Promoting Internet Safety in Greek Primary Schools: the Teacher's Role

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ABSTRACT
The introduction of the Internet at schools has raised new pedagogical challenges facing educators trying to ensure children's awareness of the possible dangers when surfing the Web. This article aims to investigate how teachers evaluate the possible dangers that students might face when surfing the Net for various educational or interpersonal purposes, and the teachers' technological skills in terms of their ability to promote Internet safety awareness when supervising elementary students surfing the Web within the school premises. Using questionnaire surveys from 179 teachers in Greece, the present data showed that teachers who tended to incorporate technology in their every-day personal or professional habits were found to be more effective in promoting Internet safety issues in class such as discussions with students or teaching children moral behaviours when navigating the Net than their less technology enthusiastic colleagues. The current work strongly recommends the importance of a more systematic promotion of Internet safety awareness in primary schools as most Greek teachers seem to luck the basic pedagogical skills for exploring Cyberspace alongside their students, and giving worldly guidance and wisdom screen-by-screen.

Keywords
Teachers, Internet safety issues, elementary students

Introduction

Nowadays, one of the main goals of almost every European country is to prepare children of all ages for an increasing complex and technological world by improving the educational quality and cognitive standards of the pupils in addition to support teachers in their everyday classroom (Anastasiades, Vitalaki & Gertzakis, 2008; Chen, 2008; Reynolds, Treharne & Tripp, 2003; Plowman & Stephen, 2003). Therefore, training children on the use of the Internet as a tool to collect information or fact finding in elementary schools has become an important and challenging issue for teachers as disorientation by misleading or inappropriate information on the Web is one of the major problems that novice pupils tend to have while navigating the Internet (Dias, Gomes, & Correia, 1999). Thus, this paper focuses on the impact of the integration of computers and the Internet at school and investigates the level of the teachers' capacity to provide safe practices and wise pedagogical guidance to elementary students when they have the opportunity to surf the Internet for various purposes (e.g. educational, recreational, interpersonal, e.t.c.) in less regulated contexts inside or outside the school boundaries.

The first part of the article makes a brief literature review of various findings on the teachers' attitudes towards the penetration of the Internet at schools and their challenging perspective to promote Internet safety policies with students in class. In the next sections, we provide the reader with various information about present attempt such as, a general description of the study, the methodology used, the hypotheses of the research as well as the presentation of the sample and the data analysis. Finally, a brief description of the research variables is also included. Moreover, the following part elaborates on the results of the study. On the basis of the discussion of the results we present conclusions about the significance of the teachers' role in view of safe Internet use by elementary students and the article finishes with the researchers' proposals for further research.

Literature Review

Promoting the Internet safety awareness to elementary students: Teachers' Attitudes

As to, whether the Internet has a positive influence in children's lives is mostly sketchy and ambiguous, concerns have emerged from both parents and educators for the safety of students unsupervised when surfing the Web for either educational or recreational purposes (Valcke, Schellens, Van Keerand & Gerarts, 2007), as children may also be exposed to inappropriate material such as pornography, gambling games, purchases, improper information about strangers, etc. (Anastasiades et al., 2008; Vallentine & Holloway, 2001) that most adults would deprecate against it.

As schools both in England and internationally are considered to be an important factor to counter the negative side-effects of Internet use by students (Valcke, Schellens, Van Keerand, Gerarts, 2007; Wishart, 2004), most of these initiatives were concerned with technological solutions, such as filtering software (Mitchell, Finkelhor & Wolak, 2001; Hunter, 2000) that were appropriate for a single computer at home or in the classroom rather than playing a central role in developing safe Internet behaviour in their students (Valcke, et al., 2007).

Regarding the impact of school based Internet safety interventions in developing pupils' safety attitudes when surfing the Web for various activities, Valcke, et al., (2007) concluded that there are limited evaluative studies focusing on such innovative ventures within the school context. For example, more contemporary implementation of intervention theories in the classroom deal with online role play activities in order to motivate and enable children to discuss and learn about internet safety by increasing pupils' involvement in existing online activities (Wishart & Morris, 2007; Ingram, Hathorn, and Evans, 2000; Harasim, Starr, Teles, & Turoff, 1995). Particularly, Wishart et al.'s (2007) intervention programme for teaching Internet awareness to 9–12 year old students in three UK schools found that 34% of the pupils claimed that they had learned about Internet safety procedures and not to hand over personal details in chat rooms and 27% learned not to trust what other users say. Despite the validity of the implementation of such Internet safety intervention in class, the "newness" of these novice attempts usually meets potential obstacles (e.g. technical issues, the amount of preparation of the pupils carried out by the teacher in charge may become a crucial factor to the success of the online role play, etc.) (Wishart et al., 2007), which may consequently lead the programme to a deadlock (Reynolds et al., 2003).

Training elementary students to use digital devices to collect information for various educational or interpersonal purposes is a challenging perspective for teachers who lack the skills for using such technological and pedagogical innovations in class (see Chen, 2008; Todman and Day, 2006; Reynolds et al., 2003; Chou, 2003; Leu, 2000) than those who are more willing to keep up with the fast development of advanced technologies and to try out innovative methods in class (Albirini, 2006; Migliorino & Maiden, 2004, Liaw, 2002). Similarly, additional studies indicated that teachers often express anxiety symptoms when they have to be involved with their students in various digital educational or interpersonal activities (Al-Fudail & Mellar, 2008; Weil & Rosen, 1997; Brod, 1984), meaning that these online education appliances may often be ignored by them (Hwang, Tsai, Tsai & Tseng, 2008; Todman & Day, 2006; Chou, 2003; Namlu & Ceyhan, 2003).

Regarding the possibility of students being exposed to various dangers through the Web (Anastasiades et al., 2008), a number of official initiatives have been launched that were designed to help educators about how to protect children when they go online (e.g. National Grid for Learning, 2002; Media Awareness Network, 2001; Children's Charities' Coalition for Internet Safety, 2001, e.t.c., see more in Wishart & Morris, 2007 and Valcke, et al., 2007). Though, acknowledging the validity of such Internet safety instructional initiatives for educators within the school context, someone might query the effectiveness of such instructions as they do not yet guarantee the amplification of teachers' skilfulness and self-esteem for cultivating students' critical judgement when they are triggered off by doubtable information through the Net in less controlled settings (Valcke, et al., 2007; Berson, 2002). Finally, other researchers agree that despite the various school-based interventions such as discussions between students and teachers about Internet safety matters (Berson, 2002) role play etc., although innovative, are considered to be "new" and as yet less effective to expect a direct impact on pupils' behavioural level of safe Internet use (Wishart & Morris, 2007; Valcke, et al., 2007; Wishart, 2004).

In sum, whilst there is only a limited amount of evaluative studies focusing on teachers' involvement with students in promoting fundamental Internet awareness in or out of the school classroom, the literature itself highlights the vital role of schools in promoting and ensuring safety measures and pedagogical guidance of both pupils and parents in crucial Internet matters. Moreover, the need for providing teachers with higher technological competence (Chen, 2008; Al-Fudail & Mellar, 2008; Todman & Day, 2006; Reynolds et al., 2003; Chou, 2003; Leu, 2000) and with innovative pedagogical guidance for Internet safety issues seems immense but it is only part of the story (Wishart & Morris, 2007; Valcke, et al., 2007; Wishart, 2004). To the writers' point of view, effective involvement of teachers is mostly associated with positive attitudes and approaches to software, their flexibility to take an approach that is relative to students' developmental needs, beliefs and cognitive standards, to seek, to inspire, to support and facilitate children's critical thinking while setting the scene for an Internet safety pedagogical environment in class (Wishart & Morris, 2007; Valcke, et al., 2007; Albirini, 2006; Migliorino & Maiden, 2004; Wishart, 2004; Liaw, 2002).

The Research

General Description of the Research

Recognizing the importance of teachers' involvement in children's safe and effective use of the Internet in and out of the school premises, this article focuses on the relations between primary teachers' computer/Internet experience, and their effectiveness and attitudes towards regarding students' safety when they surf the Web for various educational or interpersonal reasons in and out of the school boundaries. Particularly, the main objectives of this research were to investigate: a) teachers' attitudes towards their pupils when they have an option to use the Internet at school, b) to what extent can teachers identify risky behaviours during Internet use by students in school, c) if teachers take responsibility for promoting Internet safety issues in class and, d) if teachers currently get enlightenment on promoting pupils' Internet Safety behaviour.

Finally, the significance of this study lies in pointing to the fundamental need of teachers to be prepared for much more than book literacy in their classrooms as they are expected to be both efficient users of the Internet technology and guides of primary students in developing adequate safe Internet skills. Furthermore, the present research emphasizes the need for training or giving directions to teachers in safety Internet issues that build on a more safe engagement of pupils in primary schools.

Methodology and hypotheses

For the needs of this study elementary students responded to a questionnaire in order to identify: a) teachers' efficacy to use computers and the Internet, b) their attitudes towards incorporating the Internet as an educational and recreational tool in class, c) which teachers consider themselves capable enough to teach Internet Safety, in what ways, with which age groups and in which locations (urban or rural schools), d) how teachers evaluate the current Internet Safety issues for students, which are emerging and the overall importance schools assign to the topic, e) what Internet safety actions usually take place in class, and finally f) where teachers currently get advice from on Internet Safety and how they respond to that advice. More specifically, the assumptions tested here are:

a) Teachers' technological abilities affect significantly their level of confidence when supervising children on the Internet as well as when both (students and teachers) are engaged in various learning activities too.
b) Higher technological profiles can also lead to a greater teacher evaluation of the Internet dangers and their serious effects on minors' psycho-physical development.
c) Teachers' technological ability is also a serious factor of keeping students away from the negative content found on the Web by promoting Internet safety behaviours in class.
d) The effectiveness of the teachers to promote Internet safety issues in class is also connected to the type of guidance they have already received.

Sample and Research Material

The research was carried out among 36 elementary schools, which 26 were urban and 10 rural in the island of Crete during the 2005–2006 academic year with the participation of 179 teachers, 55 (30.7%) male and 124 (69.4%) female in total. The school principles of the elementary schools recruited their teaching personnel from first to sixth grade to participate in the present research. Their age ranged from 25 years to 45 years old. The whole sample of teachers had received the basic university qualification on how to manipulate computers and Internet. The selected sample of elementary teachers represents all geographic areas of Crete, and also different sized school populations, from big cities to small towns and villages.

Procedure and Research Tools

To recruit teachers for this study, the researchers first contacted the principal of the school. After getting permission from the principal and teachers of each school, the survey questionnaire was delivered to teachers.

To measure elementary teachers' attitudes and ability to promote Internet safety issues into classroom pedagogy, five tables are formed on the basis of their answers: a) **Table 1** labelled *Primary Teachers' ability to navigate the Internet* was based *on* multiple-choice questions that detected the participants' level of technological profile (e.g. teachers' experience with computers and the Internet and their access to technology). **Table 2** labelled *Ways of being educated in computer functions* asked teachers how they obtained further information in technical functions. **Table 3** labelled *Type of Internet Activity* questioned the type of computer activities of the teachers in or out of the classroom, b) **Table 4** labelled *Emerging Internet Thoughts and Expectations* questioned the attitudes of the teachers toward their students' opportunity to use the Internet for increasing their cognitive skills or interpersonal experiences in school settings. Finally, **Table 5**, labelled *Teachers' Ability to Promote Internet Safety Issues according to their Technological Profile* measures teachers' effectiveness to conduct primary students morally when the latter surf the Internet inside school. All Likert-type questions are coded 5 or 4 if the teacher's answer is *more or less positive*, 3 and 2 for *negative or strong negative answer* and 1 for *not knowing what to answer*.

Data Analysis

The electronic data of the questionnaires were blueprinted and a content analysis of the text was conducted**.** Data analysis was performed right after the questionnaires were filled in by the teachers. All statistical analysis of the data was performed using SPSS statistical package (Howitt & Cramer, 2004). For questions collecting quantitative data, frequencies of the responses to each question were calculated and cross-tabulations of the results were made. Where appropriate the x^2 statistic was used to test for statistically significant associations within the cross-tabulation. Finally, where correlation between variables was calculated Spearman's rank order correlation coefficient was preferred. Additionally, a binary logistic regression was conducted to test the reliability of the model in predicting the self-perceived teacher's knowledge about the dangers of the Internet and their evaluation of the incorporation of the Internet usage in their classroom pedagogy regarding their tendency to promote Internet safety issues with their students. For explaining the teacher's knowledge about the Internet dangers a logistic regression model has been obtained after one iteration of backward method as proposed by Field (2005). This model explains 70.3% of the data and with a signification of 5%, the Hosmer and Lemeshow test shows that the model fits the sample data well. The results are reported in the following sections.

Results

Concerning the teachers' level of technological profile the present study showed that almost half of the sample had the basic grasp to navigate the Internet (30.2% of the teachers were positive and 16.8% very positive) comparatively to the rest of the participants who were more skeptical about their Internet familiarity (38% of the teachers were less positive while 13.4% answered negatively) (Table 1).

Table 1: Primary Teachers' ability to use the Internet

Do you use the Internet?	Frequency	%
More positive	30	16.8
Positive	54	30.2
Less Positive	68	38.0
Negative	24	13.4
I do not answer	3	1.7
TOTAL	**179**	**100.0**

In relation to the question that detected where or how the teachers got their basic skills to use computers, almost half of the sample stated "in teacher training programmes" while 12.8% stated in "private institutes". However, it is worth mentioning that a 25.7% of the remaining sample claimed that they were "self-learners" while the rest of the participants did not give an answer (Table 2).

Finally, it was found that using the Net for preparing schoolwork for pupils (67%) and checking their e-mail (66.7%) were the two most favoured computer activities for both sexes of elementary teachers. Less than half of the teachers (39.1%) used the Internet for education and 26.3% to search for various information (Table 3).

Table 2: Ways of being educated in computer functions

Where or how did you get the basic skills on computer functions?	Frequency	%
In a private institute	23	12.8
I am a self-learner	46	25.7
In teacher training programs	75	41.9
I do not answer	35	19. 6
TOTAL	179	**100. 0**

Table 3: Type of Internet Activity

Type of activity	Internet access (%)		
	Yes	No	All (%)
Mail	66.5	29.1	95.6
Education	39.1	56.4	95.5
Searching for various information	26.3	69.3	95.6
Preparing schoolwork for pupils	67.0	27.4	94.4

Urban primary teachers more than rural ones (x^2 =9,600, df=2, p= .008), were found more willing to conduct pupils in technology matters. Though, pupils' option to use the Internet for education or recreation inside the school premises, seemed a less favoured idea by both urban (53%) and rural teachers (63.4%). Apparently, using the Internet in both urban and rural schools, was an activity mainly related to the pupil's personal choice and less for school requirements and generally for educational purposes. A closer look of Figure 1 shows that the Internet was rarely thoroughly involved in its exploitation in the classroom but mainly during the school breaks, probably consequently leading children to an accidental access to inappropriate material.
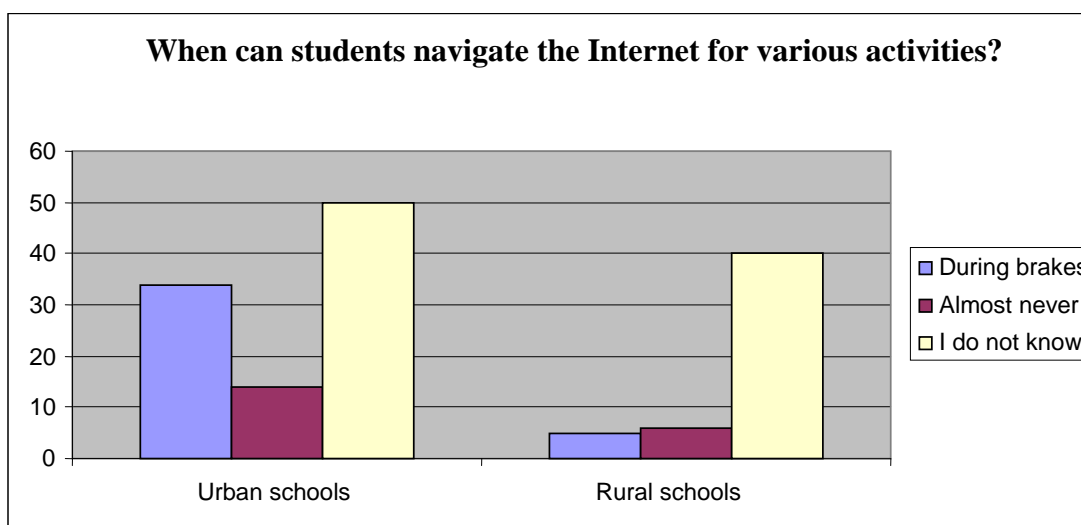

Figure 1: Pupils' opportunity to navigate the Internet at school

In response to the questions regarding whether pupils can widen their cognitive skills through the Internet usage, most teachers applauded the idea (90.5%). Though, according to the binary logistic regression to predict teachers' opinion about the Internet related to the reasons that students should navigate the Web as well as the teachers' efficacy to discuss the Internet dangers in class, it was found that: a) the technologically skilled sample considered the Internet a useful educational tool for pupils (R^2 =0.79*) and, b) they tended to encourage pupils almost twice more to use the Internet for various educational and recreational reasons (R^2 =0.63*, Exp. (B)= 1.88) than their colleagues with less technical skills. Additionally, teachers with higher technological backgrounds seemed to know better the Internet hazards and considered themselves more efficient to promote Internet safety issues in class (R^2 =1.36***). Finally, the patterns in these relationships were similar for male and female educators with higher level of technological profiles. The present results are analytically presented in Table 4.

Table 4: Emerging Internet Thoughts and Expectations

Teachers' Thoughts and Expectations when students navigate the Internet in class				
Included	95% CI for exp b			
	β (SE)	Lower	Exp. (B)	Upper
Constant	-5.848 (1.25)		0.00	
The Internet offers new educational opportunities for primary students	0.79* (.32)	1.17	2.19	4.12
The Internet promotes students' met odical and scientific way of thinking	0.63* (.27)	1.12	1.88	3.16
Teachers' ability to discuss Internet safety issues with primary students	1.36*** (.30)	2.17	3.90	7.01
R^2 = 0,22 (Hosmer & Lemeshow), 0,26 (Cox & Snell), 0,35 (Nagelkerke), Model χ^2 (1) = 52,41 p< 0,001, * *p*<0,05, ** *p*<0,01, ** *p*<0,001				

According to Table 5, after correlating teachers' technological level and their effectiveness to promote Internet safety issues with pupils in class, the present data revealed that teachers with higher technological abilities were also better informed about the possible risks that elementary pupils might face on the Web (r_s =0.27**). Also, these teachers seemed more capable of controlling pupils' unsafe behaviours when exploring the Web (r_s =0.36**) and they avoided less to make discussions with students about the possible Internet risks rather than their low technically skilled colleagues (r_s= -0.16*). Moreover, teachers with higher technological level tended to inform pupils regularly about the possible negative Internet effects on their physical and psycho-social development (r_s= 0.21**) as they knew the way compared to the teachers with lower technological profiles (r_s= -0.28**) who did not know how to do so. Finally, an additional x^2 statistical analysis between the two sexes of teachers revealed that male teachers tended to initiate Internet safety measures in class more than their female associates (*p*=. 018).

Table 5: Teachers' Ability to Promote Internet Safety issues according their Technological Profile

Teachers' attitudes and perceptions	Spearman's Rho (r_s) Correlations
Teachers are aware of the possible dangers when students navigate the Web	0.27**
Teachers are qualified enough to promote Internet Safety behaviours in class	0.36**
Teachers make regular discussions with students about the possible Internet risks and the negative Internet effects on their physical and psycho-social development	0.21**
Teachers usually feel discomfort when discussing Internet hazards with pupils but it is their duty to do so.	-0.06
It is the school's principle to discuss with pupils Internet hazards	0.14
Teachers wish they could discuss with pupils about Internet hazards but they do not know the way	-0.28**
Teachers absolutely trust their students when they surf the Net without their personal guidance.	-0.09
When pupils surf the Net at school, they are always guided by a teacher.	0.07
Teachers do not discuss with students about the Internet dangers in class	-0.16*
Teachers avoid to discuss with students about the Internet dangers even if they are asked	0.12
Promoting moral behaviors when children surf the Net is the parents' and not the teachers' obligation.	0.04

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

In response to the question if teachers are properly qualified to promote Internet Safety behaviours in class, a 54% gave a "Little" statement and 23% of the teachers were negative. Also, a 17% of the sample stated "some" while only 6% gave an absolute positive answer (Figure 2).
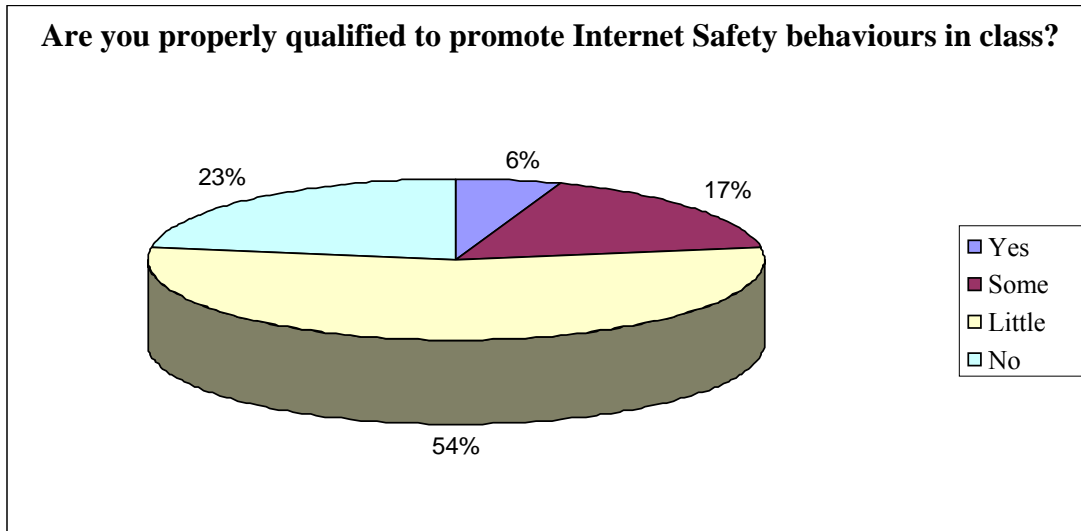
Are you properly qualified to promote Internet Safety behaviours in class?

23%   6%   17%

54%

Yes
Some
Little
No

Figure 2: Are you properly qualified to promote Internet Safety behaviours in class

Finally, it was interesting to find that 39.1% of the teachers justified their avoidance of promoting Internet Safety issues with students due to the poor technologically resourced schools while a 58.7% admitted that they simply did not find any interest in incorporating technological practices along with moral behaviour development in their classroom pedagogy. Moreover, most teachers (86%) agreed that it is the States' responsibility to provide teachers with the appropriate advice and encouragement to integrate the Internet into successful pedagogical and safe practices at school (Figure 3).
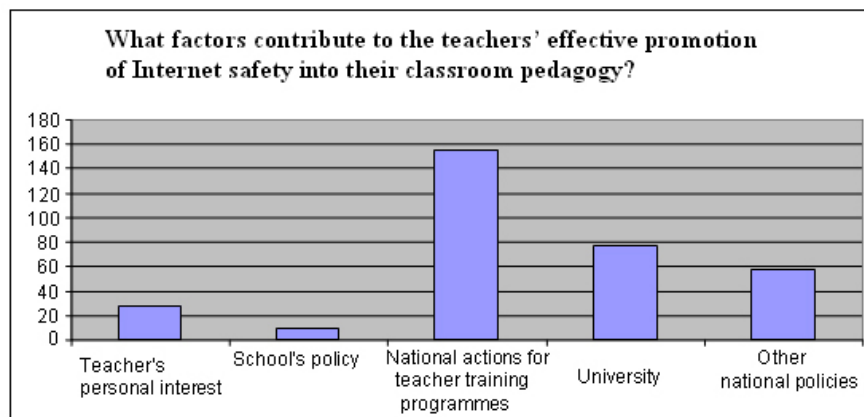
What factors contribute to the teachers' effective promotion of Internet safety into their classroom pedagogy?

Teacher's personal interest | School's policy | National actions for teacher training programmes | University | Other national policies

Figure 3: Factors contributing to primary teachers' effective Net safety teaching in class

In conclusion, although most teachers are familiar with the basic functions of computers, it seems that teachers with higher Internet efficacy have a greater perceived evaluation of the possible dangers that a student may encounter on the Net. Finally, primary educators who value the various Internet applications in primary education seem more capable of incorporating Internet Safety issues into their classroom pedagogy.

Discussion and Future Research

The current study detects how teachers from urban and rural primary schools in Greece, perceive the issue of the possible dangers that students may face when surfing the Net for educational or recreational activities. Particularly, the notion of the teachers' level of familiarity with the Internet use and their ability to promote Internet safety behaviours in class, was also investigated.

An overall review of this work showed that teachers while recognising the liberate and empowering possibilities of the internet, seemed deeply concerned about how the web should be managed and controlled safely by primary students. Thus, teachers with higher internet familiarity were more likely to incorporate the Internet technology in the students' learning process and they were more effective to control and to promote internet safety issues as they knew better the possible risks that children may encounter in the Web.

Specifically, according to the teachers' technological background almost half of the sample did have the basic skills to use the Internet while the others simply did not. Also, better skilled teachers seemed more comfortable to use the Internet in class while teachers with lower technological profiles tended to appreciate less the educational significance of the Web for pupils (Ertmer, 1999; Fabry & Higgs, 1997).

Regarding participants' perceptions and attitudes towards the possible risks pupils may encounter on the Net, the present study found that teachers with higher technological profiles seemed quite worried about pupils viewing something that is out of their control inside the school environment (Wishart, 2004). Consequently, these primary teachers were more likely to promote their pupils' Internet safety behaviours in class (Valcke, et al., 2007) and at the same time to engage students in meaningful interaction than teachers with less sophisticated Internet skills (Chen, 2008). Thus, male educators seemed more confident in promoting Internet safety behaviours in class than their female peers. This finding probably drops hints that technology practices between men and women seem to remain still a gendered space (Veckiri & Chronaki, 2008), as women are more likely to have less positive perceptions of their computer competence and are less attracted to computers than their male companions (Anastasiades, et al., 2008; Colley & Comber, 2003; Singh, 2001; Kadijevich, 2000; Durndell & Thomson, 1997; Shashaani, 1997; Whitley, 1997).

Furthermore, students' option to navigate the Net mostly during school breaks may not only derive from the teachers' personal inconvenience to monitor or engage with their students over the pedagogical and moral use of the internet but from other reasons too, such as technological inconveniences (e.g. poor digital appliances, network problems, lack of technological support etc.) (Anastasiades, et al., 2008; Pettersson & Carlsson, 2004; Chen & Wellman, 2004; Reynolds, Treharne & Tripp, 2003; Epper, 2001) and other personal reasons (Chen, 2008; Reynolds, et al., 2003; Solomon, 1998), such as lack of interest in technology (Spodark, 2003; Epper, 2001; Fullan, 2001; Etmer, 1999; Fabry & Higgs, 1997).

Generally, most teachers were found inefficient to be involved with students in promoting Internet awareness as 54.2% of them expressed low self-esteem to teach safe Internet practices in class while 22.3% were strongly negative in dealing with the particular subject (Chen, 2008; Hwang, Tsai, Tsai & Tseng, 2008; Valcke, et al., 2007; Wishart & Morris, 2007; Todman and Day, 2006; Wishart, 2004; Chou, 2003; Namlu & Ceyhan, 2003). Due to this, almost all of the sample identified the vital role of schools in promoting particular intervention programmes for ensuring Internet Safety (Chen, 2008; Valcke, et al., 2007).

Therefore, it is strongly recommended: a) the importance that all teachers receive full information on the dangers related to the Internet use and proper training on how to protect and guide their students on the Internet safety, b) to provide schools with teaching materials to use with pupils aimed at developing Net literacy and safe surfing practices that enable pupils to use the Internet responsibly and usefully both in and outside school, c) to involve teachers and students in interactive environments based on specific intervention programmes aimed at the development of safe Internet behaviours of young children and, d) to promote parent and family partnerships in schools, in order to guide minors to develop a critical thinking when navigating the Web for education or amusement in or out the school premises.

This study is subject to several limitations: first, the present sample is small in scale and there may be other variables that need to be included for study. Second, the research data were derived only from questionnaires. A richer data set could be based on actual observation of both teachers' and students' Internet use in class and teacher focus groups. However, the results presented do enable the generation of hypotheses which could usefully be tested in larger scale studies. Despite these methodological constraints, the current work strongly emphasises that additional action in Internet safety lines have to be developed and implemented in Greek primary schools.

Based on this study, future research in this area might include further examination of the factors influencing the teachers' level of involvement with pupils in the pedagogical and safe uses of the Internet in class. Teachers' features

such as communication style, teaching style and to what extend teachers try to assist students' development of Internet safety awareness should be analytically examined too. Finally, actual Internet safety intervention programs taking place in class and how teachers evaluate the learning outcomes of their students in using the Internet safely should be also considered in future research.

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