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The Integration of the Internet into Irish Primary Schools

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ABSTRACT:

The Internet has the potential to revolutionise the future of education. This research investigates how the Internet can affect the way in which children learn. It examines the suitability of the Internet as a resource for pupils and staff in the primary school. Particular attention is focussed on Irish primary schools where this new technology is being integrated into both the school environment and curriculum.

The research methodology comprises of two elements: An observational study and a survey by postal questionnaire of primary schools connected to the Internet. The observational study involves a group of primary school pupils to evaluate the ease at which they can use the Internet in a classroom setting to retrieve information. The aptness of retrieved information to primary school children is considered. A survey evaluates the level of integration that the Internet has had in connected primary schools, and provides details of the location and number of computers connected to the Internet. It investigates the levels of access to the Internet by pupils and staff for various purposes. Teacher opinions as to the value of the Internet are examined in addition to hindering factors that prevent usage.

As Ireland prepares for the implementation of the Schools IT 2000 initiative, which proposes to install and connect a computer to the Internet in every school in the country, this research provides timely results, conclusions and recommendations that would enhance the effectiveness of this historical initiative.

1   INTRODUCTION

As Ireland's primary schools prepare for the implementation of the Schools IT 2000 initiative, which has the ambition of connecting all the nation's schools to the Internet, it is necessary to explore the ramifications and educational implications of the presence of this resource in the classroom. Of the 94% of primary schools not connected at present, their opinion of the Internet has been formulated by media hype and the views of excited educationalists who maintain that it will change fundamentally the way in which children learn and in the way that teachers impart knowledge. This dissertation attempts to evaluate the real benefits of the integration of the Internet into the classroom and to investigate the impact that it has had to date in our primary schools.

2   LITERATURE REVIEW

The Internet as an information resource.

The Internet represents a gigantic source of current Information. At present 20% of all information in the world is on-line. It is predicted that this figure will approach 90% in the year 2000. (Summers, 1995). The Net's 'Information richness' is what makes it a valuable learning tool for those who seek information. (Duchastel, 1996). The 1996 Forbairt Internet Report (Ireland: The Digital Age and The Internet) also puts this point forward stating that "the Internet has a vast store of recorded knowledge - far greater than any library - and much of this information - held within academic and other institutions - is of positive educational value." (Mc. Govern, 1996). Pupils in a classroom can view satellite photographs, weather maps and other live images from other parts of the world or from space, on demand and at little or no cost. This exclusivity and currency of information not a feature of other sources.

Ironically, schooling, which is said to prepare students for the real world, is tremendously isolated. Learning is compartmentalised behind closed doors. However, an Internet connection in the classroom allows students to search libraries, communicate with others, download software, and view current newspapers from the other side of the world. All this information is available within the boundaries of the classroom as "students on the Internet are not just let out of the buildings, but let loose to roam the globe." (Peterson and Facemyer, 1996). Greg Kearsley echoes this point when he states that "the most significant aspect of the Web for education at all levels is that it dissolves the artificial wall between the classroom and the real world."(Kearsley, 1996). "Students and Teachers can establish interactive connections with anybody or any source, making learning more relevant to their lives interests and concerns" (Berenfeld, 1996).

The Internet as a learning tool

One of the most commonly stated reasons for moving the Internet into the classroom environment is that it has been classified as a 'learning tool'. This prompts the question as to what makes it a learning tool. A principal feature of the Internet for learning is its richness in information. Duchastel and Turcotte believe that it is this "information richness" that makes it a valuable tool for those who seek information. This opinion is based the principle that: "information is the principal ingredient of much learning (and often a sufficient one in itself)." (Duchastel and Turcotte, 1996). This idea that information is central to learning is developed further when they state that information "generally triggers transformations of knowledge that bring growth and development of intellectual skill."(Duchastel and Turcotte, 1996).

Children may be prepared to spend more time learning from a computer than from a textbook. Grégoire, Bracewell and Laferrière observed that "The attention span or concentration that the majority of students are willing to devote to learning activities is greater when they use a new technology than when they are in a traditional setting using traditional resources." (Grégoire, Bracewell and Laferrière 1996). This would imply that a child would prefer to read a page of text from a computer screen and probably devote more time to reading it than the same text from a textbook.

Why learning by Internet is better

One of the primary advantages of the Web is that it "appeals very much to the way our students now prefer to learn." (Owston, 1997). Seymour Papert (Papert, 1993) calls the computer the "children's machine" because today's students do not know a world without a computer. They relate to a computer in a way that would baffle adults. Children have a very positive attitude to computers and particularly towards computers in a school environment. "Most students show greater spontaneous interest in a learning activity that uses a new technology than in the traditional approaches in class" (Grégoire, Bracewell and Laferrière 1996). Children are drawn to the new technology and are eager to have their time at the computer. The report published by the U.S. Office of Technology Assessment in 1995 confirms the motivational effect that the use of new technology has on students of all ages. Among the reasons that technology can contribute to student motivation is that technology "can be a key vehicle for stimulating learning, primarily because it creates environments and presents content in ways that are more engaging and involve the student more than textbooks and more traditional teaching tools." (U.S. Congress, Office of Technology Assessment, 1995, p59).

Use of the Internet motivates pupils to develop their reading, writing and mathematical skills, especially as they involve themselves in global projects. The exchange of keypals messages – the electronic version of penpals, "provides students for outstanding opportunities for writing in real contexts, and is an effective way to learn firsthand about other communities and countries". (Dyrli, 1994) A recent example of these projects is the 'Netd@ys' project where nearly 150,000 Irish pupils were involved in sending e-mails over a one week period.

To provide students with the best chance of being successful lifelong learners and future employees, students need to become information literate and skilled in using computer-based tools to deliver information. The chances grow daily that these skills will be required for future employment. Currently over 60% of the jobs in the United States require computer and information literate employees who are able to use some kind of network to do their jobs. (Miller 1995) In addition to the job opportunities that result from the ability to use the Internet, the method of learning provided by the use of the Internet provides an effective model of learning - lifelong learning. Searching for relevant or fresh information down as many avenues as possible is a common activity on the Internet and ensures that students "develop skills that they can rely on for the rest of their lives" (Berenfeld 1996).

Negative factors of the Internet

It seems that the introduction of the Internet into education has been heralded as a milestone into the advancement of teaching and learning. However, not all educationalists hold this view. "There's an unspoken assumption that technology is an unmitigated good - that its many benefits simply must outweigh any possible negative effects" states Richard Rosenberg, a professor of Computer Science at the University of British Columbia in Vancouver. Rosenberg goes on to state that "we are letting technology chip away at the integrity of public education… children, meanwhile are morphing into antisocial egotists, parked in front of high tech boob tubes that are

stunting their critical faculties and sapping their creativity" (cited in Dwyer and Steele 1996). Maddux is concerned about the "unbridled enthusiasm and childish naivety" that accompanies talk about the use of the Internet in schools. (Maddux, 1994). Although these views may appear to be emphatically against the integration of the Internet in schools, there are many facets of this new technology that do not lend themselves to a school situation.

The Internet has been greatly appraised because of its information richness making it "a valuable tool for those who seek information" (Duchastel and Turcotte, 1996). However, the authors further point out that "it is of doubtful value for those who do not know what to seek" (Duchastel and Turcotte, 1996). Hand in hand with this "richness in information" is the "poorness in process". (Duchastel and Turcotte, 1996). This phrase is used in referring to the limited interactivity offered by the Internet. Improvements must be made in the speed and format of interaction to include more visual and auditory feedback rather than merely textual as "Interactivity is the learning ingredient that assists the development of skills" (Duchastel and Turcotte, 1996).

In the introduction of this new technology, has there really been an appraisal of its impact? Have we assumed that children will be able to acquire and use this information at their fingertips? "In fact we know very little about what students are learning on the Internet."(Tsikalas, 1995). A study conducted by the centre for Children and Technology/Educational Development Center in the U.S. found that students using the Web "had difficulty locating useful information on the Net or that they had trouble understanding the information they found." (Tsikalas, 1995). When a child enters a search for information, the sites returned may be at any level of difficulty. The child may not be able to understand or use this information. The results of this study raised the "important issue of how to make the Internet live up to its educational potential for students across the country. The Internet may be overflowing with data but students don't necessarily have the skills to find it or the information is not always in a useful form" (Tsikalas 1995).

The transformation of the learning process to one where the child guides and controls the speed of learning and the content of the lesson is one that has not been readily accepted. This entails the loss of human contact in the learning process. "Forming a dependence on computers means replacing the guidance of the teacher with a focus on the demands of the individual student with what he wants, when he wants it" (Dwyer and Steele, 1996). Furthermore whilst browsing on the Internet a child may discover new information by accident. This has been heralded as a boon but looking at this point from the negative side, it is plain that a child could be side-tracked easily and end up going down an avenue totally unrelated to the topic being researched.

Chaos is a word that could be well used in describing the Internet. There are many meanings to words and children may retrieve pages totally unrelated to their search. These pages could be confusing, perverse, pornographic and useless to a child in the throws of research. "The difficulty of separating out the excellent from the mediocre is an issue that educators and students will continue to grapple with, as they had to in accessing the validity of information provided through mass media." (Duchastel and Turcotte, 1996). However the Internet poses more problems. While

children are browsing the Internet, teachers need to be policing constantly to ensure that the children do not access unsuitable information.

Preventative factors to the integration of the Internet into teaching

The potential benefits that the new technologies can bring into education if implemented and exploited effectively do not seem to be in question. However fundamental issues need to be considered relating to the possibilities and practicalities of integrating them in a meaningful way into our education systems. There are major obstacles to their use in schools and problems related to the effective exploitation of these technologies in education.

Costs

ICTs constitute a very expensive resource for schools even in industrialised countries where the necessary infrastructure for their installation is in place. The price of hardware although constantly decreasing remains considerable for school budgets, as does software. In addition to ordinary maintenance costs, the rapid revolution of information and communication technologies implies constant upgrading of equipment and facilities if educational institutions are to keep abreast of these developments in the classroom. The costs of on-line telephone charges for use of the Internet remains high unless it is subsidised by government or private institutions.

Technophobia and Lack of Teacher Training

"Teacher education is considered to be the single most important factor in ensuring the successful use of ICTs in education" (Byron and Gagliardi, 1996; Walker, 1989) Its importance has tended to be overlooked or underestimated in the development of initiatives for introducing these technologies into schools. Teacher education is not only vital for equipping educators with the necessary skills for using ICTs effectively in the classroom, but for helping teachers to overcome their often strong resistance to these technologies and to develop positive attitudes towards them. As many teachers are unfamiliar with computers they will be reluctant to introduce this new technology.

3   RESEARCH METHODOLOGY

The Pilot Study

To ascertain the suitability of the Internet for primary school pupils, an observation of the pupils whilst using the Internet would indicate its suitability. Rather than have them use it aimlessly, the pupils would have to be allocated a task to carry out. The Internet is normally hailed as a device which allows the user to find information on anything - for the purposes of this study, a number of topics from the History and Geography programme were chosen. The children would have to use the Internet to find relevant information to their search topic without help or intervention of others. If pupils within a reasonable time-scale retrieved the required information, then the Internet could be deemed to be suitable for primary school children. Two classes of sixth class children were chosen for the study. A total of 56 pupils were observed over a three-week time-scale. This constituted a pilot study due to the small

number of pupils involved and also that they were all from the same school - not representative of the country as a whole.

As the majority of the pupils were new to searching for information on the Internet, an introductory class of twenty minutes was held to show them how to search for information. This allowed for the explanation of search engines, how to find search engines, and how to use refined search techniques to retrieve information. A checklist was designed for use during observation of the pupils. The checklist would have to elicit whether the pupil found information, if the information was found easily and quickly, and if the pupil experienced difficulties or got sidetracked into an area unrelated to the search. By definition of checklist, the form would have to be filled in easily with a minimum amount of writing so that the observer would see most of the pupil's activity.

The observation took place over a three-week period. Each pupil was allocated 15 minutes to find and either save or print information. The period of 15 minutes was chosen due to the time constraints of the research and the phone costs. Pupils were told the research topic on sitting down to the computer and were allowed use their textbook to ensure correct spelling. The fifteen-minute period commenced once the connection timer on the computer stated 00:00. No help was given to the pupil other than confirmation of the search topic unless the pupil got into difficulty from which it seemed s/he would not emerge.

The National Survey on Internet Use

To find out how many schools were using the Internet, how often and for what purposes, would require a survey of some nature. Seeing that the use of the Internet in schools was being examined, only primary schools with an Internet connection would constitute the population. The majority of Primary schools with an Internet connection were listed on a web-site called Ednet that is an educational resource on the Internet service provider - Ireland On Line. Other educational sites including the Irish Education Web and Edunet were searched to find additional primary schools. At the end of this search, the number of listed schools totalled 200. As this number was thought to relatively small in relation to the total number of Primary Schools (3308) it was decided to send questionnaires to all the schools - thus eliminating any sampling bias.

The questionnaire was designed to elicit whether the school was using the Internet connection and then divert the respondent to the relevant section based on the fact that they were/were not using the Internet. Schools using the Internet were questioned on the number of computers connected to the Internet and their location, which pupils had access to the Internet and how often, the purposes and regularity of the use of the World Wide Web and E-mail by pupils and staff. Questions were included on protection software, supervision, factors that hinder Internet usage, and reasons that prevent their school from using the Internet. Teachers using the Internet were asked to rate the Internet as a resource for pupils and teachers for various purposes.

4   PRESENTATION AND ANALYSIS OF THE RESULTS

1. Research Findings from the pilot study

Loading the Internet Browser

All the pupils were able to run the Internet browser by double clicking the browser icon on the Windows '95 desktop. The username and password were saved so no intervention was needed on the part of the pupil.

Locating a search engine

All 56 pupils were able to locate a search engine. This merely meant clicking on a button or Icon labelled 'search'. At this point a suite of search engines with boxes for entering text was presented to the user. Most pupils chose 'Yahoo!' as the word seemed to bemuse and attract them. Some children took the time to read the home page of the Internet service provider before loading the search engines page.

Operation of the Search Engine

Operation of the search engine consisted of typing in the search word. Pupils were asked to search for information for a short project on a selection of topics. Pupils were taught how to attach two or more words together for a search. 83.92% chose to attach several words together to limit the scope of the search.

Difficulty with the Internet

A pupil was deemed to be in difficulty if help was sought from either the observer or other pupils in the classroom. However, merely seeking confirmation on the search topic was not classified as difficulty. Some 17.86% of the pupils looked for help. Most commonly, pupils asked how to save information. Other pupils clicked feverishly on so many hypertext fields, that the browser stopped operating and had to be restarted. This required intervention from the observer. A significant percentage of 21.42% of the pupils expressed frustration whilst operating the browser, most frequently while they were waiting for a page to load or when after waiting, a page was not related to their search topic. Nearly one third (30.35%) of the pupils retrieved a page which was not of the nature that was expected. Only a small proportion 7.14% chose to click on an unrelated area to the search topic and to continue purposefully through that site knowing that it was unrelated to the search topic.

Time required to find relevant information on the Internet

The time constraint for each session was 15 minutes. The pupil was timed until s/he reached a page that s/he thought was relevant to their search. The following chart depicts the time the pupils required to reach a relevant page. It was observed that the majority of children reached a relevant site within 6 minutes of connection. In the case of this study, no child stopped searching due to loss of interest.

Information Found

The final two questions on the checklist related to the information that the pupils found. The first one queried if the information found on the relevant sites was usable in a primary school project. It was found that just over half (57.79%) of the information was suitable. Whether the pupil managed to save or print information was the last item on the checklist, It was found that (85.71%) saved or printed information. This is not to say that the information saved or printed was relevant or usable, it only stated that as a result of the search, the pupil possessed information that could possibly be included in a project.

In summation of the above statistics, the pupils were well able to use an Internet browser and locate sites relevant to their work within an acceptable time-scale for a classroom situation. However, the relevance and usefulness of the information to a primary school pupil was severely limited.

2. Research Findings from the National Survey of the Internet in Primary Education

Primary Schools connected to the Internet.

The total number of primary schools in the country is approximately 3308. This figure is comprised of 3186 primary and 122 special schools. (Department of Education figures 1997). Research of the Web-sites that serve education in Ireland such as 'Ednet', 'The Irish Education Web' and 'Edunet' found approximately 200 primary schools with e-mail accounts. As it later transpired, about 8 of these were secondary schools or other educational institutions and appeared erroneously in the primary listings. Therefore some 192 out of 3308 primary schools are registered and verified with e-mail accounts making a percentage of 5.80% of Primary Schools that are connected to the Internet.

Number of Respondents to the Survey.

The total number of questionnaires issued was 200. The number returned was 140 giving an overall response rate of 70%. However, 9 of these questionnaires were returned from secondary schools or were returned stating that the school had no e-mail address and 5 were too late to be included in analysis leaving 125 valid questionnaires – a response of 62.5%.

Number of Primary Schools using the Internet

Of the 125 that returned questionnaires, 23 stated that they were not using the Internet (18.40%). Ascertaining this figure was one of the prime reasons for posting the questionnaire. The results highlighted the most important factors that have to be addressed if schools are to start using the Internet – namely training (61%), hardware (33%) and the reduction of phone costs (30%). Despite the fact that the schools above already have the Internet, lack of expertise is the predominant reason for not using the Internet.

Of the schools not using the Internet at present, 65% stated that they had planned to start using the Internet within the coming school year. Although all the schools have Internet accounts, it is surprising to note that a significant number (45%) do not have sufficient computer resources to connect to the Internet. The completion of a period of training is the second most important factor (33%), which shows that teachers have taken upon themselves to learn about the Internet so that they can use it in a school setting. The third factor - new personnel represents the fact that a resource or computer teacher will be employed over the coming year.

Location of Computers Connected to the Internet within the school

There are a variety of locations where schools have their computers located to access the Internet. They can be classified into three main areas namely: the classroom, the computer room and the school or principal's office. 51% had one or more connected computers in a classroom setting, 26% in a computer room and 22% in an office. There were several other locations the most significant being a shared area where 6% had a connected computer located. Many schools had connected computers in more than one location.

Access to the Internet in schools using the Internet

Stating possession and use of the Internet does not give an idea of the fact of whether the pupils themselves were gaining access on some basis. It was necessary to find out what classes had access and how often. The very high proportion of 92% stated that they allowed their pupils to access the Internet. The following chart shows the frequency of access by class.

Figure 1. Regularity of Access to the Internet by class
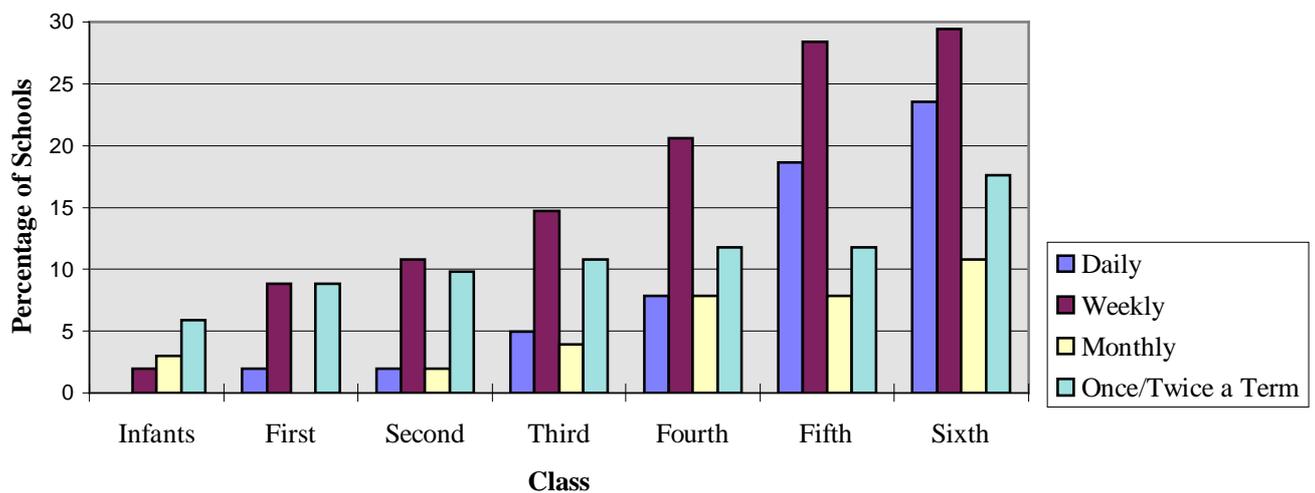
There is a linear progression in the increase in the number of pupils that use the Internet throughout the school. The regularity that the pupils use the Internet increases in a similar manner. However on observation of the individual questionnaires, it is commonly found that the classes that access the Internet the most are the classes whose teacher is regarded as the 'computer co-ordinator' or 'technical person'. Therefore, it can be deduced that the teachers with knowledge and expertise

in computer applications are the ones that actively use and promote this new technology.

The number of pupils permitted to use the World Wide Web

Out of the 102 schools that are using the Internet at present, 78.43% stated that they allowed their pupils some form of access to the World Wide Web.

Purposes for which the World Wide Web is being used.

The statistics form this question showed the predominant use of the World Wide Web by schools to locate resources for either class or project work. The option of viewing schools homepages (8.82%) was introduced by the respondents themselves.

Use of E-mail in the Primary School.

It emerged that 89.21% of the schools using the Internet provided pupils with some level of access to the use of e-mail. Of those allowing access to e-mail the regularity of use was as follows: Most pupils access the Internet on a weekly basis (32%).

The purposes for which e-mail is being used.

The purposes for which children were using e-mail fell into two distinct categories: communication with other pupils and communication with family and friends. To elicit further detail, communication with pupils was further broken down into three categories namely pupils in Ireland and Abroad and E-pals - the electronic equivalent of pen pals. The most common purpose of pupil e-mails is in communication with other pupils – especially in Ireland (60.78%). In all, 57% of schools have pupils that have sent e-mail to pupils abroad. Over one third (34%) of the schools had pupils involved in e-pals projects. In schools where the Internet has been recently installed, most of the communication is with family and friends.

Use of the Internet in Administration

From the survey, it emerged that 57.84% of the schools use the Internet for administrative purposes. However, when that figure is broken down into the categories and regularity of use, that figure appears to give a false impression on the use that is being made of the Internet for administrative purposes. At present the most frequent use of the Internet in administration is for finding information. Almost 45% of schools use it on a regular basis. Just slightly behind at 43% is communication with other schools. However, it is apparent that for any purpose in administration, not more than 7% of schools use the Internet on a daily basis. It is clear that that the vast majority of schools have not tapped into the use of this resource for administrative purposes.

Use of the Internet by School Staff

By investigating the use of the Internet in the school by staff – namely the principal and the teachers, It is possible to ascertain if the teachers themselves have the skills to use the Internet. If they were not using the Internet for personal purposes – this indicates if they are able to use it, a fact that would reflect directly on in-class use of the Internet. The questionnaire aimed to elicit the purposes and the regularity of use to which teachers were putting the Internet. The results showed that school staff uses both elements of the Internet (World Wide Web and E-mail) on a regular basis. E-mail is by far the most used application and is used with over 30% of schools using it on a daily basis for communication for other schools.

Quality of Information found on the Internet for classroom use.

The use of the World Wide Web in schools hinges fundamentally on the suitability of the information that children and teachers can retrieve from it, for use in either class or project situations. In gaining teacher's opinions on the suitability of information that they found on their own use of the 'Net' for classroom purposes, the value of the Internet could be further appraised. Two questions were set for those teachers that used the Internet to find information for classroom use: Was useful information normally found, and how suitable they deemed the quality of this information to be. Regarding the retrieval of information, 65.68% stated that they normally found suitable information. This fact indicated that the Internet is regarded as a dependable source of information for school use.

Regarding the usefulness of information for classroom use, the following table displays how useful teachers found this information to be:

Table 1. Usefulness of Information found on the World Wide Web
          for classroom use

No opinion	Useless	Poor	Fair	Good	Excellent
26.47%	0.00%	2.94%	30.39%	35.29%	5.88%

The majority of teachers who expressed an opinion believed the quality of Information found to range from fair to good. Few were impressed enough to classify it as being excellent. Drawing from the previous two points, it has been ascertained that the World Wide Web has suitable information for use in a primary school classroom situation and judging from the previous section, teachers can retrieve it.

Use of Internet blocking/protection software

To combat inadvertent or purposeful access to pornographic or controversial sites, a blocking or protection program such as 'Net Nanny' or 'Cyber Patrol' can be used. 8.7% of the schools using the Internet uses this type of software. Several schools stated that they were about to install this software, as it is readily available and downloadable as a shareware or an evaluation version. This indicates that schools have become aware of its presence recently and have started installing it.

Supervision of pupils whilst using the Internet

Supervision of pupils in primary schools whilst using the Internet is carried out by either the class teacher or a computer/resource teacher. 74.5% of schools reported that supervision is carried out by the class teacher, whilst 23.5 % stated that it was a computer or resource teachers that supervised the pupil. No school used a parent for supervisory purposes or had pupils use the Internet unsupervised.

Factors Hindering the Use of the Internet in the Primary School

In order to get a better insight into the problems associated with the use of the Internet in primary schools, the respondents were asked to rank in order of importance, the factors that hinder the use of the Internet in the school. Some factors related to hardware, some to logistics and expertise related factors. The following chart represents teacher opinion on how phone costs prevent Internet access.

<u>**Figure 2.**</u> **Do Phone Costs hinder Internet use?**

Decreasing Importance
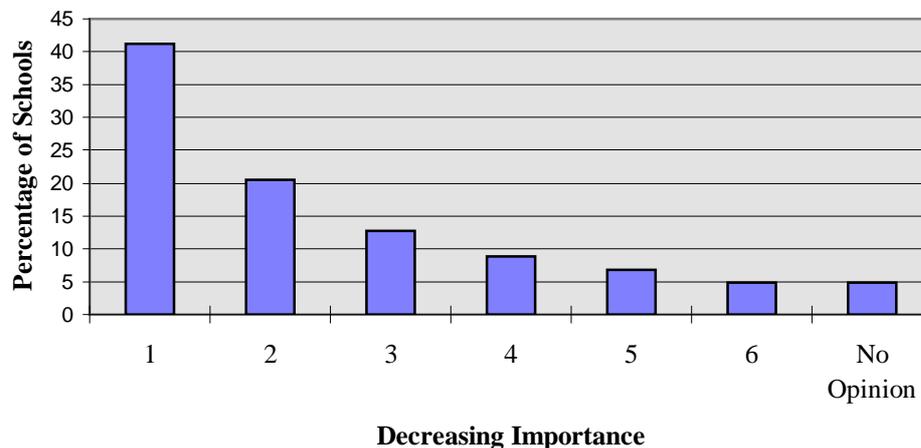
From the chart above, it is apparent that the cost of phone calls hinders greatly the use of the Internet in the Primary School. Continually watching the clock and counting the cost of access is detrimental to the use of the Internet in the classroom

On the issue of the lack of computers, the respondents are not very decisive as to whether the lack of computers hinders Internet use. It is necessary to remember however that the participants in the above question are already using the Internet and therefore would have adequate hardware for access. A considerable percentage did not insert a rank number into this field. This in addition to the low ranking shows that schools using the Internet do not find the hardware issue to be of great importance.

There is a good deal of unanimity on the point that an overloaded curriculum does in fact hinder Internet use. Over the past few years, primary teachers have been encumbered with several new subject modules to teach. However, the number of hours allocated for each subject has not been altered to reflect this new load. The attitude taken is that the use of the Internet is cross-curricular and that it should be integrated into the individual subjects. However the majority of teachers concur on the fact that an overloaded curriculum is hindering Internet use.

The location of the computer connected to the Internet does not have a great bearing on the use of the Internet. This can be interpreted to mean that even if the computer is located in the principal's office, the teachers involved ensure that the children gain access. Again in this case the majority of respondents chose not to place a rank number in this category.

Rating uses of the Internet's components

In the final section of the questionnaire, the respondents were asked to rate the components of the Internet and their use by both teachers and pupils. The method of rating was to give a mark out of ten – a system with which all teachers would be quite familiar. The Internet was rated as a resource for teacher and pupils and as a means of communication.

This section was intended to elicit the opinion teachers regarding the value of each of the components. This would give an insight if this new technology were really worth pushing into the primary school. If teachers did not rate it highly, there would not be much point in proceeding with further Internet installations. In evaluation of the first component of the Internet – E-mail, the respondents were unified as to their impression of this particular component. Teachers regard the Internet very highly as a means of communication for schools, 59.22 % gave it 10 out of 10. No teacher awarded any less than 5 out of 10.

Having the Internet is the classroom is still a relatively recent phenomenon. It has already been established that at present no more than 100 schools in the country has this luxury. It was apparent that most teachers award the Internet between 5 and 9 out of 10 as a classroom resource for pupil use. 21.56% of the responding schools awarded it 5 out of 10 and the same percentage awarded it 8 out of 10. However, This implies that teachers think that it is worthwhile to have the Internet in the classroom for pupil's use.

To fully ascertain the usefulness of the Internet within a school environment, it is necessary to enquire if teachers themselves rate the Internet highly for their own use. As stated earlier, if the teachers themselves hold the Internet in a positive regard and can find information easily on it, then its incorporation into the classroom will be more straightforward. The vast majority of schools rate the Internet relatively highly as a resource for teachers with 87.25% rating it 5 out of 10 or more. However they are not completely unified as to its benefits. It was previously established that very few teachers were enthusiastic enough about the information found on the Internet to rate it as excellent. The information that teachers seek is destined for use in the classroom and therefore must be suitable and age-appropriate for children. The lack of enthusiasm can be redressed as soon as the amount of information relevant to the Irish Primary School children increases significantly.

5   CONCLUSIONS AND RECOMMENDATIONS

The first element of the research evaluated the suitability of the World Wide Web towards use in a primary classroom. It found that after minimal training pupils were well able to master the use of the Internet quickly and easily managed to locate

information relevant to their topic of research. However, although it may be stated that pupils are ready for the Internet, alas the Internet is not (in its present state) ready for the pupils. The study found that almost one third (30%) of the pilot group retrieved pages of information not related to their search topic, and of the pages that were related, nearly half (48%) of the pupils found some of the retrieved pages to be unsuitable for their work. It can therefore be deduced that the informational requirements of our pupils may not be readily met when they go on-line in the coming year.

Results from the national survey also concur with this point that information retrieved from the Internet is not entirely useful in the classroom. Although 65% of teachers stated that they could normally find suitable information, on rating this information only 6% rated it as being excellent – the majority rating it from fair to good. Pupils should be able to retrieve encyclopaedia quality resources from the Internet if it is to be classed as a informational resource for the primary school. Towards the resolution of this problem, the proposed ScoilNet website as outlined in the Schools IT2000 document (p 42-44) must commence sourcing, reviewing or authoring curriculum support materials that will be available on this new Website. In addition, continual maintenance and enlargement of these materials is required ensuring that they are up-to-date and valid. The effectiveness and usefulness of the Internet in the classroom hinges fundamentally on the quality of the information available and the ease in which this information is accessed.

The national survey on use of the Internet found that over 18% of schools connected to the Internet are not using it. A lack of expertise is preventing the use of this new technology. Nearly two thirds of teachers that participated in the survey agreed on the fact that if they had more knowledge and training, their schools would be using the Internet. Although the provision of hardware and connection to the Internet has been well provided for by the Schools IT 2000 initiative, the proportion of schools connected but not using the Internet may remain the same. It is imperative that a programme of on-site training is provided before and after the installation to ensure that the installed hardware is utilised continually by the maximum number of schools.

Using the Internet in administration is a feature of school life that will grow over the coming years. Teachers themselves are enthusiastic about the ease and informality of the Internet as a means of communication between pupils and between schools. Schools will communicate much more often for collaborative projects and for administrative operations. As the Internet ignores geographical divides and distances, schools from distant continents will be free to exchange messages as if it were a neighbouring class. As more classrooms come on-line nation-wide, e-mail communication amongst pupils and teachers will increase exponentially. The demise of literary skills that has been forecast will not occur as the number of text based messages will continue to increase.

In 65% of schools, teachers are already accessing the Internet on a regular basis to locate materials that would bring new relevance to a class lesson. It has already been stated that these materials leave some room for improvement, but as certified and approved materials become available, it will be commonplace for teachers to download worksheets, lesson plans, and audio and video files from the

Internet. With superior materials and increased access, a central repository of resources will enliven the curriculum on a nation-wide basis.

The issue of the proliferation of violence, pornography and propaganda that can be located on the Internet will continue to be a threat to the innocence of youth in the same respect as its presence on video and television programs. Schools have already become aware of this and have taken preventative measures through the installation of Blocking/Protection programs.

Heretofore, access to the Internet has been greatly hindered by the expense of daytime phone charges – a factor that has prevented or restricted children access in most of connected primary schools. 41% of teachers stated that it was the most prohibitive factor. As precise details of the £10 million Telecom Eireann Initiative are still undisclosed, some reduction in phone costs can be expected. Ideally the costs of Internet use in schools will be free, or minimised to the costs of line rental. With the coming of ISDN (Integrated Services Digital Network) the time required on line will diminish greatly as resources and information arrives at speed.

Teachers have already stated their unhappiness as they struggle to incorporate new modules into an already packed curriculum. Nearly a quarter of teachers stated that the overloaded curriculum was the most restrictive factor to the integration of the Internet into the classroom. It appears that most teachers have the computer centre of a subject in itself rather than a medium that reinforces and retrieves resources for cross-curricular use. Hopefully, as more resources with relevance to the current curriculum become available, the computer will be seen as a compliment to teaching and learning rather than a competitor for class time.

New technology will not automatically or magically revolutionise education. An Internet connection will not make the job of teaching easier. But to succeed in the information age, teachers certainly need to incorporate this new resource into their repertoire of instructional tools. Teachers need to become guides in the process of discovering learning rather than functioning as the sole content expert. Teachers can teach students how to learn-how to search for, collect, analyse and communicate information. This ability to discover, use, and present information effectively will certainly be one of the keys to success in current and future job markets (Sturm, 1995). It is time that this technology is integrated into our schools.

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