needs, for acquiring knowledge and getting the newest information from the whole world without going out from home. They accentuate that SNW form an opportunity for saving time, acting more effectively.

Such SNW usefulness evaluation difference could be determined by various reasons. On the one hand, the youth life, i.e., learning and leisure peculiarities, their personal traits, i.e., their communication style with the contemporaries and adults, have a rather great influence on the field of study choice. On the other hand, the specialization chosen by the youth, study content and methods in their own right also form the youth lifestyle. The Holland theory [34] states that not so much are the interests, which determine the choice of profession but the personality's individual traits and his social environment. The author thinks, that similar people choose similar professions, but the satisfaction with work, success, stability depend on how the personality matches with work environment. F. Parson [2] in the theoretical career choice and professional orientation conception states, that the compatibility level of the person's individual traits and profession requirements determine person's professional success and satisfaction with the chosen type of activity. Therefore, it can be assumed, that the youth, having chosen social sciences studies and whose future work profile is in one way or another related to the people of our society, are prepared to search for information in virtual space and also in SNW more in the process of studies than humanitarians do. Youth, who relate themselves with one or another language or have an understanding in literature, are keener on humanitarian studies. Humanities faculties representatives even in the area of new technologies often remain faithful to real (paper) information source and favour printed books, magazines and so on. For them, the social networking websites are more associated with communication and leisure time.

6. Conclusion and Future Work

The results of this study show that university students highly value social networking

websites. SNW can be useful for communication and leisure time, also social and information getting needs. SNW is a good way for finding friends, communicating with them. It is obvious that SNW can be effectively used for acquiring knowledge and getting the newest information from the whole world. Despite the existence of some differences between the groups of students enrolled in different educational curricula, SNW educational opportunities are quite broad.

There is an obvious need to consider (analyze) SNW educational opportunities (potential) from the university lecturers` perspective too.

There are inherent limitations since the study is exploratory and the questionnaire was primarily targeted to the usage of social networking websites. Future work will focus on the development of a new evaluation instrument in order to target more dimensions of the social networking websites usefulness from an educational perspective. Another objective of future work will be to further explore the relation between the educational background and the perception of each facet.

Appendix 1 – Questionnaire items

Item	Description
SNUS1	This is a good opportunity to learn, improve, communicate with the whole world without going out from home
SNUS2	SN websites give national and international knowledge
SNUS3	SN websites save time, allow acting more effectively
SNUL1	SN websites is a good means for spending your leisure time
SNUL2	SN websites is a good means for relaxation
SNUI1	One can find a lot of useful information in SN websites
SNUI2	SN websites is a good possibility to find out various news
SNUC1	SN websites help to make friends
SNUC2	SN websites is a very good means for communication
SNUC3	Communication in virtual space gives bigger opportunities
SNUC4	SN websites is a good means for self-advertising

REFERENCES

1. ACQUISTI, A., R. GROSS, **Imagined Communities: Awareness, Information Sharing, and Privacy on the Facebook.** In Proceedings of the 6th Workshop on Privacy Enhancing Technologies, (Ed.) P. Golle & G. Danezis, Cambridge: Robinson College, 2005, pp. 36-58.

2. ADAMONIENĖ, R., S. DAUKILAS, B. KRIKŠČIŪNAS, I. MAKNIENĖ, A. PALUJANSKIENĖ, **Profesinio ugdymo psichologija ir pedagogika**. Vilnius, 2004, pp. 69-82.

1. ALLOWAY, T. P., J. HORTON, R. G. ALLOWAY, C. DAWSON, **Social Networking Sites and Cognitive Abilities: Do They Make You Smarter?** Computers & Education, vol. 63, 2013, pp. 10-16.

3. ARORA, P., **Online Social Sites as Virtual Parks: An Investigation into Leisure Online and Offline.** Information Society, vol. 27(2), 2011, pp. 113-120.

4. BANCIU, D., A. G. PITIC, D. VOLOVICI, A. C. MITEA, **Using Social Networking Software to Promote Digital Libraries**, Studies in Informatics and Control, ISSN 1220-1766, vol. 21(2), 2012, pp. 221-226.

2. BYRNE, B., **Structural Equation Modeling with AMOS. Basic Concepts, Applications, and Programming**. Lawrence Erlbaum Association, Publishers, 2001.

5. BUSH, G., **Thinking Around the Corner: The Power of Information Literacy.** Phi Delta Kappan, vol. 90(6), 2009, pp. 446-447.

6. CHILDERS, T., **From Social Networking to Academic Networking… A Paradigm Shift.** Internet@Schools, vol. 18(3), 2011, pp. 8-11.

7. CONOLE, G., J. CULVER, **The Design of Cloudworks: Applying Social Networking Practice to Foster the Exchange of Learning and Teaching Ideas and Designs.** Computers & Education, vol. 54(3), pp. 679-692.

3. DAVIS, M. R., **Social Networking Goes to School**. Education Digest, vol. 76(3), 2010, pp. 14-19.

4. FORNELL, C., D. F. LARCKER, **Evaluating Structural Equations Models with Unobservable Variables and Measurement Error.** Journal of Marketing Research vol. 18(1), 1981, pp. 39-50.

8. GARNER, J., H. O`SULLIVAN, **Facebook and the Professional Behaviours of Undergraduate Medical Students**. Clinical Teacher, vol. 7(2), 2010, pp. 112-115.

9. GEMMILL, E., M. PETERSON, **Technology Use Among College Students: Implications for Student Affairs Professionals.** NASPA Journal, vol. 43 (2), 2006, pp. 280-300.

10. GENTILE, B., J. TWENGE, E. C. FREEMAN, W. K. CAMPBELL, **The Effect of Social Networking Websites on Positive Self-views: An Experimental Investigation.** Computers in Human Behavior, vol. 28(5), 2012, pp. 1929-1933.

11. GORDON, D., **Districts Create Community Connections with** Social **Media**. Education Digest, vol. 78(3), 2012, pp. 59-62.

12. GRAY, K., L. ANNABELL, G. KENNEDY, **Medical Students' use of Facebook to Support Learning: Insights from Four Case Studies.** Medical Teacher, vol. 32(12), 2010, pp. 971-976.

5. HAIR, J. F., W. C. BLACK, B. J. BABIN, R. E. ANDERSON, R. L. TATHAM, **Multivariate Data Analysis**. 6th ed., Prentice Hall, 2006.

6. HU, L. T., P. M. BENTLER, **Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives.** Structural Equation Modeling vol. 6(1), 1999, pp. 1-55.

13. JOHNSON, K. A., **The Effect of Twitter Posts on Students' Perceptions of Instructor Credibility**. Learning, Media and Technology, vol. 36(1), 2011, pp. 21-38. doi:10.1080/17439884.2010.534798

14. JUNCO, R., G. HEIBERGERT, E. LOKEN, **The Effect of Twitter on College Student Engagement and Grades.** Journal of Computer Assisted Learning, vol. 27(2), 2010, pp. 119-132. doi:10.1111/j.1365-2729.2010.00387.x

15. KARLIČEK, M., I. TOMEK, M. HASPROVA, M. ZAMAZALOVA, **Social Networking Sites in the Czech Republic: an Empirical Study.** Management & Marketing Challenges for the Knowledge Society, vol. 7(1), 2012, pp. 15-28.

16. KELSEY, K., E. STAFNE, A **Model for Evaluating eXtension Communities of Practice.** Journal of Extension, vol. 50 (5), 2012, pp. 1-1.

17. KOLEK, E. A., D. SAUNDERS, **Online Disclosure: An Empirical Examination of Undergraduate Facebook Profiles.** NASPA Journal, vol. 45 (1), 2008.

18. KORD, J., L. WOLF-WENDEL, **The Relationship between Online Social Networking and Academic and Social Integration.** College Student Affairs Journal, vol. 28(1), 2009, pp. 103-123.

7. KOUFTEROS, X. A., S. BABBAR, M. KAIGHOBADI, **A Paradigm for Examining Second-order Factor Models Employing Structural Equation Modeling.** International Journal of Production Economics vol. 120 (2), 2009, pp. 633-652.

19. LAMANAUSKAS, V., V. SLEKIENE, L. RAGULIENE, **Usage of Social Networking Websites: Lithuanian University Students' Position**. Problems of Education in the 21th Century, vol. 45, 2012, pp. 27-39.

20. LAMANAUSKAS, V., **Social Networking Websites: New Educational Space**. Problems of Education in the 21st Century, vol. 39, 2012, pp. 5-7.

21. LUO, L. **Social Networking Websites: An Exploratory Study of Student Peer Socializing in an Online LIS Program.** Journal of Education for Library & Information Science, vol. 51 (2), 2010, pp. 86-102.

8. MARSH, H. W., D. HOCEVAR, **Application of Confirmatory Factor Analysis to the Study of Self-concept: First- and Higher Order Factor Models and Their Invariance Across Groups.** Psychological Bulletin vol. 97 (3), 1985, pp. 562-582.

22. MENDEZ, J. P., J. CURRY, M. MWAVITA, K. KENNEDY, K. WEINLAND, K. BAINBRIDGE, **To Friend or Not to Friend: Academic Interaction on Facebook.** International Journal of Instructional Technology & Distance Learning, vol. 6(9), 2009. Retrieved on 20 April 2012 from, http://www.itdl.org/Journal/Sep_09/article03.htm

23. MIKAMI, A. Y., D. SZWEDO, J. ALLEN, M. EVANS, A. HARE, **Adolescent Peer Relationships and Behavior Problems Predict Young Adults' Communication on Social Networking Websites.** Developmental Psychology, vol. 46 (1), 2010, pp. 46-56.

24. RAMPUN, A., T. BARKER, **The Design and Development of an eLearning System Based on Social Networking**. Proceedings of the European Conference on e-Learning, 2011, pp. 646-657.

25. ROUIS, S., M. LIMAYEM, E. SALEHI-SANGARI, **Impact of Facebook Usage on Students' Academic Achievement: Role of Self-regulation and Trust.** Electronic Journal of Research in Educational Psychology, vol. 9 (3), 2011, pp. 961-994.

26. SPOKANE A. R., **Holland's Theory.** Career choice and development. San Francisco: Jossey-Bass Publisher, 1996, pp. 33-74.

27. SMITH, J., **Facebook Surpasses MySpace in US Uniques.** Inside Facebook, January 8, 2009. http://www.insidefacebook.com.

9. STEVENSON, M., L. Min, **Learning a Language with Web 2.0: Exploring the Use of Social Networking Features of Foreign Language Learning Websites**. CALICO Journal, vol. 27 (2), 2010, pp. 233-259.

28. TAYNTON, K., **The Net Generation in Japan: A Survey of Internet Behaviours of Students Aged 13-21**. Teaching English with Technology, vol. 12(1), 2012, pp. 3-19.

29. VAUGHAN, N., **Student Engagement and Web 2.0: What's the Connection?** Education Canada, vol. 50(2), 2010, pp. 52-55. Retrieved from http://www.cea-ace.ca/

30. WILSON, K., S. FORNASIER, K. M. WHITE, **Psychological Predictors of Young Adults` Use of Social Networking Sites.** Cyberpsychology, Behavior, and Social Networking, vol. 13(2), 2010, pp. 173-177.