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# Students and privacy in the networked environment

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**Abstract - The continuing adoption of new emerging technologies is not only changing the educational environment but also raises concerns in terms of students' digital media literacy and their sense of privacy in online environments. Despite the widespread agreement of its importance the lack of formal training in information and media literacy across the curriculum actually forces students to acquire necessary skills through informal learning. This lack of systematic education potentially leads to differences in student competencies.**

Authors present the results of the study on students' attitude towards information privacy their private online environment (inside their chosen social network), as well as their professional environment (inside their e-learning system). The research was conducted in December of 2010 where a total of 397 students from the Faculty of Humanities and Social Sciences (FHSS) at the University of Zagreb and Accredited College of Business and Management "Baltazar Adam Krčelić" (ACBM) responded to an online survey. The results showed significant differences between the samples, where the students from FHSS were more aware of the importance of protecting their private data inside their social network, as well as inside their educational environment. The study confirmed the original assumption that the lack of formal guidance through student education resulted in significant differences between the students.

## I. INTRODUCTION

Today's youth is exposed to broad specter of multimedia, information overload and new set of rules governing their actions in digital world. Environment has drastically changed from traditional one bringing new concepts and viewpoints on questions of identity, privacy, ownership etc. The main focus in understanding this new environment and setting the paths of responsible digital behavior is now turned on the new generation that has been brought up with the technology i.e. digital natives.

This generation is using technology based on their experience often thriving by themselves to successfully function in this new world of media and technology. In earlier times, communities were small and intimate and usually were meeting in person without much technology usage. Personal information was preserved in the memories of friends, family, and neighbors, and it was spread by gossip and storytelling. Today, the predominant mode of communication and information spreading is not done through the flutter of gossiping tongues but through the language of electricity, where information pulses between massive record systems and databases [1].

Communication nowadays is mainly utilized through usage of new digital media. Information is willingly shared in different formats (data, video, picture etc) without individuals being aware of how this shared data can one day be used and eventually influence, in various ways, them and their life. We are witnessing cases of how information or photo shared in the private setting can be used in business environment influencing ones employment future and career.

Palfrey and Gasser [2] warn that communicating of information has some negative aspects that young people should be aware of. The information shared in digital form and in one context, according to an initial set of rules, may be presented to the world according to quite another set of rules later on. Therefore, two major problems now arrive: problem of identity and digital dossier. Each problem has its own contours, and each requires different solutions.

Furthermore, Tapscott [3] warns that *Net Generers* are making a serious mistake, and most of them are not even aware of the amount of personal information they share on social networks and elsewhere and in doing so are undermining their future privacy. They should become aware of the extent to which they're sharing parts of themselves that one day they may wish they had kept private.

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The growing popularity and emergence of various social networks puts students today in a delicate situation. On one hand they are encouraged to share more and more information and on the other hand they are not aware of all the sides accessing their information, apart from their friends. New economic settings i.e. marketing can be seen in companies accessing and using all the data people freely offer them by letting various applications access their profile data. Usually unaware of the fact for what purpose is their data being used free of charge.

Young people face a major privacy challenge with respect to information they post about themselves, let alone what other people post about them or what third parties collect about them. And even for those who are aware of the choices, keeping track of privacy settings can be difficult. Therefore, mostly from practical point of view they are more likely to ignore it. This generation is giving up its privacy, not only because of the social networks, but because they are happily answering questions from the corporate world about their private lives [3].

When discussing privacy and responsible behavior in information society one needs to emphasize the necessity of incorporating information and media literacy in educational process in order to educate youth how to responsibly and successfully act in the information universe. We can try to protect individuals but with the growing number of problems it is much more efficient to educate them how to recognize potential dangers of digital environment. There is a lot of research on incorporating filters to protect our youth but the question that then arises is can we succeed in our intentions or would it be much better and wiser to educate students how to protect themselves and act in their digital life.

The purpose of research presented in this paper was to measure and determine privacy and security meter of our students using Internet with special focus on social networking and web 2.0 technologies. Our goal was to research whether students were educated during their previous levels of education on what are the important requirements to protect themselves in digital environment.

## II. RESEARCHING PRIVACY AWARENESS

Significant amount of literature deals with the technical aspects of Internet security and cyber crime but we know very little about ordinary users' Internet security knowledge and their use of detection tools and prevention. There are many research approaches in USA directed to this area, in one of them [4] 87% of respondents (N=378) reported they had anti-virus program but only 52% had updated it in the last week and 44% did not understand how firewall works. The question about how to advance the study literature, which is one of the main focuses in this research, has the answer in examining the knowledge about Internet security and utilization on prevention and detection tools.

Downs et. al. [5] present valuable results focusing on testing whether factors related to social inequality, general computer usage, or perceptions of the social consequences of the Internet can help explain peoples use of security tools and their knowledge about Internet threats. Only 23,4% of the respondents (N=437, random sample of Chicago residents) strongly agreed that they feel confident using file encryption software to protect their information and 22% of those who had children (N=260) reported using some type of parental control software on their computers. Implementing Internet security may require educational efforts about specific and proper procedures related to difference in knowledge and utilization of security between younger and older respondents which can be explained by cultural and other perspectives.

Recently, explosion of popularity in social networking sites such as Facebook, MySpace and Twitter have presented Internet security experts with a whole new set of user-focused threats. There are two different dimensions of social networking: *use frequency* (how often people use social networking sites) and *amount* (how much time people spend on social networks). It was found [6] that college students tend to use social networking sites more often as they are younger, use the Internet more for interpersonal utilities, have fewer privacy concerns and perspective social networking web sites as easy to use. On the other hand, college students spend more time on social networking sites as they have more Internet experience and they use the Internet more for interpersonal utility and escape. Also very interesting, Cha describes that younger college students use social networking sites more often but do not necessarily spend more time using them. The age factor has the second strongest impact on frequency following the interpersonal utility motive. Furthermore, students feel free to give their personal information to join social networks on the Internet even though posting personal information has consequences.

Today we have organizational and software procedures that control the exchange of interpersonal information in social networking sites, text messaging, instant messenger programs, online role-playing games, bulletin boards and online education. Social networking sites create a central repository of personal information collecting data about people through their content space and new type of communication behavior which emerges among students as they explore their identities, experiment with behavioral norms and build friendships. There are unclear boundaries between private and public social networking space. Researches on bloggers [7] suggest that there is disconnect between the way users say they feel about the privacy settings of their blogs and how they react once they experience unanticipated consequences from a breach of privacy. In an exploratory survey [8] there were no clear privacy attitudes related to the students' use of Facebook. The only significant finding discovered was a strong disagreement with the

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statement: “everybody should know everything about everyone else.” Students wanted to keep information private but did not seem to realize that Facebook is a public space and parents, future employers or university officials can also read journal entries.

Privacy can be viewed from many different perspectives including political policies, the right of citizens and protection for consumers. Today privacy isn't just about hiding things, it's about self-possession, autonomy and integrity. Students (and other users) have to be aware who collect what information and how it is going to be used.

### III. METHODOLOGY

The survey was conducted in December of 2010 where a total of 397 students from the Faculty of Humanities and Social Sciences (FHSS) at the University of Zagreb and Accredited College of Business and Management "Baltazar Adam Krčelić" (ACBM) responded to an online survey. The overall design of questions and methodological approach was based on the recent OCLC study [9].

There were 131 respondents (33%) from the Faculty of Humanities and Social Sciences (FHSS), and 296 students (67%) that attend the Accredited College of Business and Management "Adam Baltazar Krčelić (ACBM). The FHSS sample also showed that the department represented with the highest number of respondents was Department of Information Sciences with 103 students (79%).

### IV. RESULTS AND DISCUSSION

The results are presented in three main parts corresponding to the areas surveyed: access to and the use of online services, student privacy inside their chosen social network, and their sense of privacy inside their academic environment. Graphical representations are given where appropriate.

#### A. Students and online services

To see whether students have the access to online environments, their situation regarding Internet access was examined. The results showed that vast majority of students have Internet access from their homes, with 97% of the respondents giving a positive answer.

Next question examined the types of online services students participate in their everyday Internet use. When looking at the services that the students use on a daily basis (Fig. 1.) we can see that the most commonly used services are e-mail (79%), social networks (78%), browsing videos and pictures (66%), IM/chat (64%) and the use of wikis (46%).

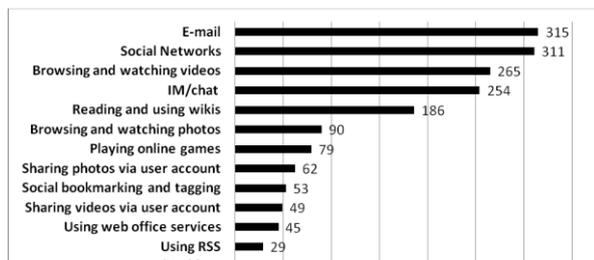


Figure 1. Most common online activities – answers *daily* and *often* combined

Compared to the previous study from the authors [10] there is a notable increase in the use of social networks, which have practically leveled with the use of e-mail. There were also some noticeable differences between the students. The FHSS students tend to use e-mail more (92%) than the ACBM students (73%). Also, they are more geared towards using wikis (73%) compared to the ACBM students (34%).

To examine the specific use of popular social software, the question on the usage of popular services worldwide was included in the survey. The popularity of Facebook worldwide was also confirmed locally, showing that 90% of the students have a Facebook account (Fig 2.). Other popular services include YouTube (60%), Skype (35%) and IM services (32%).

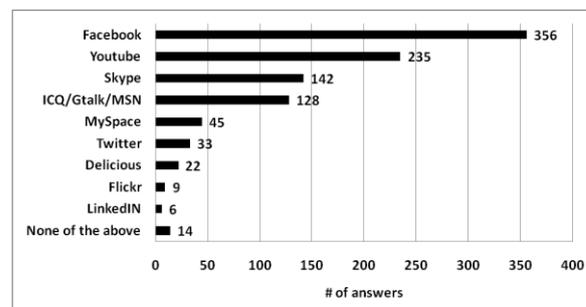


Figure 2. On which of the following social networks/services do you own an account?

#### B. Social networks and privacy

Previously presented results showed that social networks, and specially Facebook are very popular among

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students, and that they use them very often. The next part tried to examine their sense of privacy inside their social network, to see what personal information do students share, and what do they find private. The first question (Fig. 3) showed that over 90% of students adjusted privacy settings inside their social network, showing the awareness of protecting private data, such as pictures or videos.

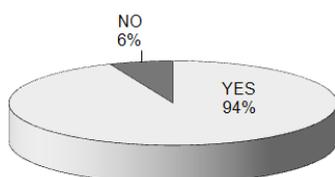


Figure 3. Did you adjust privacy settings inside your social network?

Next question examined the type of information students shared with others inside their social network. The results (Fig. 4) showed that information most commonly shared is their name (83%), date of birth (55%), city (51%) and e-mail (41%). The information least shared with others were phone number (2%), full address (3%), current location (9%) and private videos (11%).

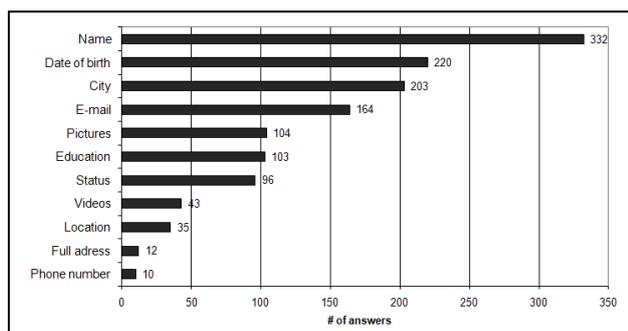


Figure 4. Which of the following have you ever shared with others on your social network?

The results showed significant differences between samples in sharing e-mail and pictures with other social network members. The e-mail address was less shared by students at the FHSS (28% compared to 51%), and the same pattern was discovered when analyzing picture sharing (19% compared to 31%). These results show that the students from FHSS were keener in protecting their personal e-mail and pictures from other users.

The next question asked the students to rate the importance of privacy of information they share through their social network. The results (Fig. 5) showed that the most important information is their phone number (86%), full address (83%), personal pictures (74%) and personal videos (69%).

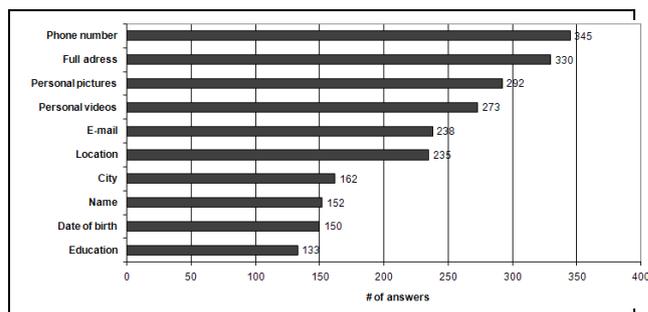


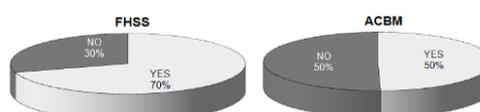
Figure 5. How important to you is the privacy of following information? Answers *very important* and *important* combined.

Again, the samples showed significant differences. The biggest difference was in the privacy of full address and phone number. Although the privacy of that information was highly regarded in both samples, the detailed analysis showed that there is a significant portion of ACBM students that consider the privacy of that information not that important. Around 10% of ACBM students (roughly 30 respondents) think that protecting the information of your phone number or your home address isn't that important. On the other hand, there were no FHSS respondents giving that answer. Also, when comparing samples there was a distinct pattern that showed that the FHSS students are more aware of the importance of keeping their personal information private.

### C. Privacy in the academic environment

The last part of the survey examined how students perceive the role of teachers inside their social network and the privacy of their professional data, such as test scores or courses taken.

The first question examined the perceived role of teachers inside their social network. Students were asked whether they think their teachers should have an official account on their social network, and the opinions were divided with around 50% of the students were both for and against. When asked, in case their teacher was a member of their social network, would they adjust privacy settings in a way that would deny her/him the access their private data (i.e. photos, commentaries), the sample was again divided at around 50% choosing each answer. However, detailed analysis showed that the FHSS students are much more likely to deny access, with 70% of respondents choosing that answer (Fig. 6)



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Figure 6. If your teacher was a member of your social network, would you adjust your privacy settings in a way that would deny her/him the access to your private data (i.e. photos)?

Since both FHSS and ACBM have an integrated e-learning system which is used in classes, the next question examined how many students are using the e-learning system provided by their institution. Results showed that practically all students (98%) are using the systems provided. That result is logical, since the educational process in both institutions relies on the use of their e-learning system and forces the students to enroll.

To examine the perceived privacy of information in their academic environment, students were asked to rate the importance of certain information on a Lykert scale.

The results (Fig. 7) showed that the information they would like to keep private are test scores (72%), teacher comments (62%), submitted assignments (65%) and achieved grades (62%). The information about books borrowed and subject searched in the library catalogue were not perceived that important.

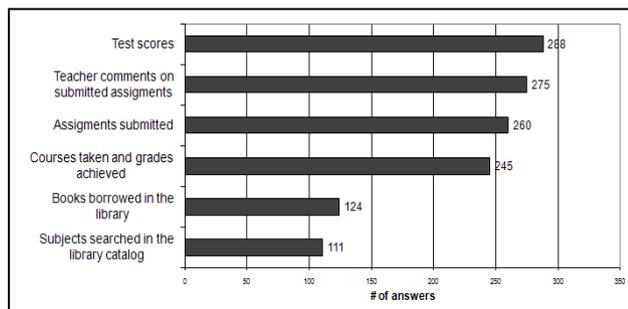


Figure 7. How important to you is the privacy of following information? Answers *very important* and *important* combined

Again, the samples showed differences, with FHSS students considering some of the data more private, such as borrowed books (41% compared to 27%), subjects searched in the library catalogue (38% compared to 23%) and teacher comments (82% compared 64%).

## V. CONCLUSION

In this study the students' attitude towards information privacy was explored both in their private online environment, as well as in their academic environment. The survey showed that the emerging services such as social networks are heavily used by the students, but their sense of privacy in online environments fluctuates between samples. The results showed significant differences between the samples, with FHSS students more aware of the importance of protecting their private data inside their social network, as well as inside their educational environment.

That pattern could be explained by taking into consideration the number of students from the Department of Information Sciences in the FHSS sample. It can be presumed that information science students are more aware of concerns and issues related to privacy in online environments through their education, so they are keener in protecting their private information.

The study confirmed the original assumption that the lack of formal guidance through student education resulted in significant differences between the students. The results are serving as evidence that privacy should be a crucial part of the educational process prior to the higher education level. If we educate our students to be responsible citizens of 21st century they will be able to proceed with the development of the knowledge society.

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