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ScienceDirect

Procedia - Social and Behavioral Sciences 141 (2014) 1228 – 1233

Procedia
Social and Behavioral Sciences

WCLTA 2013

The Use and Perception of ICT among Educators: the Italian Case

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Abstract

When observing the impact of ICT on education, it's possible to distinguish two main areas of interest: how the ICTs are integrated in the educational strategies by teachers and students and how they are used by the students in activities that interfere with the educational process. The purpose of this study was to investigate the school-related uses, perceptions and representations of ICTs among primary and secondary school educators. More specifically, the research focused on the differences in ICT usage among the educators and their opinions on how ICTs are employed by the students, and what is the diffusion of problems connected with ICT misuse among their students. A sample of 796 educators from all over Italy answered to an online questionnaire composed of three parts, assessing their ICT skills, their perception of ICT use in school and their perception of the risks connected with ICT use. Four patterns of ICT use are found among the educators, going from highly skilled users to insecure users. These groups differ in their propensity to using ICTs in their teaching. On the whole, the sample highlighted a request for additional training on ICT use, and a wide diffusion of problems such as Internet addiction or cyberbullying in all the school levels, primary, middle and upper-school.

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Selection and peer-review under responsibility of the Organizing Committee of WCLTA 2013.

Keywords: ICT, education, teacher's perception, cyberbullying, primary school, secondary school;

1. Introduction

The ICT diffusion among youth and adults all over the world is still a growing phenomenon, [1], and it is not surprising that it is also leading to their integration within the educational system. This means a change in the equipment that schools should provide, but also in the teaching strategies and in the technology-related problems that teachers have to deal with [2]. The role of teachers in the digital education of youth is very important [3], as they can teach students the necessary skills, but also online safety and netiquette [4] In order to offer the necessary

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training to the teachers it is critical to gather knowledge on their skills and their evaluations of the available technologies.

The European Union has shown great interest toward the improvement of innovation and digital skills in schools. A recent example is the launch in September 2013 of the “Opening up Education” website as part of a program that should help reduce problems, “which are hampering schools and universities from delivering high quality education and the digital skills which 90% of jobs will require by 2020” [5]. According to a recent survey [6] computer numbers in European schools have doubled since 2006, and most schools are now “connected”, but use of ICTs and digital skill levels are very uneven. However, providing the technology is not enough to ensure the increase of digital education. In fact, many other factors impact the ability to successfully use ICT in the classroom. The abovementioned 2013 European Commission research showed that the level of equipment and the level of computer use did not correlate: some countries with the highest use of computer equipment were the ones with the lowest scores on equipment provisions. Also, no overall relationship between high levels of ICT provision and student and teacher confidence, use and attitudes was found; while the teacher’s confidence and the practical support received had a stronger impact. Among the factors influencing the fruitful integration of ICT in education are: the attitude towards the use of ICTs in education [7], the teachers’ level of confidence in ICT use, the amount of technical support or training that combines ICT and pedagogical aspects [8], or teachers’ constructivist *vs.* traditional educational beliefs [9].

Another aspect to be taken into account to facilitate the introduction of ICTs into schools is the rise of problems such as cyberbullying [10] and Internet or mobile phone misuse among the students. Teachers need to be prepared on the management of such problems, and research has begun to investigate their propensity to do so. A 2010 research study [11] interviewing a sample of pre-service teachers found that the respondents were very concerned with the lack of preparation on their ability to recognize and manage cyberbullying. Moreover, the teachers evaluated the role that schools could and should play in the prevention of problems connected with ICTs as extremely relevant. But opinions differentiated, and a previous study on the same subject found the teachers less sure that it should be a school responsibility to deal with the student’s uses and misuses of Internet and mobile phones [12].

The aim of this research was to investigate the overall teachers’ modality of ICT use; their perception and representation of the students’ ICT use and the actual problems related to ICTs encountered among the students.

2. Methods

2.1. Participants and Procedure

Data was collected via an anonymous online questionnaire. The sample covered all of Italy, including for each region at least one school from the county seat and one from a minor centre, totalling 113 different cities. An email was sent to the schools of the sample to explain the reason for the research and to provide the link to the questionnaire. This was followed by a telephone call. A total of 796 online questionnaires were fully completed. The sample is composed of 82% females and 18% males, ages ranging from 22 to 78. The mean age is 48, and 50% of the teachers were between 43 and 55. This data is in line with the overall sex and age distribution of primary and secondary school teachers in Italy [13]. Only 25% of the respondents have been working for less than 13 years, and 50% have been teaching for 23 or more years. 40% of the sample works in primary schools, 40% in middle schools and 20% in high schools. The majority of the respondents teach either human science subjects (38%) or mathematic-scientific subjects (28.5%).

2.2. Instrument

The questionnaire was divided into four main sections, each focalizing on a different aspect: 1) the ICT skills of the teacher; 2) the teachers’ perception and representation of the impact of ICTs in the school; 3) the main risks that students encounter when using Internet and mobile phones and 4) vital data. Of the 45 items that composed the questionnaire only one was an open-ended question, while the remaining were close-ended questions (single-answer or multiple choice) or Likert scales.

3. Results and Discussion

3.1. ICT Skills among teachers

Most of the teachers (50.3%), rate their ICT skills as “good” or “excellent”, a good 36.5% evaluate them as “discreet” and only 13.2% “scarce” or “just sufficient”. This auto-evaluation strongly correlates (Kendall’s tau-b = .505; $p < .000$) with the number of online functions (email, search, news, home banking, image editing, blog or website management) used by the respondents. The use of IM and SNS is quite widespread (58.8% and 47.1% respectively) while professional social networking (LinkedIn, etc.) is not so common (18.3%). Among the teachers that own a SNS or IM account (74% or the whole sample), only 24.7% accept their students’ contact request and even fewer (18.2%) use them to communicate with the students. Although teachers generally feel secure while using the Internet (56%) and a vast majority already attended training courses on ICT use in education (80%), the request for further training is very high (82.1%), especially on didactics use of ICT (59.2%) and, in a smaller proportion, on the risks of Internet for the youth (12.2%).

3.2. ICT and education help or pain?

ICT are used during the lesson “often” and “always” by 46.2% of the sample, while 38.2% use them “from time to time” and 15.6% “rarely” and “never”.

Evaluating on a Likert scale going from 1 (not at all) to 10 (completely) their level of agreement with a list of statements, teachers agreed more with the following: kids should receive specific training on the use of IM, SNS, online safety and privacy ($M=8.8$; $DS=1.8$); kids should surf the Internet under adult supervision ($M=7.9$; $DS=2.3$); parents have no clue of what their children do online ($M=7.5$; $DS=2.1$); Internet has made my work as a teacher easier ($M=7.3$; $DS=2.3$); although forbidden in school, mobile phones, iPods etc. often interfere with the lessons ($M=6.2$; $DS=3.1$). The sample disagreed with the following statement: I often feel unable to guide my students in the use of Internet ($M=4.4$; $DS=2.8$); it is responsibility of the family, not of the school, to teach the kids how to use Internet ($M=4.7$; $DS=2.5$); lately I have been giving my students homework that requires the use of Internet ($M=5$; $DS=2.6$).

Most of the sample (73.6%) thinks that the parents of their students are ICT users, but only 21% state that the ICTs are used by the families to communicate with the school. Teachers have discussed Internet safety quite often with their students (only 15.3% of them never touched the subject with the kids), while the case of parents asking for advice is less frequent (only 41.6% report having these kinds of conversations). The vast majority of the sample (93.6%) believes that the school, in collaboration with other agencies, should take action to inform students and teachers on themes such as cyberbullying. In fact, although 79.1% of the teachers have heard about cyberbullying episodes, only 39.4% think that they would be able to recognize a case of cyberbullying and an even smaller 21.2% believe that they would know how to deal with it.

3.3. Problematic ICT use among the students

For the majority of the teachers, the students spend “a lot” (46%) or “too much” (30.2%) time online, mainly to play games, use text messages and watch movies or listen to music. The 40.4% of the respondents affirm to have witnessed at least one case of excessive Internet use among their students (excessive use was defined as “use that creates problems in the daily life of the student, substantially modifying his/her habits and behavioural patterns, for example interfering with studying or sleep”), and 7% have encountered 4 or more cases. The cases are slightly more frequent among high school students, but the correlation between the number of cases and school level is very weak (Kendall’s tau c = .149; $p < .001$): in fact, cases of Internet excessive use are reported by 30% of primary school teachers, 43% of middle school teachers and 54% of high school teachers.

Of the sample, 50.1% have encountered problematic situations connected with the use of ICTs in their school. Occasional aggressions on SNS are reported by the largest number of teachers, while the less frequent category is the one of offline meetings with people met online. Using ICTs to plagiarize or find test responses is the behaviour adopted with the highest frequency by the students (Table 1).

Table 1. ICT related problems

How often did you encounter this behaviour?	Aggression on SNS	Plagiarism/copying	Diffusion of personal info	Online-ID theft	Sexting	Vision of violent/pornographic material	Promotion of health-damaging behaviours	Meeting offline of people met online
From 1 to 4 times	268	122	157	126	119	105	66	51
From 5 to 10 times	51	45	16	21	16	5	5	7
Over 10 times	20	56	3	5	8	5	5	4

3.4. Cluster analysis

Using Spss, a k-means cluster analysis has been run to group the teachers on the basis of their ICT use. The variables adopted were: ICT proficiency auto-evaluation, number of online functions used, level of SNS, IM, online forum and games use, level of use of ICT with didactic purpose, feeling of safeness while online. All of the variables significantly contributed to the definition of the groups, but the level of use of online functions and the reported feeling of safeness had the strongest impact. The solution that best fit the data allowed the creation of four different groups of users:

- *Average users*: 266 subjects evaluate their level of ICT proficiency as “good”, have a medium/high level of use of online functions, and a medium level of participation in online forums and games, SNS and IM. They use ICTs in school “sometimes”, and feel “safe” while surfing the web.
- *Strong users*: 177 subjects evaluate their level of ICT proficiency from “good” to “very good”, have a high level of use of online functions and a high level of participation in online forums and games, SNS and IM. The ICTs are used “often” in school. These teachers feel “quite safe” while surfing the net, with values slightly lower than those expressed by the average users.
- *Insecure users*: 141 subjects, they evaluate their skills as “discreet” or less, have a medium level of online functions’ use, and show medium to low participation in online forums, games SNS and IM. These teachers use ICTs at school “sometimes”, and feel “very unsafe” when surfing the net.
- *Overconfident users*: 208 subjects evaluating their skills as “discreet”, with a low level of use of the online functions, low participation in online forums and games, almost no use of SNS and IM. The ICTs are used in school “sometimes”, and they feel “quite safe” when surfing the net.

The four groups differ in their perception of ICT impact in the school environment (Table 2). While Internet is seen as a useful work resource by the average and intense users, the insecure and overconfident users do not agree as much with this statement, and accordingly have not been giving homework that requires its use, while average users and especially intense users did. Overconfident users more often think that the families should be in charge of the Internet educations of the kids, while the groups that least shares this opinion are intense and insecure users. Overconfident users are also those reporting a higher feeling of inadequacy in guiding their students in the use of the Internet, while the intense users are the most confident.

Table 2. Differences among the groups of Internet users

	Mean				χ^2 (p)	η
	Average users	Intense users	Insecure users	Overconfident Users		
Internet has made my work as a teacher	7.65	8.08	6.76	6.37	94.59	.297

easier						(.001)	
Lately I have been giving my students homework that requires the use of Internet	5.30	6.12	4.55	4.16	80.22	(.001)	.273
It is the responsibility of the family, not of the school, to teach the kids how to use Internet	4.76	4.37	3.99	5.46	62.96	(.001)	.208
I often feel unable to guide my students in the use of Internet	4.13	3.50	4.79	5.44	86.20	(.001)	.257

4. Conclusions

Overall, ICT diffusion among teachers seems quite widespread, but the level of integration with the educational practice is still too low. Consistent with previous research [14], teachers indicated a need for additional training on the didactic use of ICTs. The detection of teacher-student contacts via SNS and IM show the need for specific regulation [15], especially because the phenomenon will probably increase as their diffusion increases. Teachers' attitude towards ICTs in education is positive, but they recognize the risks connected with student's Internet use, and generally believe that the school should take action to help the students to be safe online. A large part of the sample report having encountered some students having problems connected with the use of ICTs, going from excessive Internet use to SNS aggression, to the adoption of risky behaviours in all levels of schools taken into consideration. This means that even primary school should seriously consider taking actions to help the kids develop a healthy relationship with ICTs. Teachers showed different patterns of user profiles, varying in degrees of proficiency and confidence, and the difference was reflected in their perception of ICTs in education. This data should be considered when planning the training of the educators.

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