

HOW AUTHENTIC SHOULD A LEARNING CONTEXT BE? USING REAL AND SIMULATED PROFILES IN A CLASSROOM INTERVENTION TO IMPROVE SAFETY ON SOCIAL NETWORK SITES

Ellen Vanderhoven

Department of Educational Studies & iMinds-MICT-Ugent, Ghent University
Korte Meer 7, 9000 Ghent, Belgium
Ellen.Vanderhoven@Ugent.be

Tammy Schellens

Department of Educational Studies, Ghent University
Henri Dunantlaan 2, 9000 Ghent, Belgium
Tammy.Schellens@Ugent.be

Martin Valck

Department of Educational Studies, Ghent University
Henri Dunantlaan 2, 9000 Ghent, Belgium
Martin.Valcke@Ugent.be

ABSTRACT

With the rise of social network sites (SNSs), there is an increasing need for safety education within the current cyber society. To this end, a variety of educational materials have been developed to prepare children to be vigilant when interacting on such sites. However, little is known about the critical design aspects necessary to make these materials effective. In this study, we build on the results of two previous studies, in which

we found that general instructional principles drawn from constructivism, such as collaborative learning, are not always appropriate to teach children how to behave safely online. This study therefore focuses on the importance of authentic learning and active learning as critical design features. A quasi-experimental study was conducted in secondary schools in order to compare the impact of two classroom interventions about the risks on SNSs. As part of the intervention, students were presented scaffolds towards different risks related to an SNS-profile through a series of questions. In the control condition, these questions concerned a simulated SNS-profile on paper containing signs of many risks. In the experimental condition, students had to answer the same questions about their own SNS-profile on a computer. It was hypothesized that the simulated profile would not be experienced as realistic, and that students would have difficulties identifying with it. On the other hand, teenagers were expected to be able to recognize more risks on the simulated 'worst-case scenario' profile than on their own profile, which would facilitate the scaffolding process in the control condition. The results of the study mostly confirmed these hypotheses. Furthermore, the question arose as to whether the intervention based on the student's own realistic profile was educationally more valuable than the intervention based on the simulated profile, but no such added value was found. On the contrary, the scaffolding questions about the simulated profile were found to be more effective in teaching the teenagers about the different categories of risks that were tackled. Based on these findings, the importance of an authentic setting was put into perspective. Within the context of a classroom intervention to promote safety on SNSs, the exercise based on the simulated SNS-profile is put forward as the more effective teaching strategy.

Keywords: Social Network Site, Unsafe Internet Use, Authentic Learning, Scaffolding, Secondary Education

INTRODUCTION

Researchers, parents, teachers and teenagers agree that media literacy education is increasingly important in this 21st century, when participatory and collaborative network technologies such as social network sites (SNSs) are omnipresent (Livingstone, 2004a; Safer Internet Programme, 2009). Since children have been found not to be competent in avoiding some of the risks posed to them by the Internet (Livingstone, 2004b), education on cyber security and e-safety seems particularly essential. Examples of risks that

teenagers might come across when using popular SNSs are cyberbullying, sexual solicitation and privacy risks (De Moor et al., 2008). School education about these risks is proposed as a solution in order to empower minors to deal with such online dangers (Livingstone & Haddon, 2009; Marwick, Murgia-Diaz, & Palfrey, 2010; Tejedor & Pulido, 2012).

To this end, a vast array of educational materials has been developed to raise awareness and to change unsafe behavior (e.g., Insafe, 2014). However, only a few of these packages have been evaluated so far (Mishna, Cook, Saini, Wu, & MacFadden, 2010; Vanderhoven, Schellens, & Valcke, 2014a), and there has been only limited attention given to the critical aspects of effective materials. Nevertheless, research about prevention campaigns in different subjects, such as drug abuse and aggressive behavior, shows that it is important not to rush the development of materials, but to develop materials around strategies that are known to be effective (Jones, 2010; Nation et al., 2003). For now, it is unclear which strategies can guarantee that interventions and prevention campaigns are effectively changing awareness and unsafe behavior (Livingstone & Bulger, 2013).

It is for these reasons that we developed a new intervention with educational materials for teenagers in secondary education based on specific instructional guidelines drawn from constructivism (Vanderhoven, Schellens & Valcke, 2014b). In the following, we describe these learning principles and how they were applied to these originally developed interventions. We then describe the results of two preceding evaluation studies that tested the impact of these initial interventions on the awareness and behavior of the students. Based on the results, we formulated three hypotheses concerning the principles of authentic and active learning. We explain why and how we adapted the classroom intervention on the basis of these hypotheses. Finally, we clarify the goal of the current study: establishing whether the adapted intervention has more educational value than the originally developed intervention.

Learning Principles

As stated, the intervention that we originally developed was based on instructional guidelines drawn from constructivism (Vanderhoven et al., 2014b). As the dominant theory of the last decades in the field of learning science, constructivism mainly implies that learning is an active process, in which the learners actively construct their knowledge (Duffy & Cunningham, 1996). This knowledge cannot be transferred from one person to

another just by lecturing. Therefore, some basic learning principles are introduced for the development of educational materials to maximize the chances of successful learning (Karagiorgi & Symeou, 2005). In the newly developed educational materials, we particularly took into account the principles of collaborative learning, situated learning and active learning (Vanderhoven et al. 2014b).

The first principle, collaborative learning, is based on the fact that, for constructivists, learning is inherently a social-dialogical process. Working together helps in sharing and developing multiple viewpoints. As Duffy and Cunningham (1996) stated, collaborative learning provides variation in classroom activities and teaches students how to work together and share the workload. For this reason, we added a two-by-two exercise to the intervention in which students had to cooperate to answer different questions about a simulated SNS-profile, hence ensuring collaborative learning.

Secondly, we took into account the principle of situated learning. Learning is more likely to be meaningful if it is embedded in a realistic context (Duffy & Cunningham, 1996; Snowman, McCown, & Biehler, 2008). This is also called *authentic learning*: learning should take place in a socio-culturally relevant context that maintains the complexity of the authentic context (Karagiorgi & Symeou, 2005). To ensure situated learning during our intervention, we made the simulated profile described above as realistic as possible. The design of the profile mimicked that of popular SNSs, containing different similar parts such as a user name, personal information, interests, relationship status, *likes*, ads and status updates.

The third principle is that of active learning, also referred to as learning by doing: knowledge and skills are acquired better when they are actively practised. Learners need to develop effective ways to resolve problematic situations (Duffy & Cunningham, 1996). Technology and teachers can help to motivate active learning by providing *scaffolding* opportunities. Scaffolds guide the learners from what they already know to what needs to be known (Wood, Bruner, & Ross, 1976). This principle was applied in the materials by alternating a number of instructional strategies with different levels of activity and participation. These specific didactical strategies, such as a voting card game, ensure the active participation of the students. Moreover, the simulated SNS-profile described above contained all kinds of possible risks (e.g., a sexually suggestive profile picture, gossip, posts with contact information). Instead of just stating this information, the exercise was set up in such a way so as to guide the students towards uncovering these existing risks through scaffolding questions. These questions are summarized in table 1, together with

examples of possible answers.

**Table 1 Scaffolding Questions in the Exercise with the Simulated Profile
(Vanderhoven Et Al., 2014b)**

Scaffolding question	Examples of possible answers (information that can be found on the simulated SNS-profile)
Do you see any signs of bullying, mean statements or hurtful information? If so, where?	Yes. - the owner of the profile joined the group “I hate my math teacher” - In the personal information, it says “I hate fat people”.
Are there any signs of gossip? If so, where?	Yes. - There is a status update stating “Haha, Caroline made a fool out of herself today, again. She’s such a loser.”
Are there sexually suggestive pictures or is there sexually suggestive information on the profile? If so, where?	- The profile picture can be considered as sexy by some. - Her profile name is <i>Sexy_Julie</i>
Do you think this girl could be approached with unwanted, sexual messages? Why (not)?	Yes. She reveals contact information such as her address and email address, and states that she is ‘looking for a relationship’, together with the sexually suggestive information above.
Do you see any personal and/or contact information on the profile? What kind of information?	Harmless information such as the color of her hair and eyes, and possibly risky information, such as her address, email address, date of birth, name and surname, mobile number.
Do you think that this profile can be seen only by people the girl wants the profile to be seen by? Or might it be visible for strangers, acquaintances or even teachers or parents? Why? Do you think this is harmful?	It is not clear whether Julie uses her privacy settings. However, she has 1,263 ‘friends’ on her social network site. Therefore, it is quite likely that strangers can also see her information.
If you have a profile yourself: do you have the same kinds of information on your profile? What would you do and what would you avoid doing?	Dependent on the student.

Evaluating Learning Principles in E-Safety Interventions

With the developed intervention, the goal was to raise awareness about the risks on SNSs and to change unsafe attitudes and behavior. To establish whether the principles behind the development of this intervention could effectively obtain this goal, a number of evaluation studies were conducted. A first evaluation of the developed materials showed that the initial guidelines described above were not necessarily effective in educating about the risks on SNSs. Although the intervention did affect risk awareness, the impact on unsafe behavior was found to be limited (Vanderhoven et al., 2014b). Based on the results of a second study, time for individual reflection, rather than collaborative learning, appeared to be a critical aspect of effective educational materials if the objective is both raising awareness and changing unsafe behavior on SNSs (Vanderhoven, Schellens & Valcke, in press). Indeed, although collaborative learning is put forth by constructivists as an important instructional strategy to increase knowledge (Duffy & Cunningham, 1996), it was found to be less effective in changing unsafe behavior on SNSs. Therefore, the intervention was modified so that the two-by-two exercise with the simulated profile had to be completed individually, leaving more time for individual reflection.

The results of these first two studies indicate that the initial instructional guidelines drawn from constructivism are not necessarily appropriate for raising awareness and changing unsafe behavior. Additional research might point out that, compared to collaborative learning, other instructional guidelines that were taken into account in these materials might be inefficient as well. To verify this, the study focuses on the importance of the principles of active learning and authentic learning in the context of education about risks on SNSs. As stated, these principles were embedded in the initially developed materials (Vanderhoven et al., 2014b), by including an exercise with scaffolding questions about a simulated SNS-profile that mimicked a real profile. The simulated profile reflects an authentic SNS-context, and the scaffolding questions elicit active learning.

However, it can be argued that this exercise does not satisfy the requirements of an authentic setting for two reasons. Firstly, no technology is involved. The simulated profile is provided on paper, not on a computer, thus decreasing the complexity of the immediate context and its authenticity. Secondly, the profile contains so many risks (since it is a ‘worst-case scenario’) that it might appear unrealistic. Because SNS-profiles are an important place for teenagers to construct an online identity (Madden & Smith, 2010;

Zhao, Grasmuck, & Martin, 2008), it might be crucial that students can identify with the simulated profile, in order to establish an authentic setting.

Decreasing the number of risks on the profile or adding more harmless information would make the profile more realistic and thus more authentic. On the other hand, the ‘worst-case scenario’ profile was chosen to facilitate scaffolding towards all of the categories of risk. If fewer risks were present in the profile, this would make it harder to guide the students towards a comprehensive set of risks. Therefore, if the profile were more realistic, it might be more difficult to evoke active learning by scaffolding towards all the different risk categories. Moreover, the simulated profile on paper has various practical advantages, as it can be given in all classes and to all students without the need of technology, and it creates a controlled situation that is more readily implemented by the teacher. Given the advantages of the simulated profile and the possible disadvantages of using a more realistic profile, the question arose as to whether an intervention using an exercise with a more realistic profile would be more effective in changing unsafe behavior.

The Current Study

The current study examines whether establishing a ‘more authentic’ educational context has an added value, specifically over the exercise with the simulated paper profile used in the original intervention about safety on SNSs. For this purpose, we developed a similar intervention in which the exercise with the profile had to be completed by the students using their own, real profile on a computer. By using technology and a profile that reflects the students’ online identity, a more authentic context was created. Except for this adaptation, the intervention was exactly the same as the previous one. Both interventions were implemented in secondary school classes. As a starting point, we developed three hypotheses:

- H1) The simulated profile is not experienced as realistic.
- H2) Students have difficulties identifying with the simulated profile.
- H3) Teenagers recognize more risks on the simulated profile than on their own profile.

On the basis of these assumptions, we then formulated the following research question: Is it educationally more valuable to work with an existing, authentic context or to create a simulated context when teaching about safety on SNSs?

METHOD

Design & Participants

In order to answer this research question, we set up two interventions with the aim of reducing the risks on SNSs for secondary education students. In both interventions, scaffolding strategies were used to draw the students' attention to the risks on SNSs through questions about an SNS-profile. A "pre-test - post-test" design was used with one control condition, in which the exercise was completed with a simulated profile, and one experimental condition, in which the exercise was completed with the students' own SNS-profile. These conditions are described in table 2, with regard to the didactic principles used, the assumptions made, and the (dis)advantages related to the respective conditions.

A total of 23 secondary school classes participated in the study, comprising 340 students between 13 and 19 years old. Classes were randomly assigned over the two conditions. The answers on pre- and post-test were screened for unreliable answers and missing values (not all pupils filled out both pre- and post-test information), leaving 80 cases that were used for analysis ($M=15.64$, $SD=1.23$). Of these students, 56% were girls, and 44% were boys. Both the control group and the experimental group consisted of 40 students.

Measurements

We used a mixed-methods approach to obtain both quantitative and qualitative data from students in a pre- and post-test online survey.

1. Quantitative data

We designed the online survey to gather different kinds of information from the participating students. First, we collected some general data, such as their gender and age, whether they had a profile on an SNS, and which SNS they used most. Furthermore, to measure the amount of risky information found on the profile during the exercise, we developed a scale, consisting of four items on a 7-point Likert scale (e.g., "I believe that there was a lot of risky information on the profile", 1 = totally disagree, 7 = totally agree, Cronbach's $\alpha = .88$). We also asked the students who received the simulated profile whether they could identify with this profile in three items on a 7-point Likert scale (e.g., "I can imagine having a profile like the profile of *Sexy Julie*", 1 = totally disagree, 7 = totally agree, Cronbach's $\alpha = .92$) and whether they found the profile realistic, again in

three items (“The profile of *Sexy Julie* is a typical profile you find online”, “My friends could have a profile such as the profile of *Sexy Julie*”, and “The profile of *Sexy Julie* is an exaggeration”). Since the internal consistency of these last three items appeared to be low (Cronbach’s $\alpha = .24$), they are considered separately in the discussion of the results.

Table 2 Comparison between the Two Conditions of the Study, with Regard to the Didactical Principles Used, the Assumptions Made and the Advantages Related to the Respective Conditions

	Control condition	Experimental condition
Didactical principles		
Authentic setting		

¹*Evidence-based materials described by Vanderhoven et al. (2014b)*

Finally, we measured the effectiveness of the intervention using several additional scales. To value the students’ awareness of risks on SNSs, we developed a scale consisting of six items about different SNS-related risks (De Moor et al., 2008), such as “Some information on SNSs, such as pictures, videos, and comments, is mean and offensive.” (1 = totally disagree, 7 = totally agree, Cronbach’s $\alpha = .74$). Moreover, to assess their attitudes towards different kinds of behavior on SNSs and their actual behavior, we devised a number of subscales following the manual of Fishbein and Ajzen (2009). Based on the summary of contact risks by De Moor et al. (2008), we categorized unsafe behavior on SNSs by describing five particular types of behavior: posting personal information, posting sexual information, cyberbullying, not using privacy settings and not reflecting before posting/doing something on SNSs. The attitudes towards these behaviors and the behaviors themselves were measured for every type of behavior, using

three items on a 7-point likert scale (1 = safe, 7 = unsafe; Chronbach's $\alpha > .78$ for all scales). Subsequently, we calculated two indices based on the mean score on the five subscales to indicate the general attitudes towards unsafe behavior and the general unsafe behavior, respectively.

2. Qualitative data from students

To assess the effectiveness of the intervention, the post-test survey also contained an open question, which directly asked what students had learned during the intervention.

Procedure

Before starting with the intervention, we asked the teachers if they wanted to cooperate. To assure external validity, the intervention required a regular classroom setting with the teacher teaching the students using the manual with detailed instructions for teachers and the syllabus for the students. When the teachers consented to cooperate in the research, their students were given the link to an online survey. Approximately one week after they had filled out the first survey, they received a homework task containing the SNS-profile exercise. This exercise was given as homework to facilitate the technological requirements of the experimental condition (for which a computer was necessary to complete the exercise). The homework task was afterwards discussed during a classroom session. In both conditions, the classroom discussion was extended with an in-class voting game with statements and a summary of theory about risks on SNSs, resulting in a one hour classroom session (as described by Vanderhoven et al., 2014b). After this session, students were provided with the link to the second online survey. The complete research procedure is depicted in Figure 1.

Analysis

Firstly, in order to establish whether there was a difference in effectiveness of the two experiment conditions, three ANCOVAs were consecutively executed with, as dependent variables, the post-test scores on awareness, the post-test attitudes, and the post-test behavior, respectively. In all ANCOVAs, the corresponding pre-test score was added as a covariate, to control for individual differences in the pre-test. Furthermore, the kind of exercise (condition: control or experimental) was added as a predictor in the analysis, to establish whether there was a difference in effectiveness between the two interventions. Since a multiple testing correction is appropriate (Bender & Lange, 2001), a Bonferroni correction was applied to the significance level $\alpha = 0.05$ in all quantitative

analyses, resulting in a conservative significance of effects at the level $\alpha = 0.02$.

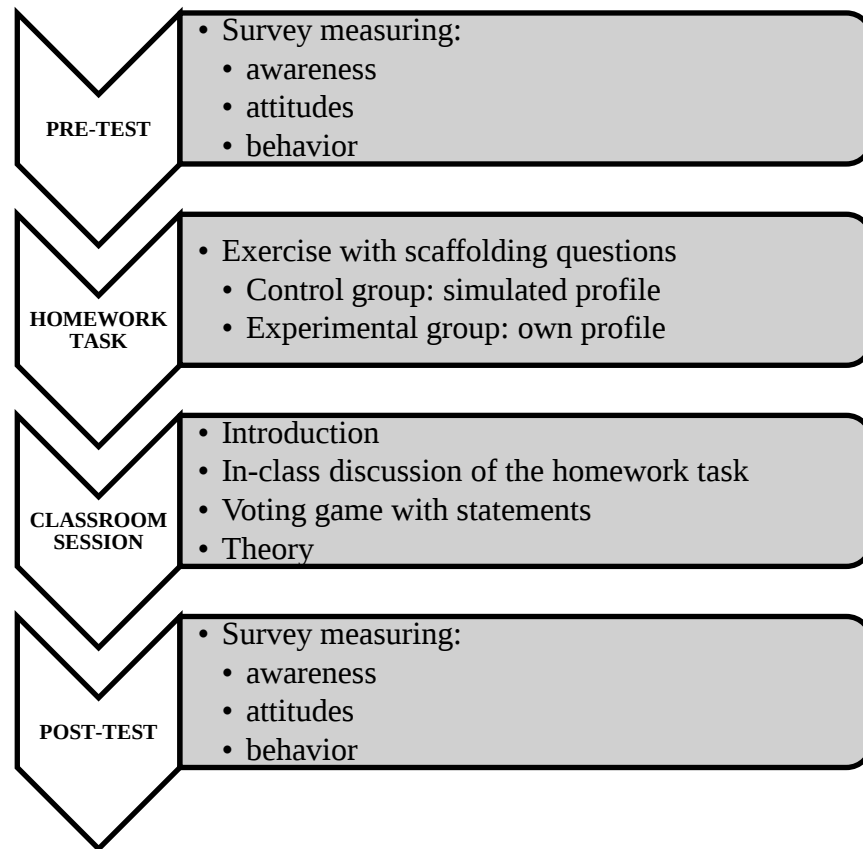


Figure 1. Description of the Research Procedure

Secondly, the answers to the open question were coded in binary: “1” if students reported to have learned something (anything that could have been learned during the intervention), and “0” if they reported not to have learned anything. A χ^2 -test indicated whether more students reported to have learned something in the condition using their own profiles compared to the condition using the simulated profile.

Finally, the answers to the open question with regard to what students had learned during the intervention were categorized by two independent raters into three categories that corresponded to the three risks tackled in the course (i.e. cyberbullying, privacy risks and sexual solicitation, De Moor et al., 2008). To this end, three binary variables were created, one for each category. If the students indicated that they had learned something about a certain category of risk, the corresponding variable was coded as 1. If they did

not mention this category of risk in the open answer, the variable was coded as 0. Inter-rater agreement was 93%. For every variable, a χ^2 -test showed whether there was a difference between the experiment conditions in the number of students reporting to have learned about this category of risk.

RESULTS

Testing the Hypotheses

Once we completed gathering all experimental data, we proceeded to test the three hypotheses we had originally set forth:

H1) The simulated profile is not experienced as realistic.

With regard to the first assumption, students reported that the simulated profile was exaggerated ($M = 5.66$, $SD = 1.72$), and that their friends would not have similar profiles ($M = 2.55$, $SD = 1.57$). However, the rather neutral score on the item “The profile of *Sexy Julie* is a typical profile you find online” ($M = 4.59$, $SD = 1.65$) indicates that the profile is not completely unrealistic.

H2) Students have difficulties identifying with the simulated profile.

As a confirmation of the second assumption, students were found to have difficulties identifying with the simulated profile of *Sexy Julie*, which can be demonstrated by the low mean score on the identification scale ($M = 1.63$, $SD = 1.10$).

H3) Teenagers find more risks on the simulated profile than on their own profile.

An independent sample t-test showed that teenagers indeed recognized more risks on the profile of *Sexy Julie* than on their own profile ($t(74) = -6.28$, $p < .001$). Therefore, the third assumption can be confirmed as well.

Answering the Research Question

The results of this study confirmed not only that teenagers could not identify with the simulated profile (which might indicate the lack of a proper authentic setting), but also that more risks could be recognized on this profile compared with their own profile, thus facilitating active learning with scaffolding questions. It is therefore interesting to analyze whether there was a difference in effectiveness between the control and the experimental conditions in this study.

1. Quantitative analysis

As mentioned in section 2.4, we performed three ANCOVAs with awareness, attitudes and behavior as the respective dependent variables. There was no difference in effectiveness between the two experiment conditions when controlled for pre-test scores, not for awareness ($F(1,77) = .12, p = .73$), attitudes ($F(1,72) = .001, p = .97$) or behavior ($F(1,72) = .38, p = .54$).

2. Qualitative Analysis

Firstly, we analyzed the answers to the binary-coded question asking whether students had learned something (yes/no). We found that there was no statistically significant difference between the two experiment conditions in the number of students that reported to have learned something (see Table 3). Secondly, we verified whether different categories of risks were mentioned by the students. Although the students made the same number of references to cyberbullying and privacy risks, we did observe more references to the risk of sexual solicitation in the control condition (e.g., “it is important not to post sexual information on your profile, because this may lead to sexual solicitation”). Statistical results are shown in Table 3.

Table 3 Comparison between the Two Conditions with Regard to the Open Question “What Did You Learn During the Course?” χ^2 Tests Indicate the Significance of the Difference

	Control condition	Experimental condition	$\chi^2(1)$
Students who reported to have learned something.	85.7%	76.9%	.93
What did you learn something about?			
Cyberbullying	14.3%	17.9%	.18
Sexual solicitation	17.1%	2.6%	4.58*
Privacy risks	40%	43.6%	.10

Note: *= $p < .05$

DISCUSSION & CONCLUSION

Since there is a widespread consensus among researchers, parents and teenagers that school is an important place to learn about online safety (Safer Internet Programme, 2009; Tejedor & Pulido, 2012), different educational materials have been developed on this

topic (e.g., Insafe, 2014). Previous research has shown that more research is required about the effectiveness of these materials (Vanderhoven et al., 2014a). More specifically, given that general didactical principles drawn from the field of constructivism were found to be ineffective for education on online safety (Vanderhoven et al., in press, Vanderhoven et al., 2014b), more research is necessary to develop specific design guidelines for effective education about the risks on SNSs. To this end, this study tested the importance of two didactical principles, namely situated learning and active learning.

The results of the study confirmed our assumption that the simulated profile used in our original materials was not sufficient to generate an authentic context, because students cannot identify with it. Additionally, the results support the hypothesis that students would find more risks on the simulated profile of *Sexy Julie*, which supports the process of active learning through scaffolding strategies. Given the advantages of the simulated profile (i.e, better scaffolding opportunities, less technology needed and easier to implement), the question arose as to whether making the context more authentic by using the students' own profile was educationally more valuable than using the 'worst-case scenario' simulated profile. The quantitative results of this study showed that there was no difference in impact between the two conditions, and therefore that there was no added value in making the context more authentic. The qualitative results even showed that in the control condition more students reported to have learned something about sexual solicitation, one of the contact risks tackled in the intervention. There was no difference in the number of students that reported to have learned something about the other two risks (privacy risks and cyberbullying).

These results indicate that the number and type of risks that were available on *Sexy Julie's* profile helped to scaffold towards all the different risks. This scaffolding seemed to have been more difficult when the students had to work with their own profiles, as it seemed to be challenging for students to discover risks on their own profiles. For example, while students found the simulated profile not entirely unrealistic, they reported that they could not have such a profile themselves, nor could they imagine that their friends had similar profiles. This means that students are not able to recognize the risks in their own profiles and perceive these risks as remote from their personal lives. This is in line with previous research, which found a "third person effect", meaning that people perceive less risks to themselves than to others (Debatin, Lovejoy, Horn, & Hughes, 2009). People often state that the information other persons reveal creates risks to them, but they are less concerned about the risks they create to themselves (Acquisti & Gross,

2006). To raise awareness and to start a classroom discussion, it is therefore necessary to provide examples and to explain to teenagers that these risks exist (e.g., by using scaffolding questions). This seems to be beneficial, even within a less authentic context. However, future research should establish whether this “third person effect” still exists after classroom conversations about all risk categories and whether more efforts are necessary to help the students transfer the acquired knowledge to their own lives.

In addition, these results have important practical implications. As stated above, the simulated profile has significant instructional advantages. Setting up courses that involve technology remains challenging in some schools (Hohlfeld, Ritzhaupt, Barron, & Kemker, 2008). Many teachers and developers will therefore be happy to know that courses that simulate digital contexts on paper are just as effective, or, in some cases, even more effective, than courses in which the real authentic digital context is implemented. Moreover, since the simulated profile is the same for all the students in the classroom, it is easier for the teacher to discuss the results of the exercise in class afterwards. The teacher manual developed to guide the intervention with the simulated profile contains suggestions of possible answers to the scaffolding questions. In contrast, teachers need to be more flexible when using real SNS-profiles.

Finally, this research has implications for further research efforts. It emphasizes the importance of studying different kinds of interventions, aiming to identify critical guidelines for the development of media literacy interventions. Such guidelines will make it easier for developers, teachers and practitioners to create effective educational materials about the risks of SNSs. Ideally, future research should follow a design-based approach, starting from the practical problems observed (e.g., unsafe behavior) and using iterative test cycles of various proposed solutions in practice (Phillips, McNaught, & Kennedy, 2012). By refining problems, solutions and methods, researchers can develop more design principles that can guarantee a positive impact on teenagers’ awareness, attitudes and behavior.

In conclusion, it can be stated that there is no added value to creating a more authentic educational context when informing students about the risks of SNSs. However, it is important to scaffold the students towards all the types of risks that exist. For this reason, using a simulated profile is the preferred option for this educational purpose.

REFERENCES

- Acquisti, A., & Gross, R. (2006). Imagined communities: Awareness, information sharing, and privacy on the Facebook. In G. Danezis and P. Golle (Eds.), *Privacy enhancing technologies* (pp. 36-58). Berlin Heidelberg: Springer. http://dx.doi.org/10.1007/11957454_3.
- Bender, R., & Lange, S. (2001). Adjusting for multiple testing-when and how? *Journal of Clinical Epidemiology*, 54(4), 343-349. [http://dx.doi.org/10.1016/S0895-4356\(00\)00314-0](http://dx.doi.org/10.1016/S0895-4356(00)00314-0).
- De Moor, S., Dock, M., Gallez, S., Lenaerts, S., Scholler, C., & Vleugels, C. (July, 2010). *Teens and ICT: Risks and opportunities*. Retrieved from http://www.belspo.be/belspo/fedra/TA/synTA08_en.pdf.
- Debatin, B., Lovejoy, J.P., Horn, A.-K., & Hughes, B.N. (2009). Facebook and online privacy: Attitudes, behaviors, and unintended consequences. *Journal of Computer-Mediated Communication*, 15(1), 83-08. <http://dx.doi.org/10.1111/j.1083-6101.2009.01494.x>.
- Duffy, T., & Cunningham, D. (1996). Constructivism: Implications for the design and delivery of instruction. In D. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 170-198). New York: Simon and Schuster.
- Fishbein, M., & Ajzen, I. (2009). *Predicting and changing behavior: The reasoned action approach (1st ed.)*. New York: Psychology Press.
- Hohlfeld, T.N., Ritzhaupt, A.D., Barron, A.E., & Kemker, K. (2008). Examining the digital divide in K-12 public schools: Four-year trends for supporting ICT literacy in Florida. *Computers & Education*, 51(4), 1648-1663. <http://dx.doi.org/10.1016/j.compedu.2008.04.002>.
- Insafe. (January, 2014). *Educational resources for teachers*. Retrieved from <http://lreforschools.eun.org/web/guest/insafe>
- Jones, L.M. (October, 2013). *The future of Internet safety education: Critical lessons from four decades of youth drug abuse prevention. Publius Project*. Retrieved from http://publius.cc/future_internet_safety_education_critical_lessons_four_decades_youth_drug_abuse_prevention
- Karagiorgi, Y., & Symeou, L. (2005). Translating constructivism into instructional design: Potential and limitations. *Educational Technology & Society*, 8(1), 17-27.
- Livingstone, S. (2004a). Media literacy and the challenge of new information and communication technologies. *The Communication Review*, 7(1), 3-14.

- <http://dx.doi.org/10.1080/10714420490280152>.
- Livingstone, S. (2004b). "What is media literacy?" *Intermedia*, 32(3), 18-20.
- Livingstone, S., & Bulger, M.E. (2013). *A global agenda for children's rights in the digital age. Recommendations for developing UNICEF's research strategy*. London: LSE.
- Livingstone, S., & Haddon, L. (2009). *EU Kids Online: Final report (EC Safer Internet Plus Programme Deliverable D6.5)*. London: EU Kids Online: LSE.
- Madden, M., & Smith, A. (2010). *A reputation management and social media*. Washington, DC: Pew Internet & American Life Project.
- Marwick, A.E., Diaz, D.M., & Palfrey, J. (2010). Youth, privacy and reputation. *Harvard Law School Public Law & Legal Theory Working Paper Series*, 10-29.
- Mishna, F., Cook, C., Saini, M., Wu, M.-J., & MacFadden, R. (2010). Interventions to prevent and reduce cyber abuse of youth: A systematic review. *Research on Social Work Practice*, 21(1), 5-14. <http://dx.doi.org/10.1177/1049731509351988>.
- Nation, M., Crusto, C., Wandersman, A., Kumpfer, K.L., Seybolt, D., Morrissey-Kane, E., & Davino, K. (2003). What works in prevention. Principles of effective prevention programs. *The American Psychologist*, 58(6-7), 449-456. <http://dx.doi.org/10.1037/0003-066X.58.6-7.449>.
- Phillips, R., McNaught, C., & Kennedy, G. (2012). *Evaluating e-Learning: Guiding research and practice. connecting with e-Learning*. New York: Routledge, Taylor & Francis Group.
- Safer Internet Programme. (November, 2011). *Assessment report on the status of online safety education in schools across Europe*. Retrieved from http://ec.europa.eu/information_society/activities/sip/docs/forum_oct_2009/assessment_report.pdf
- Snowman, J., McCown, R., & Biehler, R. (2008). *Psychology applied to teaching (12th ed.)*. Belmont: Wadsworth Publishing.
- Tejedor, S., & Pulido, C. (2012). Challenges and risks of Internet use by children. How to empower minors? *Comunicar*, (39), 65-72. <http://dx.doi.org/10.3916/C39-2012-02-06>.
- Vanderhoven, E., Schellens, T., & Valcke, M. (2014a). Educational packages about the risks on social network sites: state of the art. *Procedia - Social and Behavioral Sciences*, 112, 603-612. <http://dx.doi.org/10.1016/j.sbspro.2014.01.1207>.
- Vanderhoven, E., Schellens, T., & Valcke, M. (2014b). Educating teens about the risks on

- social network sites: Useful or pointless? An intervention study in secondary education. *Comunicar*, (43), 123-132. <http://dx.doi.org/10.3916/C43-2014-12>.
- Vanderhoven, E., Schellens, T., Valcke, M. (in press). Changing unsafe behavior on social network sites: Collaborative learning vs. individual reflection. In M. Walrave, K. Ponnet, E. Vanderhoven, J. Haers, and B. Segaert (Eds.), *Youth 2.0: Social media and adolescence*. Connecting, sharing and empowering, Dordrecht: Springer.
- Wood, D., Bruner, J.S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17(2), 89-100. <http://dx.doi.org/10.1111/j.1469-7610.1976.tb00381.x>.
- Zhao, S., Grasmuck, S., & Martin, J. (2008). Identity construction on Facebook: Digital empowerment in anchored relationships. *Computers in Human Behavior*, 24(5), 1816-1836. <http://dx.doi.org/10.1016/j.chb.2008.02.012>.