Preservice teacher beliefs related to Internet usage.

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PRESERVICE TEACHER BELIEFS RELATED TO INTERNET USAGE

by
Salah Zogheib

A Thesis
Submitted to the Faculty of Graduate Studies
and Research through the Faculty of Education in
Partial Fulfillment of the Requirements for the
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Abstract

The study investigated the relationship between preservice teachers’ attitudes, achievement-, and value-related motivational beliefs about the Internet and their perceived likelihood to use it in instruction. Attitudes investigated preservice teachers’ confidence and liking of the Internet. Achievement-related beliefs were examined within a motivational framework that described preservice teachers’ actual knowledge and perceived experience about the Internet. Value-related beliefs were constructed from six measures for which the Internet would be valuable: personal needs, future career goals, a partner, children, future students, and society in general. Likelihood of using the Internet in instruction focused on teaching needs, students’ learning, and differential access to resources.

The sample consisted of 70 teachers enrolled in the one year consecutive P/J and J/I preservice program at the Faculty of Education, University of Windsor, during the 2001/2002 academic year. Thirty-five of the participants had a partner and 23 had children. Data was collected at the end of the program. A questionnaire
served as the data collection instrument.

Overall, three out of the four independent variables were found to be significantly related to future Internet use: attitudes, perceived experience, and perceived value. Perceived values were the most dominant predictors of almost every item of Internet use. Perceived experience was only a significant predictor for creating a homepage for students to use. Attitudes was only a significant predictor when access was restricted to the school. Surprisingly, actual knowledge was never a main predictor of future Internet use. Possible implications for preservice programs are indicated.
dedicated to my parents,

Ibrahim and Anisseh,

for a lifetime of support
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Introduction

The great interest in technology, especially computers and their role in education, has paved the way for a vast number of studies and research. Moreover, such research has investigated the role that could be played by technology in enhancing teaching and learning.

As long as teachers have been expected to apply new methodologies and techniques in their classrooms, much more research has been done trying to investigate teachers' general beliefs about computers (Kay, 1989; Koohang, 1989; Violato, Marini & Hunter, 1989; Woodrow, 1987). Because of their importance to student learning, over the last decade, educational research has focused not only on variables such as teachers' computer knowledge, attitudes, and value, but on the relationship these variables have to classroom usage and instruction in an attempt to provide information that would help structure and guide the use of computers in education (Kellenberger, 1994; Savenye, 1992; Summers 1990; Woodrow, 1992). Despite the
various arguments for (Jonassen, 1991; Konza, 1994) and against (Clark, 1994) the benefits of the use of technology in the classroom, one must recognize it is now an ubiquitous part of everyday living.

Yet, few could argue that the largest influence associated with technology in recent years has been the Internet or the "Information Superhighway." Internet usage has become a phenomenon in its own right and the effect on education has become significant (Collis, 1996; Rosen 1996). Even seven years ago, more than 97% of American public schools had classroom computers. An increasing number of them were connected to the Internet (Gallo & Horton, 1994). Today, all of Ontario's schools have some type of access to the Internet. Through the Internet, teachers are able to access subject content and educational practices to enhance learning. Intentional information searching, project ideas, resources, and many other aspects related to classroom instruction are now found online.
Despite the great contribution of studies related to computers, surprisingly few have examined teachers' beliefs about the Internet. Most of the studies related to the Internet have investigated Internet usage among educators where the focus was mainly on computer attitudes, demographics, and level of use (Gallo & Horton, 1994). Of these, only a handful has investigated preservice teachers, even though this group is becoming more important due to increasing teacher shortages (Farenga & Joyce, 1996). No studies have investigated this topic within a motivational framework, despite its applicability to relate beliefs and future actions.

In an age where technology and the Internet are gaining solid ground, it is essential to develop a motivational framework associated with Internet use for instruction to assist those involved with teacher-training programs. This study will shed light on preservice teachers' belief systems and provide answers that may be very effective in enhancing students' overall learning. For example, should
programs focus more on the social value of the Internet, the value of the Internet for preservice teachers' own needs and their career, or on the development of successful Internet experience? The results of this study will help further researchers investigate and expand upon these new outcomes and ensure that all efforts are directed towards encouraging and achieving more Internet applications in classrooms. Specifically, the purpose of this study is to examine whether there was a relationship between preservice teachers' attitudes, knowledge/experience, and values about the Internet and their perceived likelihood to use the Internet in teaching.
Literature Review

The growing body of literature associated with educational use of the Internet has examined variables and interrelationships in order to gain a better understanding of Internet beliefs and use. Internet studies have focused mainly on factors such as access (Gallo & Horton 1994), training (Farenga & Joyce; 1996; Rudden & Mallery; 1996), or experience (Anderson & Reed; 1998) and their effect on Internet use for educational or instructional purposes. Whereas a few studies have examined the relative importance among different factors in predicting Internet use (Jaber & Moore; 1999), research appears not to have included factors related to the role of achievement- or value-related beliefs within a motivational framework, to predict Internet use.

As long as familiarity with using the Internet suggests a certain level of ability in using computers, a close look at educational research in the area of computers is helpful for this study. Reviewing and understanding the past implementation of computers
in education can provide substantial knowledge to aid in successfully implementing Internet use in classroom instruction.

Computer Studies

Demographics.

The relationship between age and computer-related beliefs or behaviours appears to be uncertain at best. Whereas many researchers found no significant relationship between teachers' age and either computer-related professional training (Cates & McNaul, 1993) or attitudes (Gressard & Loyd, 1985), Marcinkiewicz (1993/1994) found older teachers had more computer experience. With respect to preservice teachers, research has found no significant relationship between age and either computer literacy (Woodrow, 1991a), computer literacy achievement (Woodrow, 1991b), or computer use for own personal needs, teaching and student learning (Kellenberger & Hendricks, 2003).

In 1993, Cates and McNaul investigated the effect of inservice training and university coursework
on teachers' attitudes and computer use. Age was one of several independent variables that the researchers felt might possibly influence the amount and type of computer training teachers had completed. The study examined 107 seventh and eighth grade teachers of learning disabled students. Of the respondents, 7% were males and 93% were females. The study found that age did not have any significant influence on teachers' reported computer use. Results such as these raise some doubts regarding the influence of age on educators' computer attitudes and use.

Research conducted by Gressard and Loyd (1985) supported this. The sample included 41 elementary, junior high, and high school teachers, from three school systems in Virginia who were enrolled in a computer staff development program. The effects of age on teachers' beliefs were investigated. Again, researchers found that age was not a significant contributing factor to the beliefs of teachers about computer use and attitudes.
As for preservice teachers, Woodrow (1991a) investigated age as one of several independent variables that may possibly have influenced the level of computer literacy of a group of 106 preservice teachers enrolled in an introductory computer literacy course. Here, computer literacy was defined as an understanding of computer characteristics, capabilities and applications, as well as an ability to implement this knowledge in the skilful productive use of computer applications suitable to individual roles in society. The researcher found that age was not significantly correlated with the level of computer literacy. Having identified no significant influence for age on computer literacy, the researcher conducted another study to support such belief (Woodrow, 1991b).

In the same year, Woodrow (1991b) examined the relationship between age and the computer literacy achievement of 98 preservice teachers enrolled in an introductory computer literacy course for novices. The age of the subjects ranged from 18 to 44 with 73%
being less than 24 years old. Age was again found not to be correlated with preservice teachers’ computer literacy achievement.

Similarly, Kellenberger and Hendricks (2003) conducted a study to predict inservice teachers’ use of computers for their own needs, teaching and student learning from five groups of factors, age being one. The sample consisted of 80 teachers enrolled in an inservice program at a southwestern Ontario university in Canada. The study excluded teachers who were enrolled in computer-related inservice courses to avoid sampling bias and allow greater generalization of the results. Age was not found to be a significant predictor for any of the three computer uses.

Yet, in contrast to the above, Marcinkiewicz (1993/1994) conducted a study that examined factors that might possibly influence teachers’ level of computer use. The sample consisted of 170 elementary school teachers. The researcher insisted on choosing elementary school teachers because they taught a variety of subjects and were less likely to be
influenced by their specialization in a subject area that emphasizes computer use. The study found that age was related to the amount of computer experience of the participants; older teachers had more computer experience than younger ones. However, age was not a significant predictor of the level of computer use among the participants. Instead, self-competence and innovativeness were the only factors found to be significant.

Overall, the above research provides evidence that age appears to have a little significant influence on computer use or attitudes. As the Internet is a part of computer technology, this study excluded age as a variable that could have any effect on Internet perceived use.

Like age, gender is one of the most common factors investigated in relation to computer beliefs. While Loyd and Gressard (1986) found a significant relationship between gender and computer related attitudes, many others found no such relationship (Honeyman & White, 1987; Okinaka, 1991). Those studies
that have found a significant relationship generally found that males had more favourable attitudes than females. With respect to preservice teachers, gender appears not to have influenced their beliefs about computers (Pope-Davis & Twing, 1991; Woodrow 1991a).

Loyd and Gressard (1986) conducted a study to investigate any significant relationship between teachers' gender and computer attitudes. The sample consisted of 112 elementary, junior high and high school teachers from three school systems in Virginia. The teachers as a whole had fairly positive attitudes towards computers; however, the researchers found a main effect for gender on computer anxiety. Males were less anxious than females.

Okinaka (1991) found opposite results. The researcher investigated differences between male and female computer teachers regarding attitudes and knowledge of computer technology. The sample consisted of 160 computer teachers in Orange county schools. Surprisingly the study showed that female computer teachers outnumbered their male counterparts and had
more favourable attitudes towards the use of computer in their classrooms. Female teachers had also the same level of awareness, expertise, and experience as males.

Contrary to the above, Honeyman and White (1987) conducted a two-year study that involved teachers and school administrators enrolled in an introductory computer applications course. Gender was one of the variables that may have possibly influenced levels of anxiety. The study found that, like age, gender did not have any significant influence on the level of computer anxiety.

With respect to preservice teachers, Pope-Davis and Twing (1991) studied the effect of age, gender, and experience on attitudes towards computers. The sample was a group of 207 preservice teachers enrolled in an introductory computer skills course. The researchers found that gender did not play any significant role in determining differences in attitudes among preservice teachers. This was consistent with Woodrow’s results (1991a), which found
no significant correlation between gender and either computer attitudes, experience, or literacy.

Clearly, there is a lack of consistent results for gender. Perhaps, there may have been a progression from the expectation of male use of computers in the 80s that may not exist anymore.

Findings from the aforementioned studies provide researchers and educators with some evidence about the role age or gender play in influencing the use of technology for educational purposes in general and in classroom instruction in particular. A justified conclusion is that what motivates teachers to use or to avoid using educational technology is something that lies far beyond the issue of age or gender. These days, no one can ignore that whether young or old, male or female, preservice and inservice teachers appear to know well the importance of learning about the Internet and overcoming the obstacles that can stand in the face of using it as an effective educational tool. Thus for the sake of this study, simple variables such as age and gender were not
included as possible predictors of preservice teachers' perceived future use of the Internet for instruction. Instead this study focused on variables such as attitudes, actual and perceived knowledge that were expected to have a significant influence on preservice teachers' future use of the Internet in the classrooms.

Attitudes.

In general, prior studies have found no significant relationship among age, gender, and attitudes. However, a large body of literature has found significant relationships between computer attitudes and computer literacy (Gressard & Loyd, 1985; Kaye, 1999; Milbrath & Kinzie, 2000; Savenye, 1992; Woodrow, 1991a). These researchers and educators have been aware of the importance of attitudes towards computers in enhancing a successful use of computers in instruction.

Gressard and Loyd's study (1985) outlined previously, studied the influence of training on teachers' computer attitudes. The researchers found
that computer staff development programs improved teacher’s perceptions of computers. Gressard and Loyd (1985) summarized that there was value in providing computer instruction and experience to teachers of all ages because it might be the most effective way to alleviate teachers’ fear of computers and to improve their perceptions of computer use in education.

Kaye (1999) studied differences in attitudes towards computer use by preservice and inservice teachers. Participants answered a questionnaire twice, before instructional technology classes began and at the end, to determine whether training might alter attitudes of the participants. The purpose of the training was to prepare the teachers to use technology effectively. The participants in the study were 50 preservice teachers enrolled in a ten-week introductory instructional technology course and 30 inservice teachers enrolled in two ten-week courses, one based on word processing skills and one directed towards the use of the Internet to enhance instruction. The study found that inservice teachers
had more positive attitudes toward computers than preservice teachers at the beginning of the course. Preservice teachers were only slightly more positive on the anxiety category. As to the effect of the training course, the study found that preservice teachers' attitudes were more positively influenced than those of the inservice teachers. Preservice teachers' attitudes declined only on two categories, "liking of computers" and "gender appropriateness."
The author suggested that the "liking of computers" declined because students were tired at the end of the course and thus did not feel as positive about using computers.

Inservice teachers' attitudes were less positive at the end of the course in four categories: liking of computers, value of computers to society, value of computers to education, and gender appropriateness. Many of those teachers indicated that integrating the new technology into the curriculum was a very difficult task. They felt that this process would require them to spend a lot of time preparing to use
computers in the classrooms. In addition, there was a little gain in items related to learning about computers and confidence about computers.

Milbrath and Kinzie (2000) found similar results. Here the researchers surveyed the effect of training on attitudes, perceived self-efficacy, and frequency of computer use. The studied sample consisted of 86 prospective teachers who entered a five-year education program at the University of Virginia. Besides technology courses, teaching internships provided these teachers with opportunities to apply computer technology to classroom teaching. Overall, the researchers found that the influence of training was very significant. Milbrath and Kinzie (2000) concluded that training had a direct influence on teachers' attitudes and self-efficacy. Such positive attitudes and perceptions have led to more frequent use of computers by prospective teachers. The authors stressed the crucial role time played in generating more enduring results of training.
Results from the above study are consistent with that of Savenye (1992). The researcher here studied elementary preservice teacher anxiety towards computers and the relationship between anxiety and taking computer courses. The participants in the study were 75 college preservice teachers enrolled in a computer literacy course that was systematically developed to teach the use and understanding of computer technologies in an educational setting. The computer literacy attitude questionnaire was intended to measure liking of computers, valuing computers for society and education, anxiety about computers, confidence regarding learning about computers and perceptions of gender appropriateness. The researcher found that participation in the course improved students' attitudes. Students' responses indicated that they liked computers more at the end of the course, had less anxiety about using computers, had more confidence in their ability to learn about and to use computers, and generally valued computers more for education and for society in general.
In a similar study, Woodrow's (1991a) investigated the influence of preservice teachers' attitudes on the level of computer literacy. Here computer literacy encompassed the use of computers as a classroom tool and the computer as a subject of instruction. Five computer attitude dimensions were selected for analysis: (1) computer anxiety, (2) computer confidence, (3) computer liking, (4) computer interest, and (5) computer ability of both genders. The scores on each of these dimensions were added to yield a composite computer attitude index. The study found that computer literacy was positively correlated with attitudes. The study also found that the computer use, a computer literacy dimension, was highly correlated with the computer attitude index.

Yeun and Ma (2002) conducted a study to investigate the effect of computer attitudes on preservice teachers' intention to use the computer. Participants were 186 preservice teachers' enrolled in the one-year full-time teacher education program at the University of Hong Kong. Among the respondents,
24.9% were males and 75.1% were females. The administered questionnaire included five items of perceived usefulness, five items of perceived ease of use, and two items of intention to use computers. Perceived usefulness and perceived ease of use were the two constituent subscales of the attitude scale. The researchers found that perceived usefulness had a significant influence on preservice teachers’ intention to use the computer in education. The researchers noted that every increment in perceived usefulness had a direct and significant effect on preservice teachers’ perceived likelihood to use computers. Perceived ease of use also had a direct positive influence on preservice teachers’ intention to use computers. Yeun and Ma (2002) stressed the importance of developing a positive perception of use to help teachers develop the computer skills they require. The researchers also stressed the importance of developing training that should not be decontextualized from practices.
Such results provide significant implications regarding the roles training and positive attitudes can play. These roles are essential for a successful implementation of computer technology in the classrooms. Training helps provide preservice teachers with effective computer and Internet experience, expertise and techniques that would generate more favourable attitudes. These positive attitudes help enhance computer and Internet use for educational purposes. However, training courses could be more effective if instructors could determine whether certain methods of instruction are more appropriate for teachers. As for attitudes, one can easily conclude that positive attitudes are also needed to ensure an active and efficient participation in training sessions.

The relationship between attitudes and training appears to be reciprocal. Whereas attitudes can generate greater interest in training and knowing more about computers and the Internet, training appears also to be effective in generating positive attitudes.
that would also lead to an effective use. This paves the way for more research to be done concerning the role that attitudes can play in the use of the Internet for instruction.

However, the question remains as to whether attitudes are prerequisites or consequences of computer literacy. The major body of literature treated attitudes both as a predictor of computer literacy (Woodrow, 1991a) and as a consequence (Kaye, 1999; Savenye, 1992). Nonetheless, the correlation between these two variables is clear. As such, attitudes were included in the present study.

Internet Studies

Research related to the Internet has focused mainly on the effects of Internet access and training on teachers’ educational use of the Internet. Whereas many researchers found significant relationships between having access to the Internet and Internet use (Becker, 1999; Gallo & Horton, 1994; Ravitz, 1998; Weisenmayer & Koul, 1999), Hack and Smey (1997) found that access did not mean that the Internet was used.
Research has also found significant relationships between training and teachers' use of the Internet (Jaber and Moore, 1999; Labonte, 1996; Vanfossen, 2001). With respect to preservice teachers, research has mainly focused either on the effect of training on preservice teachers' future use of the Internet (Farenja & Joyce, 1996) or on preservice teachers' attitudes (Anderson & Reed, 1998; Rudden & Mallery 1996).

**Access.**

Becker (1999) investigated Internet use among inservice teachers. Data was collected from a sample of more than 2000 public and private school teachers who taught grades 4 through 12 in the US. The study provided information as to whether there was a significant relationship among: (1) Internet access; (2) teaching responsibilities; (3) technology expertise; (4) school support for teaching using technology; (5) pedagogical beliefs; and (6) teachers' likelihood to use the Internet for educational purposes. The study found that the most important
factor in predicting teachers' Internet use themselves or with their students was the level of classroom access. Classroom connection had more effect on Internet use than having to connect elsewhere in the school building or at home.

Similar results were found by Gallo and Horton (1994). Here the researchers investigated the effect of direct and unrestricted access on high school teachers' use of the Internet. The study was conducted over a period of five months and required teachers to submit a final report based on their experiences at the end of the study. It identified problems that the teachers faced while using the Internet and the proper training needed for a more effective use of computers and the Internet in classrooms. Lack of access to the Internet was one of the main reasons that prevented teachers from adopting the Internet as an effective instructional tool. The findings of this study were common to many other studies done in the field of technology and education (e.g., Jaber & Moore, 1999).
Ravitz (1998) examined the conditions that would facilitate Internet use by teachers and students. The participants were Internet using teachers in a group of schools that had a high level of Internet connectivity. The researcher in this study stressed the importance of choosing teachers who were striving to use the Internet to avoid problems associated with those who have not adopted or who might have been resistant to using the new technologies. This study investigated the effect of the Internet access as one of the independent variables that might significantly affect Internet use by teachers and students. The study found that Internet access in the classroom was highly correlated with overall Internet use. Access was a significant predictor of Internet use by both teachers and students.

Similarly, in 1999, Weisenmayer and Koul investigated access as one of several independent variables that possibly may have influenced inservice teachers' level of Internet use. The sample consisted of 90 teachers who participated in a workshop that
provided them with training on how to use Internet in science teaching. The researchers found that access to the Internet in classrooms was the second significant predictor of the teachers' level of Internet use ($r = .598, p < .01$).

Opposite to the above results though, Hack and Smey (1997) conducted a study to examine the number of teacher Internet users and the reasons behind teachers being slow to embrace Internet use in their teaching. Each of the schools participating in the survey had an Internet connection but only 8% of teachers surveyed used the school connections frequently, while 47% reported not using the Internet at all during the survey week. The study showed that more than half of the respondents had access to computer at home. Teachers who logged on to the Internet connected from home and not from school. Teachers with Internet access at home were more than three times as likely to use the Internet than those who had only school access. However, the study found that access to the Internet did not mean that it was used.
Overall, the above results have shown that Internet access is a very decisive element in the use of the Internet for instruction. Problems such as lack of access may be among the most common problems facing educators. However, by increasing the funds such problems no longer exist. Also training provided by teachers colleges and institutions has been quite capable of facilitating the process of integrating technology into classrooms. In the 21st century all schools in Ontario have some type of access to the Internet. Researchers have to consider other variables that may play an effective role in the implementation of the Internet in the classrooms.

Also, one appears to easily notice that Internet connectivity is an issue that is likely to be beyond the control of teachers. Moreover, the influence of connectivity is quite negligible in the age of technology. This factor is overcome by teachers' ability to access the Internet either in their classrooms or in the school. Internet connectivity in schools urged researchers to focus on factors that
were related to teachers themselves. As such, this study focused on variables that were internal to them.

Training.

Training has been one of the most common factors studied by researchers in the field of educational use of the Internet. Such researchers found that it had a significant influence on teachers' Internet use (Jaber & Moore, 1999; Labonte, 1996; Vanvossen, 2001). Also, with respect to preservice teachers, Farenga and Joyce (1996) found that short-term training had a very significant influence.

Jaber and Moore (1999) conducted a study to examine the factors that influenced teachers' use of computer-based technology. The study found that 30% of the teachers indicated that they were using computers and they had access to the Internet. The results obtained in this study indicated that access influenced instructional activity and frequency of use; however, respondents favoured training that could provide them with the necessary strategies on how to employ computer based technology in instruction.
Findings of this study are significant regarding the type of training for which teachers were looking. Teachers appear to be familiar with the general use of the new technology in education. They have attained this knowledge from their peers. What they were really seeking was the proper academic training that could provide them with more specific strategies on how to use the Internet.

Labonte (1996) conducted a survey that investigated teachers' use of the Internet in their classrooms and the way it was being used. The sample represented a group of 120 experienced teachers who had been teaching for at least fourteen years. The study found that more than half of the participants had access to the Internet from their homes. This may have been the reason that motivated teachers made attempts to integrate the Internet into their curriculum regardless of all the obstacles that were facing this integration. The study also pinpointed the concern that educators had for implementing the Internet into their classroom and identified both
teachers' and students' concern for a very effective implementation. Participants in this study felt that there was a great need for guidance, direction, and more experience. They had to understand how effective their integration of the Internet into schools had been. Although this study did not involve a motivational framework, Labonte (1996) indicated that value and achievement were important to Internet studies. The researcher encouraged more research to be done regarding these two issues.

Vanfossen (2001) studied the degree of Internet use and barriers to use among secondary social studies teachers. More than 85% of the teachers were employing the Internet in some way for professional use such as planning and research. Results indicated that most of the Internet use was of the lower-order types in Bloom's Taxonomy of the cognitive domain. Social studies teachers in this study were using the Internet only for gathering information. As to the barriers to Internet use, the most common factors included lack of training in how to apply the Internet to the
classrooms (47.7%), lack of general computer training (32.7%), concern over students accessing inappropriate materials via the Internet (30.1%) and lack of Internet access in the school building (22.2%). As such, one way to increase use of the Internet among social studies teachers was to provide more access to training.

With respect to preservice teachers, Farenga and Joyce (1996) examined the effects of short-term training. The study’s focus was to teach the procedural knowledge required to navigate the Internet for the sake of taking students from non-users to Internet practitioners. The sample consisted of 40 preservice science teachers. The data indicated that short-term training was sufficient to change teachers’ behaviours and confidence levels regarding the use of the Internet. Preservice teachers’ likelihood to use the Internet in the future showed that the majority of the students who were exposed to Internet training would use the Internet to access lesson plans (62%) and research on teaching (38%). The study also showed
that effective training of preservice teachers was a deciding factor in future use of the Internet for education.

Findings from the above research send a clear message about the importance of training in education. Preservice teachers are in need for training that focuses not only on general Internet knowledge but also on providing them with the specific knowledge and expertise that is related to Internet use with students. Knowledge as such will help them effectively implement the new technology into their classrooms. However, most teacher colleges today have special courses that provide preservice teachers with the most effective ways and techniques to implement the Internet into their curriculum. Specifically, participants in this research have spent over 25% of their computer course time working online. They were introduced to a variety of methods by which they could use the Internet effectively in their classrooms. Those future teachers were taught how to effectively use a search engine as a teaching tool. They also had
to practice what they learned by preparing lesson plans and activities that were totally based on the Internet. This necessitates the investigation of other aspects or variables that may have influence on teachers’ beliefs or attitudes toward the Internet and its role in education.

Attitudes.

Studies related to educational use of the Internet appear to have largely ignored the importance of understanding educators’ attitudes towards the Internet and the influence attitudes play in successful implementation of the Internet in the classroom. Whereas studies that investigated educators’ attitudes towards computers were quite satisfactory, very few studies have tried to investigate the role of attitudes in using the Internet for instruction (Anderson & Reed, 1998; Rudden & Mallery 1996). Of those rare studies that do exist, the results were significant. Duggan, Hess, Morgan, Kim & Wilson, (2001) found that positive attitudes had significant influence on college
students' Internet use and revealed that those attitudes correlated with selected behaviours. Surprisingly, research related to the Internet appears to have never investigated preservice teachers' attitudes.

Anderson and Reed (1998) examined the effects of Internet instruction on teachers' Internet attitude. Participants in the study were 24 inservice teachers from West Virginia. Internet attitudes were considered in relation to two stages: internal and external. Internal stages were related to how the Internet might affect the individual: awareness (e.g., "I am not concerned about the Internet"), informational (e.g., "I would like to know more about the Internet"), personal (e.g., "I am concerned about how the Internet will affect me"), and management (e.g., "I seem to be spending all my time getting instructional materials related to the Internet"). External concerns were related to one's learning about the innovation and how that might affect others whom the learner might teach about the Internet: consequence (e.g., "I am concerned
about how the Internet will affect my students"), collaboration (e.g., "I would like to know more about what my colleagues are doing related to the Internet"), and refocusing (e.g., "I would like to know how something other than the Internet would work better in my classroom").

The Internet workshop was found to be very effective in decreasing all the internal stages of concern. After being involved with the innovation, the participants were no longer worried about knowing more about it. This feeling of comfort also applied to the three other stages where participants felt that after the workshop they became well informed about the innovation and that their personal concerns were no longer the same. The training also helped decrease the teachers’ management concerns. In addition, the workshop was effective in increasing preservice teachers’ refocusing level. The fact that Consequence and Collaboration did not increase may have been due to participants’ high level of concern when they came to the workshop. Refocusing increased because the
participants were quite knowledgeable after the workshop, where they were going next, and how to make use of the innovation once they would start teaching again (Anderson & Reed, 1998).

Rudden and Mallery (1996) reached similar results. Here, the researchers examined the effects of instruction in the use of the Internet on preservice teachers' attitudes about the use of technology in teaching. The participants received training that would help them navigate the Internet and search for information. Internet attitudes were considered in relation to the two stages of concern outlined in the previous study. Internet training revealed significant changes in the level of concern relevant to awareness, information, consequence, and refocusing. Participants' awareness of the use of the Internet decreased. Indeed, they appear to have comprehended the role the Internet could play in instruction. Also there was a decrease in the area of informational concerns, which suggested that participants were no longer curious about the lack of information about the
Internet. Preservice teachers were quite satisfied with what they had learned about technology and how to make use of it in education. Also, participants were no longer concerned about the consequence of using the Internet in their classrooms. The increase showed that the educators had gained a lot of understanding regarding the possible effects that the use of the Internet might have on their students. In the area of refocusing, the significant increase indicated that preservice teachers became more aware when to use the Internet effectively. Without doubt, the study showed that short-term instruction in the use of the Internet positively affected the way preservice teachers viewed this technology.

Duggan et al (2001) studied students’ attitudes towards the Internet and some selected behavioural correlates of those attitudes. The sample consisted of 188 university teachers enrolled in various communication and health promotion classes in a large southeastern university in the United States. The study found that behaviours such as keeping track of
valuable educational sites on the Internet, sharing class-related information, or free enrolment in classes that required using the Internet were among the behaviours that were highly correlated with positive attitudes toward educational use of the Internet. The study also found that students with favourable attitudes revealed more frequent use of the Internet for general purposes as well as for educational purposes. The researcher suggested that students who possessed favourable attitudes for educational use of the Internet might be using the Internet to satisfy the many tasks of today’s education such as consulting with an instructor and for research. As one would guess, those students who thought highly of the Internet exhausted its capabilities. Indeed, they may be learning to like it more by using more of its various features.

Overall the above studies provide evidence for the need to understand attitudes towards educational use of the Internet in particular. As such, assessing and changing the trainees’ computer attitude may be
essential to enhance the effectiveness of the training. Teachers' positive attitudes towards computers were recognized as a necessary condition for effective use of computers in the classroom (Woodrow 1992). Teachers' positive attitudes may likely help teachers in creating a more favourable attitude among their students towards using the Internet more effectively in their learning. Thus developing positive attitudes towards the Internet can lead to a better achievement on the part of both teachers and students.

For the present study attitudes were entered as one of the independent variables. This study investigated the effect that attitudes may have on preservice teachers' likelihood to use the Internet for instructional purposes.

Yet, none of the aforementioned Internet studies considered preservice teachers' perceived Internet achievement and value from the perspective of their personal and career needs and whether these may have affected their Internet usage. Moreover, these studies
never attempted to apply or develop a conceptual framework to study educational use of the Internet.
Conceptual Framework

Motivational Frameworks

The following study adopted a motivational framework that was based on the work of Kellenberger (1994). Such framework investigated the role that could be played by both achievement- and value-related factors in predicting Internet use. Attitudes were also included as a predictor.

Achievement-Related Framework.

Weiner (1972) outlined an attribution theory that incorporated achievement motivation. The goal behind this theory was to “1) develop a theory that was better than others to explain (account for, predict) behaviour in achievement related contexts and 2) to provide a theory that more readily extended to other motivational domains than other conceptions of achievement strivings (Weiner, p.159, 1986).” Weiner felt that this cognitive approach towards explaining achievement motivation satisfied these objectives.

Attribution theories, in general, investigate the explanations individuals offer for the occurrence of
an event, and how these causal attributions presumably influence future expectations and behaviour. Heider was considered to be the founder of attribution theory (Weiner, 1972). Heider (1958) postulated that outcomes at achievement-related activities are a function of both internal and external factors. Examples of internal factors are ability and effort. Examples of external factors are ease or difficulty of the task and grading policies. Of course, fatigue, illness and drugs are also among the causes that might be unique to a specific situation. But within the confines of academic accomplishment, ability and effort are believed to be the dominant causes of success and failure (Weiner, 1980). Effort and ability are perceived to be factors of the person whereas difficulty and luck are factors of the environment. Heider (1958) came up with the conclusion that behaviour \( B \) was a function of the person \( P \) and the environment \( E \). This equation, \( B = f(P, E) \), was based on a person's perceived causes of behaviour and not the actual observed one. Weiner and Kukla (1970),
though, deserve credit for recognizing the importance of causal attributions for the explanation of achievement behaviour.

Weiners’ model incorporated and expanded Heider’s work trying to establish the reasons that caused an individual to succeed or fail. In 1970, Weiner and Kukla found that failure-motivated and success-motivated individuals use distinctively different attributions. Thus, a link between achievement motivation and attributions was established.

Weiner (1972) wrote that ability, effort, task difficulty, and luck were the four perceived causes of success and failure for achievement tasks and he postulated that these four elements could be classified within two causal dimensions: locus of control and stability. The locus of control dimension classified the variable according to whether or not control was an internal or external variable. As to the stability dimension, it could tell whether or not the variable in question changes for a person.
An example of this model is predicting a student's future behaviour based on the student's attributions for success or failure in a former task. If this student perceived the likelihood of success in a task at hand as dependent upon his/her ability versus the amount of luck involved, and the student had succeeded in a similar past activity, the student would then approach this task with a great hope and expectation of success. On the contrary, if this same student perceived that the chance of succeeding in a task at hand as dependent on the amount of luck involved versus the individual ability, the student may not try his hand at this task or may compensate in some different approach that would bring him/her success. This student might, for example, think the timetable of this task should be changed and thus try to approach it another time where success could be within the reach.

Kuendiger (1990) established a link between preservice teachers' perceived former mathematical achievement and their attributions by separating
preservice teachers into two groups based upon their perceived former mathematical achievement. These groups were found to use distinctively different attributions to explain their mathematical achievement. Preservice teachers whose former mathematical achievement was above average attributed their achievement more to ability and less to lack of ability than those whose former mathematical achievement was average or below average. In addition, the group with higher mathematical achievement believed the ease of the subject was more applicable in explaining their achievement and were quite decisive as to those reasons that were clearly not applicable. In contrast, the group with lower mathematical achievement believed lack of effort, difficulty of the subject, and poor teachers' explanations were more applicable in explaining their achievement, thus showing more self-serving biases.

The former mathematical achievement in association with the causal attributions used to explain this achievement, justified describing these
two groups as having different mathematical learning histories. The group that had a higher perception of mathematical achievement and a more positive attribution pattern was considered to have a more favourable mathematical learning history, whereas the group with a lower perception of their mathematical achievement and a more negative attribution pattern was considered to have a less favourable mathematical learning history. Thus, Kuendiger coined the term "learning history" to describe preservice teachers' perceived former achievement in association with the causal attributions they used to explain this achievement.

A number of researchers have used general achievement constructs of locus of control to investigate aspects related to computers. Woodrow (1991b) found internals tended to achieve higher final grades in a programming-oriented preservice computer course than externals. Kay (1990) measured locus of control as it pertained to achievement with computers in particular. Kay found internals tended to have more
favourable computer attitudes than externals. Similarly, Campbell's (1992) study used computer-specific constructs of both locus of control and stability. Campbell found that students who attributed failures in the use of computers to the task involved were less likely to elect to take additional computer courses compared to those who did not attribute failures to the task.

Although the above framework appears not to have been used previously, in the area of the Internet, this study adopted this framework to study preservice teachers' future use. However, the framework adopted here was to some extent based on Kellenberger's (1994) model. Kellenberger included achievement as one factor of a motivational framework to study preservice teachers' beliefs related to educational computer use. In addition though, value-related aspects were also used.

Value-Related Framework.

The ARCS Model of Motivational Design is a well-known and widely applied model of instructional
design. This model is rooted in a number of motivational theories and concepts (see Keller 1983). In this model four basic categories of motivational conditions were presumed: Attention, Relevance, Confidence and Satisfaction. Attention refers to whether or not the attention or curiosity of the learner was aroused. Relevance addresses the motivational influence of particular values. Expectancy corresponds to the development of confidence from success. Satisfaction refers to the accomplishment of a particular goal.

In expectancy-value theory, effort is identified as the major measurable motivational outcome. For effort to occur, two necessary prerequisites are specified: (1) the person must value the task and (2) the person must believe that he or she can succeed at the task. Therefore, in an instructional situation, the learning task needs to be present in a way that is engaging and meaningful to the learner, and in a way that promotes positive expectations for the successful achievement of learning objectives. Although
expectancy-value theories have developed over the years, achievement and value are still viewed as important components within motivational frameworks. These components are particularly relevant for preservice teachers due to the role these components have in education. Thus the second motivational framework being applied to preservice teachers' perceptions about the future use of Internet in their own classrooms uses value as a component.

In the field of computer technology, Reed (1986) conducted a study that involved teachers' beliefs about how computers should be used in the classroom, computer misuses, and ways to improve computer use. The sample consisted of 89 teachers from elementary, immediate, middle, junior high, vocational, and high schools in a mid-Atlantic state. The study found that the most valuable types of uses were those that would help students become more functional in society and the work force. As to computer misuses, the most reported uses were those of playing games instead of focusing on actual teaching. Such results appear to
reveal the importance of value in the implementation of computers in the classroom. Teachers should value the computer as a teaching tool if they really want to use it effectively as a teaching tool.

Such results are consistent with those of Wedman, Heller, and Strathe (1986). Here the researchers investigated teachers' beliefs about educational computing and the effect of training on these beliefs. The sample consisted of 91 teachers who had voluntarily enrolled in a computer course given at a certain university. Teachers' received no kind of financial support for enrolment in this course; they had to pay their own tuition. The survey was conducted twice before and after the training session. The study showed that teachers were interested in receiving the new information about computer uses. Years of computer experience and teaching experience were never an obstacle to comprehending the new material. The authors stressed the importance of addressing teachers' concerns such as how to incorporate computers into their teaching on a daily basis;
otherwise, teachers may feel distracted and not centered on educational computing but also on the whole educational process. Wedman, Heller, and Strathe (1986) concluded that providing teachers with effective means of developing their understanding of computer uses for educational purposes may enhance the value they hold for the new innovation.

The above findings are quite satisfactory regarding the role "value" plays in enhancing better use of computers and the Internet in the classrooms. A successful integration of the Internet into the classrooms seems to be very much related to teachers' goal orientation. If teachers' goals for education changed, then the importance of a given task such as using the Internet would vary accordingly.

*Kellenberger's Studies*

Kellenberger (1994) attempted to develop a motivational model to understand preservice teachers' perceived computer use. In general, many motivation theories assume behaviour as a multiplicative function of two components: expectancy of success and value.
One important antecedent, if not the most important that was linked to expectancy of success, was past achievement (Weiner 1979, 1980). This finding made achievement-related beliefs a motivational component in its own right. As such, one motivational framework Kellenberger (1994) applied to preservice teachers' future use of computers was an achievement-related framework that was based on the concept of learning history that used attribution theory as a foundation. Such theories investigate the explanations individuals offered for the occurrence of an event and how these causal attributions presumably influence future behaviour.

A second motivational framework Kellenberger (1994) applied to preservice teachers' perceptions about the future use of computers in their own classrooms used value as a component. This was associated with one of the four categories in Keller's (1983) model of motivation: relevance. Preservice teachers' value of computers were investigated in relation to: (a) their own personal needs; (b) their
future career goals; (c) their spouse, if applicable; (d) their children, if applicable; (e) their future students; and (f) society in general. The researcher found that preservice teachers’ value for their personal and career needs was more closely related to their perceived use of computers than their perceived former achievement with computers.

In a similar study, Kellenberger (1997) examined the effectiveness of experience-related and value-related factors in predicting preservice teachers’ computer use with a class under differential access to four resources: computers, programs, a computer knowledgeable person, and an individual to initially teach students how to use a computer. The three experience-related factors were: number of computer courses taken, perceived past experience and success of past experience. The six value-related factors mentioned earlier were also included.

The results of the study showed that the value of computers for preservice teachers’ career and future students were the best predictors of perceived
computer use under differential access to the first three resources while value for own needs and again value for future students was the best predictor for perceived computer use associated with the fourth resource. None of the experience related factors, nor the value of the computer for spouse, children or society were significant. Such results encourage more research to include the value variable in studying the Internet.

This research study adopted Kellenbergers' (1994) framework in studying preservice teachers; however, the focus of this study was the Internet and not computers. Here, the researcher investigated factors that may influence future Internet use in the classroom. The research question addressed here was:

What are the most significant predictors of preservice teachers’ perceived likelihood of using the Internet for instructional purposes?

One must not ignore the significant role that could be played by attitudes. As mentioned earlier, the influence attitudes on Internet use can never be
neglected (e.g., Savenye, 1992; Woodrow, 1991a). Attitudes have been always treated as an important factor that may influence any successful implementation of technology into the curriculum. This research investigated attitudes as one of the factors that could have influenced preservice teachers’ future Internet use. Attitudes here were related to participants’ confidence and liking of the Internet.

The achievement-related framework adopted here took into consideration the role that could be played by both actual knowledge and perceived experience. Whereas perceived experience was included in Kellenberger’s model, actual knowledge was not included as a part of the motivational framework. As such, in the present study the effect of both will be taken into account.

The value-related framework is similar to that of Kellenbergers’ (1994, 1997). This framework was modified for the sake of this study. Preservice teachers were asked to indicate how valuable the
Internet was for their personal needs, future career goals, partner, children, future students, and society in general.

The instructional use of the Internet construct asked questions that addressed teaching needs and students' learning. In addition, preservice teachers were asked to indicate their likelihood to use the Internet if access was available either in classrooms or just at school. As such, outcomes of this research will provide educators with information that can help promote future Internet use in education.

Figure 1 represents a conceptual model of the current study. The independent variables included such concepts as "attitudes," "knowledge," "experience," and "values." These are indicated by three boxes within the motivational beliefs column. The dependent variable on the other hand focuses mainly on Internet use for instructional purposes. This includes teaching needs, students' learning, and likelihood to use the Internet under differential access to resources. These are indicated by two boxes within the Internet-related
perceptions column. The possible relationships between the independent variables and the different dependent variable items are indicated by six solid lines.
Motivational Beliefs	Relationship Addressed	Internet Related

Perceptions

<table>
<thead>
<tr>
<th>Attitudes:</th>
<th>Instructional use of the Internet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Liking</td>
<td>-Researching materials</td>
</tr>
<tr>
<td>-Confidence</td>
<td>-Communicating with teachers</td>
</tr>
<tr>
<td></td>
<td>-Creating a homepage for students’ to use</td>
</tr>
<tr>
<td></td>
<td>-Giving assignments to students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Achievement:</th>
<th>Internet use with students when access is available in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Actual knowledge</td>
<td>-Classrooms</td>
</tr>
<tr>
<td>-Perceived knowledge</td>
<td>-Schools</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-Personal needs</td>
<td></td>
</tr>
<tr>
<td>-Future career goals</td>
<td></td>
</tr>
<tr>
<td>-Partner</td>
<td></td>
</tr>
<tr>
<td>-Children</td>
<td></td>
</tr>
<tr>
<td>-Future students</td>
<td></td>
</tr>
<tr>
<td>-Society</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Conceptual model of the study
Method

Subjects

Subjects in this study were 70 students enrolled in the one-year consecutive P/J and J/I preservice program at the Faculty of Education, University of Windsor, during the 2001/2002 academic year. Thirty-five of the participants had a partner and 23 reported they had children. The program provided teachers with training in all subject areas. Upon completion of the program, successful candidates would receive a Bachelor of Education degree and can apply for membership in the Ontario College of Teachers.

As part of their program, preservice teachers were required to take a Computer General Methodology Course that focused on providing them with hands-on computer experience. Such experience would allow preservice teachers to apply computers within all subject areas.

Instrument

A questionnaire developed by the researcher was used to gather data (see Appendix A). This
questionnaire consisted of five separate sections that measured preservice teachers’ attitudes towards the Internet, actual knowledge of the Internet, perceived knowledge of the Internet, perceived value of the Internet, and perceived likelihood to use the Internet in instruction, respectively. Some of these questions included multiple parts.

Attitudes.

Items one through twenty represented two constructs of Loyd and Gressard’s (1984) Computer Attitude Scale (CAS): confidence and liking. Each subscale consisted of 10 items. Preservice teachers were asked to respond on a five-point Likert scale. The items were reworded for the purpose of measuring preservice teachers’ attitudes towards the Internet. Scores of each subscale ranged from 10 to 50. The subscale scores were summed to represent a general attitude towards working on the Internet that reflected confidence and liking. The items were coded so that the higher the score, the more positive the attitude. As such scores of items that were negatively
worded (1, 4, 5, 8, 9, 12, 13, 16, 17, and 20) were reversed. Loyd and Gressard (1984) ran a study that showed that the CAS was reliable and valid for measuring attitudes. The coefficient alpha reliabilities were .89 for both the Computer Confidence and Computer Liking subscales, thus indicating that the two subscales had high reliability in measuring attitudes.

**Actual Knowledge.**

Items twenty-one through twenty-seven were used to measure preservice teachers’ actual Internet knowledge. The seven items in this section were arranged according to the level of difficulty. Preservice teachers were asked to answer simple questions first (e.g., items 21 and 22) and then more difficult ones (e.g., items 25 and 26). Items 21 and 22 asked preservice teachers to state what http and URL stood for, respectively. Item 23 asked them to explain the difference between a directory and a search engine. In item 24, teachers were asked to name three of the search engines they used to access
information on the Internet. Item 25 asked
participants to indicate how they copy an image from a
Web page. Items 26 and 27 asked them to name two Web
page editors and to explain what Java was,
respectively.

**Perceived Experience.**

Items twenty-eight through thirty-two gathered
data about preservice teachers' perceived Internet
experience. Participants in this section responded on
a five-point Likert scale. The questions were based on
Kellenberger's (1994) study and were modified for the
purpose of this study. While Kellenberger's (1994)
study focused on preservice teachers' perceived
computer experience, this study focused on preservice
teachers' perceived Internet experience.

Item 28 asked preservice teachers to report the
level of experience they had using the Internet in
general and with the classroom in particular. Teachers
were also asked about the frequency of Internet use
for seeking information (item 29). Item 30 asked
teachers if they were familiar with the techniques
related to the various Internet homepage features. Teachers were also asked to state if they were familiar with most search engines and with determining how effective these search engines were (items 31 and 32, respectively).

Value.

Item thirty-three was used to gather data associated with the value-related motivational framework outlined earlier. The six questions in this section were measured on a 5-point Likert scale. This item was taken from Kellenberger’s study (1994) and was modified to measure Internet value.

The items asked preservice teachers how valuable the Internet was for: their own personal needs, future career goals, partner, child, future students and society. Preservice teachers were asked not to answer the items concerning the value of the Internet for a partner or children if these items were not applicable.

Thirty-five of the teachers in the study reported having a partner. Twenty-three of these had children.
As such, the value construct was divided into two groups: The first one included the value of the Internet for preservice teachers' personal needs, future career goals, future students and society in general. The second one included the additional values of the Internet for child and partner.

Likelihood to Use the Internet for Instruction.

Items thirty-four through thirty-nine were used to measure preservice teachers' likelihood to use the Internet for instruction. Items 34, 35, and 36 asked preservice teachers about Internet use for teaching purposes. These items asked preservice teachers to indicate their level of likelihood to use the Internet to: (1) access information about lesson plans, (2) research materials, and (3) communicate with other teachers. Items 37 and 38 asked them about Internet use for students' learning: creating a homepage for students and giving assignments to students. Item 39 was divided into two parts that asked preservice teachers' about their use of the Internet with
students if access was available in the classroom, and at school.

Preservice teachers responded to all the items in this section on a five-point Likert scale. Scores were summed with values ranging from 7 to 35.

Procedures

After receiving Ethics Committee approval, data were gathered during the Winter Semester of 2002. The researcher distributed the questionnaires to preservice teachers the last day they attended classes at the university after receiving permission from the instructors. The whole process of answering the questionnaire took about fifteen minutes of the students’ time. Before commencing with answering the questionnaire, the Consent Form that the preservice teachers signed informed them of the procedures to be followed to participate in this study. The teachers were asked to answer the questions truthfully reflecting their own personal feelings leaving blank those questions that they did not wish to answer. They were informed that they volunteered to be in this
study and might withdraw at any time without consequences of any kind. They might exercise the option of removing their data from the study.

After answering the questionnaires, the researcher collected them. Anonymity was guaranteed. Once the questionnaires were received from the participants, the accompanying consent form was the only document that included the participant's name. The researcher separated the consent form from the questionnaire. The data was kept in locked files that were only accessible by the researcher. Of the 70 teachers in the sample, 66 completed the entire attitude construct, 70 the actual knowledge construct, 68 the perceived knowledge part, 68 the value construct, and 68 the instructional use part. About 100 preservice teachers were attending class when the questionnaire was administered. Thirty of them did not participate. They apologized for not having enough time to stay.
Research Design and Analysis

Statistical analyses were performed on a personal computer using SPSS. A significance level of 0.05 was used throughout the study. Moreover, unless otherwise indicated, significance level of 0.01 was also indicated.

Responses to variables measured on a 5-point Likert scale were coded from 1 to 5 (see questionnaire in Appendix A). Unless, otherwise indicated, answers that were not chosen by a subject were coded as blank. Items twenty-one through twenty-seven were coded from 0 to 2. Students who gave complete answers were assigned a score of 2, those with a partially correct answer were assigned 1, and those with a wrong or no answer were assigned 0.

Step-wise regression analysis served as the primary statistical procedure for this study. This regression was run for the various items of Internet instructional use with all the other variables included as predictors. For regression that resulted in multiple steps the change in $R^2$ (i.e., $\Delta R^2$) was
tabulated to further examine the contribution of each significant predictor. For each significant factor in each step of the regression, the unstandardized coefficient (B), standard error of the unstandardized coefficient (SE B), and standardized coefficient (β) were presented. The multiple correlation coefficient ($R^2$) for the first step and change in the multiple correlation coefficient squared ($ΔR^2$) for each subsequent step were also indicated.

Pearson correlated coefficient served as a secondary statistical procedure. The study investigated significant correlations among the various instructional use items, the other variables, and between instructional use items and the other variables.
Results

Attitudes

Confidence.

Table 1 shows the mean and standard deviation (S.D.) of confidence towards the Internet. The overall mean was found to be 41.41 out of a possible 50. This indicates that preservice teachers were highly confident in working on the Internet. Although teachers agreed on the positive role of the Internet, such attitudes may have only a limited role in predicting future Internet use due to the generally high mean.

The means of five out of ten items (i.e., 1, 3, 7, 11, and 13) were particularly high. Teachers were confident working on the Internet, liked to try out new things, and could learn about the Internet. As such, most preservice teachers had a considerable amount of general knowledge about the Internet.

Interestingly, the lowest mean was that of doing advanced work. This suggests that preservice teachers’ level of advanced knowledge was somewhat low. Perhaps,
Table 1
Mean and Standard Deviation of Confidence towards the Internet

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good working on the Internet (-)</td>
<td>4.55</td>
<td>0.73</td>
</tr>
<tr>
<td>Feel okay about trying out new things</td>
<td>4.37</td>
<td>0.78</td>
</tr>
<tr>
<td>Would do advanced work (-)</td>
<td>3.45</td>
<td>1.21</td>
</tr>
<tr>
<td>Can do work With the Internet</td>
<td>4.48</td>
<td>0.88</td>
</tr>
<tr>
<td>The type to do well on the Internet (-)</td>
<td>4.07</td>
<td>1.13</td>
</tr>
<tr>
<td>Could learn about the Internet</td>
<td>4.61</td>
<td>0.82</td>
</tr>
<tr>
<td>Easy to work on the Internet (-)</td>
<td>4.30</td>
<td>0.97</td>
</tr>
<tr>
<td>Could get good grades in computer courses</td>
<td>3.70</td>
<td>0.99</td>
</tr>
<tr>
<td>Handle a computer course (-)</td>
<td>4.00</td>
<td>1.11</td>
</tr>
<tr>
<td>A lot of confidence when working on the Internet</td>
<td>3.82</td>
<td>1.19</td>
</tr>
<tr>
<td>Total</td>
<td>41.41</td>
<td>6.1</td>
</tr>
</tbody>
</table>

**Note.** The (-) sign indicates items that were negatively worded.
this might influence specific uses.

*Liking.*

Table 2 shows the mean and standard deviation of preservice teachers’ liking of the Internet. The mean was found to be 36.56, which is slightly above “neutral.”

Not surprisingly, working on the Internet had the highest mean. This suggests that preservice teachers enjoyed using the Internet regularly in their life either to search for information, communicate with friends, or for any other activities. They appear to know well how important the Internet was for them and made use of this technology as a means to add to their lives. Perhaps, this item best represents the concept of “liking.”

On the contrary, the lowest mean was found for item 14 when teachers were asked to state how difficult it was for them to stop working on the Internet. Teachers knew that the Internet was very useful, highly respected and valued it. Yet, they were
Table 2
Mean and Standard Deviation of Liking towards the Internet

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>S. D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Like working on the Internet</td>
<td>4.40</td>
<td>0.78</td>
</tr>
<tr>
<td>• Challenge of finding information appeals to me (-)</td>
<td>3.88</td>
<td>1.07</td>
</tr>
<tr>
<td>• Working on the Internet is enjoyable</td>
<td>4.08</td>
<td>0.88</td>
</tr>
<tr>
<td>• Find information appeals to me (-)</td>
<td>3.60</td>
<td>1.04</td>
</tr>
<tr>
<td>• Solve problems with the Internet</td>
<td>3.31</td>
<td>1.24</td>
</tr>
<tr>
<td>• Wonder how others enjoy working (-)</td>
<td>3.48</td>
<td>1.29</td>
</tr>
<tr>
<td>• Hard to stop working on the Internet</td>
<td>2.97</td>
<td>1.30</td>
</tr>
<tr>
<td>• Do as little work as possible (-)</td>
<td>3.92</td>
<td>1.04</td>
</tr>
<tr>
<td>• Think of unsolved problems related to the Internet</td>
<td>3.35</td>
<td>1.10</td>
</tr>
<tr>
<td>• like to talk with others about the Internet (-)</td>
<td>3.50</td>
<td>1.07</td>
</tr>
<tr>
<td>• Total</td>
<td>36.56</td>
<td>6.53</td>
</tr>
</tbody>
</table>

Note. The (-) sign indicates items that were negatively worded.
not at all obsessed with it despite their great belief in its importance and value.

Quite surprisingly, the summed mean scores revealed that preservice teachers' confidence towards the Internet was much higher than their liking. Such a result appears odd if one likely assumes that liking comes before confidence. This raises many questions about the dimensions that the liking subscale measured.

Actual knowledge

This part consisted of seven items. The possible score ranged from 0 to 14. Surprisingly, the highest mean was that of naming three search engines, which shows that preservice teachers had a considerable amount of general working knowledge (see Figure 2). Fifty-six teachers (80%) gave a complete answer. Only six did not answer correctly.

The study also found that preservice teachers had some operational knowledge about the Internet. Twenty-two were able to know how to copy an image from a Web page. Twelve preservice teachers stated
Figure 2. Mean of the actual knowledge items
correctly the difference between a search engine and a directory. As for naming two Web page editors, 11 preservice teachers gave a complete answer. Just four teachers gave complete answers to what Java stood for. However, twenty-three gave a partially correct answer.

Quite surprisingly, the researcher found that the first two items in this section had the lowest means. Sixty-four teachers did not know what http stood for. Also 60 did not know what URL stood for. Very few teachers appear to have had detailed knowledge about the Internet.

Overall the mean of actual Internet knowledge was very low (M = 4.14). However, the above results revealed that preservice teachers had a general working knowledge about the Internet but lacked advanced knowledge. This result was also suggested in item 5 that was associated with confidence, where preservice teachers indicated that they were not confident about their ability to do advanced work. Likely, a lack of detailed knowledge is related to a lack of confidence.
Perceived Experience

This section included six questions. The mean level of perceived Internet knowledge (M = 21.01) indicates that preservice teachers perceived themselves to have knowledge and experience about the Internet that was slightly above average. However, data gathered revealed that preservice teachers' personal experience with the Internet was higher than their experience using it in the classroom (see Figure 3). Whereas 67 teachers indicated they had "a lot of" experience, only 8 (11.6%) stated that they had "a lot of" general experience using the Internet with a class. This may suggest that very few of these teachers used the Internet for classroom purposes. Nonetheless, the majority of teachers (89%) indicated that they used the Internet to search for information sometimes or very often.

Value-Related Beliefs

Table 3 shows the mean and standard deviation of perceived value of the Internet. Data collected showed
Figure 3. Mean of the perceived experience items
Table 3
Mean and Standard Deviation of perceived Value of the Internet

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of the Internet for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Personal needs</td>
<td>3.73</td>
<td>1.00</td>
</tr>
<tr>
<td>• Future career goals</td>
<td>4.15</td>
<td>0.94</td>
</tr>
<tr>
<td>• Partner</td>
<td>3.65</td>
<td>1.30</td>
</tr>
<tr>
<td>• Child</td>
<td>4.26</td>
<td>1.09</td>
</tr>
<tr>
<td>• Future students</td>
<td>4.51</td>
<td>0.68</td>
</tr>
<tr>
<td>• Society</td>
<td>4.26</td>
<td>0.91</td>
</tr>
</tbody>
</table>
that preservice teachers highly valued the Internet. The highest mean was that of value for future students. Value for future career goals was the next highest. Whereas 42 of the participants (60%) indicated that the Internet was "very" valuable for their future students, thirty-four (49.3) stated that it was "very" valuable for their future career.

Interestingly, the means of value for a partner and value for personal needs were the lowest. However, the high standard deviation of value for a partner shows that preservice teachers were divided as to the value the Internet could hold for this person. Whereas some of those clearly indicated that they highly valued the Internet for a partner, others were not quite convinced.

Preservice teachers also appear to highly value the Internet for future students. However, data also showed that teachers had a high general knowledge about the Internet but lacked the experience needed for classroom use. As such, perhaps this high value
might be an impetus to the effective use of the Internet in the classrooms.

Since some of the participants had a partner and children, the value scale was grouped in a way that helped distinguish among three different groups of participants. The first group included every one. The second included those with a partner and children. The third included those with no partner and no children. Consequently the value items formed two groups. The first one included the value of the Internet for own personal needs, future career goals, future students, and society \( V_{PCHRSTS} \). The second included the additional values of the Internet for a partner and children \( V_{CHPART} \). As such, the regression and correlation performed investigated any significant relationship among the various Internet use items and preservice teachers’ attitudes, actual knowledge, perceived experience, \( V_{PCHRSTS} \), and \( V_{CHPART} \).

**Instructional Use of the Internet**

Table 4 shows the mean and standard deviation of Internet use for different educational purposes. Data
### Table 4
Mean and Standard Deviation of Internet Use for Different Educational Purposes

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the Internet to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Access lesson plans</td>
<td>4.59</td>
<td>0.89</td>
</tr>
<tr>
<td>• Research materials</td>
<td>4.44</td>
<td>0.87</td>
</tr>
<tr>
<td>• Communicate with other teachers</td>
<td>4.30</td>
<td>0.95</td>
</tr>
<tr>
<td>• Create a homepage for students to use</td>
<td>3.57</td>
<td>1.28</td>
</tr>
<tr>
<td>• Assignments that require searching the Internet</td>
<td>4.50</td>
<td>0.74</td>
</tr>
<tr>
<td>• With students if access available in the classroom</td>
<td>4.52</td>
<td>0.81</td>
</tr>
<tr>
<td>• With students if access available in the school</td>
<td>4.17</td>
<td>0.92</td>
</tr>
</tbody>
</table>
collected showed that using the Internet for teaching needs had the highest mean. Preservice teachers showed a high Level of readiness to access information about lesson plans. Fifty-one (73.9%) indicated that they were "likely" or "very likely" to use the Internet to access such information. Using the Internet to research materials was also high. Sixty preservice teachers (88.3%) indicated that they were "likely" or "very likely" to use the Internet for such purpose. Fifty-two preservice teachers (76.4%) revealed that they were "likely" or "very likely" to use the Internet to communicate with other teachers.

Using the Internet for students' learning was somewhat high, yet differentiated. Eighty-eight percent of preservice teachers stated that they were "likely" or "very likely" to give assignments that require searching the Internet. However, creating a homepage for students to use had the lowest mean. Thirty-two preservice teachers indicated that that they were "somewhat" or less than "somewhat" likely to create a homepage for students to use. Creating a
homepage for students' use likely requires a considerable amount of detailed knowledge and experience. Yet, as indicated earlier, teachers had little detailed knowledge about the Internet. This is likely why few teachers would create a homepage.

Preservice teachers also revealed a high interest to use the Internet under differential access to resources. Yet, not surprisingly, using the Internet with students if access was available in the classroom had a higher score than using it if access was available in school.

Correlations

Table 5 shows a summary of correlation coefficients performed. Pearson correlation coefficient was used to determine the significant intercorrelations among the various instructional use items. The study also examined relationships among the various Internet use items and the other variables.

As for significant intercorrelations, the study found that all the items of Internet use for instructional purposes, except for using the Internet
### Table 5
**Correlation Coefficients Performed**

<table>
<thead>
<tr>
<th></th>
<th>lesson plan information</th>
<th>Research materials</th>
<th>Communicate with teachers</th>
<th>Create a homepage</th>
<th>Give assignments</th>
<th>Classroom access</th>
<th>School access</th>
<th>Attitudes</th>
<th>Actual knowledge</th>
<th>Viropros</th>
<th>Vichpartner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>lesson plan information</strong></td>
<td>1</td>
<td>.722**</td>
<td>.617**</td>
<td>.084</td>
<td>.413**</td>
<td>.715**</td>
<td>.246**</td>
<td>.447**</td>
<td>.330**</td>
<td>.600**</td>
<td>.678**</td>
</tr>
<tr>
<td></td>
<td>69</td>
<td>68</td>
<td>68</td>
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<td>68</td>
<td>68</td>
<td>68</td>
<td>65</td>
<td>69</td>
<td>68</td>
<td>21</td>
</tr>
<tr>
<td><strong>Research materials</strong></td>
<td>.722**</td>
<td>1</td>
<td>.645**</td>
<td>.171</td>
<td>.392**</td>
<td>.651**</td>
<td>.253**</td>
<td>.448**</td>
<td>.267**</td>
<td>.684**</td>
<td>.613**</td>
</tr>
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<td>68</td>
<td>64</td>
<td>68</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>Communicate with teachers</strong></td>
<td>.617**</td>
<td>.645**</td>
<td>1</td>
<td>.305*</td>
<td>.433**</td>
<td>.688**</td>
<td>.360**</td>
<td>.513**</td>
<td>.216</td>
<td>.682**</td>
<td>.699**</td>
</tr>
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<td></td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>64</td>
<td>68</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>Create a homepage</strong></td>
<td>.084</td>
<td>.171</td>
<td>.305*</td>
<td>1</td>
<td>.524**</td>
<td>.232</td>
<td>.476**</td>
<td>.500**</td>
<td>.299*</td>
<td>.283**</td>
<td>.294</td>
</tr>
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<td></td>
<td>68</td>
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<td>68</td>
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<td>68</td>
<td>68</td>
<td>64</td>
<td>64</td>
<td>68</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>Give assignments</strong></td>
<td>.413**</td>
<td>.392**</td>
<td>.433**</td>
<td>.524**</td>
<td>1</td>
<td>.589**</td>
<td>.605**</td>
<td>.338**</td>
<td>.111</td>
<td>.528**</td>
<td>.665**</td>
</tr>
<tr>
<td></td>
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<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
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<td>64</td>
<td>68</td>
<td>64</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>Classroom access</strong></td>
<td>.715**</td>
<td>.651**</td>
<td>.688**</td>
<td>.232</td>
<td>.589**</td>
<td>1</td>
<td>.424**</td>
<td>.475**</td>
<td>.230</td>
<td>.689**</td>
<td>.544**</td>
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<td>64</td>
<td>64</td>
<td>68</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>School access</strong></td>
<td>.246*</td>
<td>.253*</td>
<td>.360**</td>
<td>.476**</td>
<td>.605**</td>
<td>.424**</td>
<td>1</td>
<td>.408**</td>
<td>.045</td>
<td>.453**</td>
<td>.648**</td>
</tr>
<tr>
<td></td>
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<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>64</td>
<td>64</td>
<td>68</td>
<td>67</td>
<td>21</td>
</tr>
<tr>
<td><strong>Attitudes</strong></td>
<td>.447**</td>
<td>.448**</td>
<td>.513**</td>
<td>.500**</td>
<td>.338**</td>
<td>.475**</td>
<td>.408**</td>
<td>1</td>
<td>.327**</td>
<td>.563**</td>
<td>.521**</td>
</tr>
<tr>
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<td>64</td>
<td>66</td>
<td>66</td>
<td>64</td>
<td>17</td>
</tr>
<tr>
<td><strong>Actual knowledge</strong></td>
<td>.330**</td>
<td>.267*</td>
<td>.216</td>
<td>.299*</td>
<td>.111</td>
<td>.230</td>
<td>.045</td>
<td>.327**</td>
<td>1</td>
<td>.169</td>
<td>204</td>
</tr>
<tr>
<td></td>
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<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>66</td>
<td>70</td>
<td>68</td>
<td>21</td>
</tr>
<tr>
<td><strong>Value(pr,cr,at,so)</strong></td>
<td>.600**</td>
<td>.684**</td>
<td>.682**</td>
<td>.283*</td>
<td>.528**</td>
<td>.689**</td>
<td>.453**</td>
<td>.563**</td>
<td>.169</td>
<td>1</td>
<td>729**</td>
</tr>
<tr>
<td></td>
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<td>67</td>
<td>67</td>
<td>67</td>
<td>67</td>
<td>64</td>
<td>64</td>
<td>68</td>
<td>68</td>
<td>21</td>
</tr>
<tr>
<td><strong>Value(ch,par)</strong></td>
<td>.678**</td>
<td>.613**</td>
<td>.699**</td>
<td>.294</td>
<td>.665**</td>
<td>.544**</td>
<td>.648**</td>
<td>.523**</td>
<td>.204</td>
<td>.729**</td>
<td>1</td>
</tr>
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<td></td>
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<td>21</td>
<td>17</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed).
to create a homepage for students to use, were significantly correlated with each other. Using the Internet to create a homepage for students to use was only correlated at the 1% level with using the Internet to give assignments and with using the Internet if access was available in schools.

As for attitudes, confidence and liking were very highly correlated ($r = .705$). As such, these scores were combined to yield a composite Internet attitude scale. The possible score ranged from 20 to 100.

The study also found that the various items of Internet use for teaching needs were very highly correlated with the different value items. Using the Internet to access information about lesson plans was highly correlated with $V_{PRCRSTS}$ and $V_{CHPRT}$ at the 1% level. Internet use to research materials and communicate with other teachers also had a significant correlation with two value groups at the same level.

Interestingly, Internet use to create a homepage for students was correlated with attitudes and perceived experience at the 1%. This was the only
significant correlation that perceived experience had with any of the various use items.

Using the Internet under differential access to resources was also highly correlated with value at the 1% level. However, whereas Internet use if access was available in the classroom was highly correlated with $V_{PRCRSTS}$, Internet use if access was available in school was most highly correlated with $V_{CHPRT}$.

In summary, correlations performed showed that the most significant relationships of Internet use items were those in the value group. This appears to be a clear indication of the possible influence value could play in determining the future use of Internet in instruction. One questions the role that could be played by attitudes and perceived experience in such predictions.

Regression

The stepwise regression carried out in this study took into consideration the fact that 23 of the participants had a partner and children. Once again, the value items were grouped so as to give a clear
picture of three groups of teachers: (1) all preservice teacher, (2) those with a partner and children, and (3) those with no partner and no children. As to the grouping of the value items: The first one included the values of the Internet for own personal needs, future career goals, future students, and society ($V_{PRCRSTS}$). The second included the added values of the Internet for a partner and children ($V_{CHIPART}$).

Table 6 shows a stepwise regression analysis for factors predicting the use of the Internet of all preservice teachers who participated in the study. For each factor found to be statistically significant in each step of the regression, the unstandardized coefficient ($B$), standardized error of the unstandardized coefficient (SE $B$), and standardized coefficient ($\beta$) are presented along with the multiple correlation coefficient squared ($R^2$) for the first step and change in the multiple correlation coefficient squared ($\Delta R^2$) for each subsequent step are also indicated.
Table 6
Summary of Significant Stepwise Regression Analyses for Factors Predicting Perceived Internet Use for All Preservice Teachers

<table>
<thead>
<tr>
<th>Item</th>
<th>Regression Steps</th>
<th>Significant Factors</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the Internet to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Access lesson plans</td>
<td>1 ($R^2 = 0.35^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.17</td>
<td>0.03</td>
<td>0.59^{**}</td>
</tr>
<tr>
<td></td>
<td>2 ($ΔR^2 = 0.04^{*}$)</td>
<td>Value ($V_{PRCRSTS}$) Actual knowledge</td>
<td>0.16</td>
<td>0.03</td>
<td>0.55^{**}</td>
</tr>
<tr>
<td>• Research materials</td>
<td>1 ($R^2 = 0.51^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.22</td>
<td>0.02</td>
<td>0.71^{**}</td>
</tr>
<tr>
<td>• Communicate with other teachers</td>
<td>1 ($R^2 = 0.43^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.23</td>
<td>0.03</td>
<td>0.66^{**}</td>
</tr>
<tr>
<td>• Create a homepage for students to use</td>
<td>1 ($R^2 = 0.28^{**}$)</td>
<td>Perceived Experience</td>
<td>0.17</td>
<td>0.03</td>
<td>0.53^{**}</td>
</tr>
<tr>
<td></td>
<td>2 ($ΔR^2 = 0.08^{*}$)</td>
<td>Perceived Experience Attitudes</td>
<td>0.12</td>
<td>0.04</td>
<td>0.37^{**}</td>
</tr>
<tr>
<td>• Assignments that require searching the Internet</td>
<td>1 ($R^2 = 0.28^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.12</td>
<td>0.02</td>
<td>0.53^{**}</td>
</tr>
<tr>
<td></td>
<td>2 ($ΔR^2 = 0.05^{*}$)</td>
<td>Value ($V_{PRCRSTS}$) Perceived Experience</td>
<td>0.11</td>
<td>0.02</td>
<td>0.47^{**}</td>
</tr>
<tr>
<td>• With students if access is available in classroom</td>
<td>1 ($R^2 = 0.42^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.17</td>
<td>0.02</td>
<td>0.64^{**}</td>
</tr>
<tr>
<td>• With students if access is available at schools</td>
<td>1 ($R^2 = 0.20^{**}$)</td>
<td>Attitudes</td>
<td>0.03</td>
<td>0.00</td>
<td>0.45^{**}</td>
</tr>
</tbody>
</table>

Note: **$p < .01$, *$p < .05$. **
For each item associated with teachers’ uses (i.e., the first three items in this group), value was found to be the first significant predictor. $V_{PRCRSTS}$ was the first significant factor in predicting preservice teachers’ Internet use to access information about lesson at the 1% level. Interestingly, it was also the most significant predictor of Internet use to research materials and communicate with other teachers. This variable accounted for an amazing 51% of the variance of Internet use to research materials and 43% of Internet use to communicate with other teachers.

$V_{PRCRSTS}$ was also a very important predictor of one of the differential access items. This factor accounted for 42% of the variance of Internet use if access was available in the classroom.

Perceived experience was a significant predictor for the two Internet use items that addressed students’ learning. This variable was the first predictor of creating a home page for students to use, at the 1% level. It accounted for 28% of the variance. Perceived experience also accounted for additional 5%
of the variance of Internet use to give assignments to students. Nonetheless, $V_{PRCRST}$ was the first predictor here.

Regression analysis showed that attitudes played only a minor role in predicting future Internet use. It was the first significant predictor of Internet use if access was available at school. Yet, this variable accounted for only 20% of the variance. Attitudes also accounted for an additional 8% of the variance of Internet use to create a homepage for students to use ($p < .05$).

Quite surprisingly, actual knowledge was never a first predictor of any of the different use items. Actual knowledge accounted only for an additional 4% of the variance of Internet use to access information about lesson plans. One appears to question how significant a role this variable can play in the implementation of the Internet in the classrooms.

Value had an even more significant role in predicting Internet use among the group of teachers with a partner and children. It was the first
predictor of the seven Internet use items (see table 7). $V_{PRCRSTS}$ predicted a very high percentage of the variance of the items that addressed teaching needs and Internet use under differential access to resources. It accounted for 49% of the variance of Internet use to access information about lesson plans at the 1% level. It also predicted an amazing 67% of the variance of Internet use to research materials at the same level. Moreover, this variable accounted for 48% and an incredible 69% of Internet use when access was available in the classroom and in school, respectively.

$V_{CHIPART}$ was only a significant predictor of Internet use to communicate with other teachers. It accounted for 45% of the variance.

Interestingly, perceived experience was only a second predictor for two of the items. Nonetheless, it accounted for an additional 15% of the variance of Internet use to communicate with other teachers and to create a homepage for students to use.
Table 7
Summary of Significant Stepwise Regression Analyses for Factors Predicting Perceived Internet Use among Preservice Teachers with a Partner and Children

<table>
<thead>
<tr>
<th>Item</th>
<th>Regression Steps</th>
<th>Significant Factors</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the Internet to:</td>
<td>1 ($R^2 = 0.49^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.6</td>
<td>0.70</td>
<td>0.59^{**}</td>
</tr>
<tr>
<td>- Access lesson plans</td>
<td>1 ($R^2 = 0.67^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.27</td>
<td>0.04</td>
<td>0.70^{**}</td>
</tr>
<tr>
<td>- Research materials</td>
<td>1 ($R^2 = 0.45^{**}$)</td>
<td>Value ($V_{CHPART}$)</td>
<td>0.33</td>
<td>0.09</td>
<td>0.67^{**}</td>
</tr>
<tr>
<td>- Communicate with other teachers</td>
<td>2 ($\Delta R^2 = 0.15^{*}$)</td>
<td>Value ($V_{CHPART}$)</td>
<td>0.23</td>
<td>0.09</td>
<td>0.47^{*}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perceived Experience</td>
<td>0.12</td>
<td>0.52</td>
<td>0.43^{*}</td>
</tr>
<tr>
<td>- Create a homepage for students to use</td>
<td>1 ($R^2 = 0.44^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.27</td>
<td>0.07</td>
<td>0.67^{**}</td>
</tr>
<tr>
<td></td>
<td>2 ($\Delta R^2 = 0.15^{*}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.19</td>
<td>0.07</td>
<td>0.48^{*}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perceived Experience</td>
<td>0.14</td>
<td>0.06</td>
<td>0.42^{*}</td>
</tr>
<tr>
<td>- Assignments that require searching the Internet</td>
<td>1 ($R^2 = 0.60^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.19</td>
<td>0.04</td>
<td>0.77^{**}</td>
</tr>
<tr>
<td>- With students if access is available in classroom</td>
<td>1 ($R^2 = 0.48^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.19</td>
<td>0.51</td>
<td>0.69^{**}</td>
</tr>
<tr>
<td>- With students if access is available at schools</td>
<td>1 ($R^2 = 0.69^{**}$)</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.22</td>
<td>0.03</td>
<td>0.83^{**}</td>
</tr>
</tbody>
</table>

Note. ^{**}p < .01, ^{*}p < .05
Attitudes did not predict any significant variance in any of the different use items. This is different from the first group of regressions where attitudes was a first predictor of Internet use if access was available in the school and a second predictor of Internet use to create a homepage for students to use.

Quite interestingly, when studying preservice teachers who had no partner and no children as a separate group, results were found to be similar to those that included the entire sample of teachers. Value was the dominant predictor (see table 8). $V_{PRCSTS}$ predicted a very high variance of Internet use to research materials (45%). It also accounted for 43% of Internet use to communicate with other teachers.

Perceived experience again was the only significant predictor of Internet use to create a homepage for students to use. It accounted for 25% of the variance. As such creating a homepage appears to be a factor that is very much dependent on the level
Table 8
Summary of Significant Stepwise Regression Analyses for Factors Predicting Perceived Internet Use among Preservice Teachers with no Partner and no Children

<table>
<thead>
<tr>
<th>Item</th>
<th>Regression Steps</th>
<th>Significant Factors</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the Internet to:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Access lesson plans</td>
<td>$1 (R^2 = 0.29^{**})$</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.14</td>
<td>0.35</td>
<td>0.54**</td>
</tr>
<tr>
<td>• Research materials</td>
<td>$1 (R^2 = 0.45^{**})$</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.19</td>
<td>0.03</td>
<td>0.71**</td>
</tr>
<tr>
<td>• Communicate with other teachers</td>
<td>$1 (R^2 = 0.43^{**})$</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.23</td>
<td>0.04</td>
<td>0.66**</td>
</tr>
<tr>
<td>• Create a homepage for students to use</td>
<td>$1 (R^2 = 0.25^{**})$</td>
<td>Perceived Experience</td>
<td>0.16</td>
<td>0.04</td>
<td>0.50**</td>
</tr>
<tr>
<td>• Assignments that require searching the Internet</td>
<td>$1 (R^2 = 0.18^{**})$</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.09</td>
<td>0.03</td>
<td>0.42**</td>
</tr>
<tr>
<td>• With students if access is available in classroom</td>
<td>$1 (R^2 = 0.40^{**})$</td>
<td>Value ($V_{PRCRSTS}$)</td>
<td>0.16</td>
<td>0.03</td>
<td>0.63**</td>
</tr>
<tr>
<td>• With students if access is available at schools</td>
<td>$1 (R^2 = 0.20^{**})$</td>
<td>Attitudes</td>
<td>0.03</td>
<td>0.01</td>
<td>0.40**</td>
</tr>
</tbody>
</table>

Note. **p < .01, *p < .05
of experience teachers had with the Internet use for academic purposes.

Again, attitudes was the only significant predictor of Internet use once access was restricted to the school. However, it accounted for only 20% of the variance.
Discussion

The purpose of this study was to investigate preservice teachers' attitudes, achievement- and value-related motivational beliefs about the Internet and their perceived likelihood to use the Internet in instruction. Achievement-related beliefs were examined within a motivational framework similar to the one used by Kellenberger (1994, 1996). However, the conceptual model of this study focused entirely on the instructional use of the Internet as the only dependent variable.

Below is a discussion of the results found in this study. Possible implications of these results for preservice programs follow afterwards.

Instructional Use of the Internet

Generally, the study found that preservice teachers were very likely to use the Internet for their teaching needs as well as for students' learning. These teachers were well convinced of the role the Internet could play in the future. The high value of the Internet for society and future students
appears to be consistent with this view and with the perception that the Internet role in future classrooms is indispensable. However, creating a homepage for students to use did not have the same level of likelihood of use among teachers as the other items. Perhaps, preservice teachers’ lack of detailed knowledge explains this finding.

Results also showed that preservice teachers felt more comfortable using the Internet when access was available in the classroom. This finding is supported by the results of Gallo and Horton (1994), Ravitz (1998) and Becker (1999) who found that classroom access had more effect on Internet use than having to connect somewhere else in the school. Those teachers might be thinking of the difficulty or obstacles that could face them once they had to seek the Internet in a place somewhere else in the school. Such obstacles could be arranging suitable time that did not conflict with other teachers or having a technician ready to fix all the computers and the modems to access the Internet. As such, schools may wish to make computer
access available to teachers in the classrooms to ensure a more effective use.

The sections that follow address the implications of each independent variable. In addition, the influence of these variables as significant predictors for the different Internet use items will be also addressed.

Attitudes

In general, levels of confidence towards the Internet were high. Yet, preservice teachers appear not to have had this same level when doing advanced work. The finding that they also had little detailed actual knowledge might be the reason. In fact, creating a homepage for students had the lowest mean among the use items, which requires advance knowledge of the Internet.

With respect to liking, data revealed that preservice teachers liked working on the Internet. However, preservice teachers stated clearly that it was not at all hard to stop working on the Internet. This appears to be an indication that these people
highly valued the Internet, its role, and potential benefit. Yet, their interest never reached the obsession level.

One of the most interesting findings about attitudes was that preservice teachers’ confidence was higher than liking. This is different from the findings of Loyd and Gressard (1984) and Loyd and Loyd (1985). Both studies found that liking was higher than confidence. The first study revealed that the mean of liking was 46.1 and that of confidence was 43.3. The second one found that the mean of liking was 33.3 and that of confidence was 31.3.

Results from the present research appear to be a bit confusing if one accepts that normally liking comes before confidence. Even if some of the liking items clearly revealed a high level of Internet liking, others did not. This may indicate that the liking subscale had more than one dimension. For example, item 12 asked preservice teachers about their feeling towards “people who can spend so much time working on the Internet.” Item 18 asked them if they
would think about a problem related to the Internet that was left unsolved in a computer technology class. One may doubt to what extent these are related to liking. Perhaps, a future study may investigate the dimensionality of this subscale.

On the other hand, it is very essential to point out that with the aforementioned studies, this subscale measured attitudes towards computers. With respect to computers, liking appears to come before confidence. With the Internet however, confidence appears to come before liking. This may be due to the unique applicability of the Internet in which a certain amount of confidence may be necessary before one starts to like it.

As mentioned earlier, the confidence and liking subscales were highly correlated. As such the scores were added to form a composite attitude scale. Most evidently, preservice teachers had positive attitudes towards the Internet. Everyone who had some sort of access to the Internet or who used it in a way or another appears to value its importance. This
importance extends from daily life interests to concerns that address professional needs.

Ruden and Mallery (1996), Anderson and Reed (1998) found that developing teachers' positive attitudes was a very significant factor in a more effective use of the Internet in the classrooms. Yet, the findings from this study shed a new light on this issue. In the aforementioned studies value was never taken into consideration. In this study though, attitudes only played a minor role. It was clearly over shadowed by the importance of value.

Regression analysis showed that attitudes had very few significant relationships with the different items of Internet use. Attitudes predicted use only when access was restricted to schools. However, this variable accounted for only 20% of the variance. As such, any significant role attitudes might play in Internet use for instruction may be a subject for future research, especially if we know that schools are trying to help teachers access the Internet from the classroom and not from somewhere else.
Actual Knowledge

Preservice teachers had a high level of general working knowledge, some operational knowledge, and no detailed knowledge. This suggests that preservice teachers lacked the necessary skills that were needed to do advanced work.

Surprisingly, actual knowledge did not play any significant role in predicting any of the various Internet use items at the 1% level. As such one wonders if a high level of actual knowledge is required to incorporate this new technology. General knowledge can support an effective use of the Internet in instruction. It can provide teachers with the skills that are needed to use the Internet for teaching and outside interests. One might assume that detailed and operational knowledge is essential to provide preservice teachers with all the techniques and skills to help incorporate the Internet into the curriculum. However, the study found that what really determined an effective use of the Internet was the value these teachers held for the new innovation. As
such, there is little gain in focusing on actual knowledge. General knowledge is quite sufficient.

Perceived Experience

Preservice teachers' perceived experience of the Internet was quite high except for classroom experience. Those teachers were using the Internet to a great extent for every day use and to a very low level for classroom instruction. This significant result sends a clear message to educators and teachers everywhere.

Teachers should have enough practice that would allow them to integrate the Internet into their future classroom. These teachers were provided with the skills and techniques needed at the Faculty of Education. The computer course they took provided them with a clear and effective plan on how to use the Internet in the classroom. However, the problem appears to be related to the practice teaching in the schools. Associate teachers may lack enough experience to incorporate the Internet into their classrooms. As
such preservice teachers lacked any chance of using the Internet in their practice teaching.

Inservice programs or professional learning plans might have some sort of training that would help associate teachers apply the Internet for educational purposes, which in turn would help preservice teachers have experience during practice teaching to use the Internet in the classroom. Indeed, this is supported by the findings of Farenga and Joyce's (1996) research studies with preservice teachers, Jaber and Moore's (1999), and Vanfossen's (2001) research with inservice. These studies found that what was really needed was providing teachers with enough experience with using the Internet specifically for classroom instruction.

The role of experience is very important, especially realizing that this variable was an important predictor for items that addressed students' learning. This significant influence sheds light on the role that perceived experience could play in enhancing the educational process for students.
Value

Perceived values of the Internet were somewhat high. Preservice teachers appear to have valued the Internet more for student learning and for society in general. However, value for personal needs was well below the other values. This result is not consistent with the findings of Kellenberger's (1994, 1997) and Kellenberger and Hendricks' (2003) studies that looked at computers. Here, the researchers found that the participants highly value computers for their personal needs.

One reason to explain this low level of value for personal needs might be that preservice teachers were quite aware of the importance of the students as future generations upon which the whole society would depend. In an age of technology where the computer and the Internet are gaining solid ground everywhere, preservice teachers appear to have valued the role of the Internet as an essential instructional tool that is necessary to keep students well-informed about the importance of this innovation not only outside the
classroom where the whole world endorses its use, but also inside the classroom where it also plays an important role.

One of the most important findings of this study was that the role of value in influencing instructional use of the Internet was, by far, much larger than that of Internet experience, actual knowledge and attitudes. Such results are consistent with the findings of Kellenberger (1994) who found that preservice teachers’ values for their personal and career needs were the most significant predictors of perceived computer use.

As a follow up, this research also investigated the role that could be played by each value item in predicting the Internet use in instruction. Value of the Internet for society and for future students had the most dominant influence. Value for society was a significant predictor of Internet use to access information about lesson plans and to give students assignments that required searching the Internet. It was also an important predictor of preservice
teachers' Internet use with students if access was available in classrooms. Value for future students was a significant predictor of Internet use to research materials and to communicate with other teachers. Again, this appears to be consistent with the findings of Kellenberger (1997). The researcher found that value of computers for future students and future career were the best predictors of perceived computer use.

Significantly, in the aforementioned studies, the predictor for efficient use of computers as an effective instructional tool stemmed from the value for personal needs. With the Internet, however, this study found something different.

Implications for Preservice Programs

This study found significant results that can be used to help in understanding and implementing the Internet in education. From those results the following suggestions are provided to encourage and achieve more Internet applications in classrooms.
Perceived experience was found to be a significant predictor of Internet use for students. Because of their importance for students' learning, training programs have to take into consideration the importance of raising preservice teachers' level of Internet experience within the classroom, which would lead to a better investment of the Internet. Perhaps, practice teaching sessions might ensure that at least one of the four sessions is held in a school or class where the Internet is used as a main teaching tool.

Actual knowledge was not found to be significantly related to any level of Internet use at the 1% level. As a result, faculties of education might not focus on actual knowledge only. Instead, computer courses should focus mainly on ensuring that knowledge is translated into practical applications in classroom settings.

The study also found that the value for the Internet was the main significant predictor of almost every item of Internet use. Such results prove that the value that preservice teachers have towards the
Internet is the major reason behind using the Internet effectively in the classrooms and not only for their own or for teaching purposes. Thus preservice teachers’ educators need to focus on the value that preservice teachers place on the Internet for teaching needs, and most importantly, for classroom instruction in general. Increasing educators’ perceived levels of value for the Internet could result in a more effective and efficient use of the Internet in classrooms.

What is significant about the results is that value for future students and value for society were the main significant predictors of almost every item of future Internet usage, when the value items were studied separately. This again places more emphasis on the need to supply preservice teachers with a clear understanding of how technology can be beneficial to students and society. This would help open new horizons to enhance a better understanding and better incorporation of the Internet into the curriculum. Since value for personal needs did not have any
influence at all in this study, an emphasis on the importance of the Internet for personal needs is not suggested.

Limitations and Suggestions for Further Studies

This study was not without limitations. All limitations that apply to empirical research of this type apply also to this study. The possibility that significant results occurred by chance cannot be excluded. To the knowledge of the researcher this is the first study that relates preservice teachers' attitudes, achievement- and value-related beliefs to their Internet related perceptions. Thus, more studies in the area of Internet use may be necessary as it was beyond the scope of this study to generalize these findings over time. It is also essential that other populations of preservice teachers should be studied to determine whether similar results could be attained. Because this study was the first to apply a motivational framework to examine Internet usage, future studies may focus on many areas.
One, future studies that adopt a motivational framework about the Internet are required to attempt to identify changes in beliefs about Internet usage over time. This might be needed to introduce other factors that could affect the incorporation of this new technology.

Also, it might be significant to study the beliefs of the other branch of teachers—in-service teachers—to see whether they also share with preservice teachers the same perceptions about the Internet. Based upon such results recommendations could be made to teacher colleges to ensure better implementation of the Internet in the classrooms.

Studies are needed to determine whether there is a relationship between perceptions about the Internet and actual use. More research is needed to investigate the practices and behaviours related to technology that are taking place in the classrooms. Though beliefs or perceptions are important predictors of individual behaviour (Bandura, 1986), it is essential to study those behaviours and detect any deficiency in
the whole teaching process. Here, a follow up study might be helpful to detect the behaviours of the 70 preservice teachers, who participated in this study, in their classrooms when they start their teaching career.

The study also found that preservice teachers had very little experience using the Internet in the classroom. As such, ministries of education, school boards and people in charge can help enhance the learning process by creating portals that allow teachers who teach the different subject areas to have access to certain programs or locations online that would facilitate incorporating the Internet into the curriculum.

Future research is also needed to investigate the reliability of Loyd and Gressard’s (1984) scale as a means of measuring Internet attitudes. It could be of great importance to rotate the blocks of the questionnaire to detect any variance in its reliability as a consistent means of measuring attitudes towards the Internet.
Researchers should also detect the dimensionality of the liking subscale. In addition, some of the items need more explanation so that participants can comprehend their various implications. Item 5 asks if one can think of doing advanced work on the Internet. Maybe, it is essential to state clearly what is meant by advanced work.

Finally, future research might be needed to investigate the difference between the motivational frameworks adopted by computer studies and those adopted by the Internet. Like computer studies, this study showed that the values of the Internet for future students and for society were very high. They were also the most dominant predictors of the various Internet use items. Nonetheless, this study appears to adopt different system than that for computers. Value for personal needs appears to motivate teachers’ likelihood of using computers. With the Internet, the motivational system is addressed towards the future as represented by students and society.
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Appendix A: Questionnaire
## QUESTIONNAIRE

For the following twenty questions please circle the number that represents the most appropriate response.

1. I am no good working on the Internet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

2. I like working on the Internet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

3. Generally I feel okay about trying out new things on the Internet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

4. The challenge of finding information on the Internet does not appeal to me.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

5. I don’t think I would do advanced Internet work.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

6. I think working on the Internet is enjoyable and stimulating.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>
7. I am sure I can do work with the Internet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>

8. Finding information on the Internet does not appeal to me.

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>

9. I am not the type to do well on the Internet.

<table>
<thead>
<tr>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>

10. When there is a problem with the Internet that I can’t immediately solve I would stick with it until I have the answer.

<table>
<thead>
<tr>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>

11. I am sure I could learn about the Internet.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>

12. I don’t understand how some people can spend so much time working on the Internet and seem to enjoy it.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Neutral</td>
<td>Slightly</td>
<td>Strongly</td>
</tr>
<tr>
<td>Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Agree</td>
<td></td>
</tr>
</tbody>
</table>
13. I think working on the Internet would be very hard to me.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree

14. Once I log on to the Internet I find it hard to stop.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree

15. I could get good grades in computer technology courses.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree

16. I will do as little work on the Internet as possible.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree

17. I don’t think I could handle a computer technology course.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree

18. If a problem is left unsolved in a computer technology class related to the Internet, I would continue to think about it afterward.

1        2        3        4        5
Strongly Slightly Neutral Slightly Strongly
Disagree  Disagree           Agree    Agree
19. I have a lot of self-confidence when it comes to working with the Internet.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
</tbody>
</table>

20. I don't enjoy talking with others about the Internet.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Disagree</td>
<td>Slightly Disagree</td>
<td>Neutral</td>
<td>Slightly Agree</td>
<td>Strongly Agree</td>
<td></td>
</tr>
</tbody>
</table>

PLEASE ANSWER THE FOLLOWING SEVEN QUESTIONS WRITE NA FOR THOSE QUESTIONS YOU CANNOT ANSWER.

21. What does http stand for? ________________________________

22. What does URL stand for? ________________________________

23. What is the difference between a directory and a search-engine? ________________________________

24. Name three search-engines that you might use to access information on the Internet. ________________________________

25. How do you copy an image from a Web page? ________________________________

26. Name two Web page editors. ________________________________
27. What is Java?

FOR THE REMAINING QUESTIONS PLEASE CIRCLE THE NUMBER THAT REPRESENTS THE MOST APPROPRIATE RESPONSE.

28. How much experience do you have using the Internet?

A) in general?

No Experience | Some Experience | A lot of Experience
1 | 2 | 3 | 4 | 5

B) with a class?

No Experience | Some Experience | A lot of Experience
1 | 2 | 3 | 4 | 5

29. How often do you search the Internet for information?

Very Often | Sometimes | Not Very Often
1 | 2 | 3 | 4 | 5

30. I am familiar with most of the techniques associated with various Internet homepage features.

Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree
1 | 2 | 3 | 4 | 5

31. I am familiar with most of the search engines.

Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree
1 | 2 | 3 | 4 | 5
32. I can determine how effective and reliable a search-engine is

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tbody>
</table>

33. How valuable is the Internet to:

A. Your own personal needs?

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

B. Your future career goals?

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

C. Your partner?

Check if not applicable

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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D. Your children?

Check if not applicable

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
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</table>

E. Your future students?

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
F. Society in general?

<table>
<thead>
<tr>
<th>Not Valuable</th>
<th>Somewhat Valuable</th>
<th>Very Valuable</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<tr>
<td>5</td>
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</tr>
</tbody>
</table>

34. What is the likelihood you will use the Internet to access information about lesson plans?

Not Likely    Somewhat    Very Likely

| 1 |                   |               | 5 |
|---|-------------------|---------------|

35. What is the likelihood that you will use the Internet for researching materials?

Not Likely    Somewhat    Very Likely

| 1 |                   |               | 5 |
|---|-------------------|---------------|

36. What is the likelihood that you will use the Internet to communicate with other teachers?

Not Likely    Somewhat    Very Likely

| 1 |                   |               | 5 |
|---|-------------------|---------------|

37. What is the likelihood that you will create a home page for your students to use?

Not Likely    Somewhat    Very Likely

| 1 |                   |               | 5 |
|---|-------------------|---------------|

38. What is the likelihood that you will give your students assignments that require searching the Internet for specific information?

Not Likely    Somewhat    Very Likely

| 1 |                   |               | 5 |
39. What is the likelihood that you will use the Internet with your future students if access is available in your:

A) classroom?
Not Likely  Somewhat  Very Likely
1   2   3   4   5

B) school only?
Not Likely  Somewhat  Very Likely
1   2   3   4   5
Appendix B: Consent Form to Participants
CONSENT FORM TO PARTICIPANTS

PRESERVICE TEACHER BELIEFS RELATED TO EDUCATIONAL
INTERNET USE

You are asked to participate in a research study conducted by Salah Zogheib from the Faculty of Education at the University of Windsor the results of which will be contributed to a thesis.

If you have any questions or concerns about the research, please feel free to contact Salah Zogheib at: 256-3381.

PURPOSE OF THE STUDY

The purpose of this study is to examine preservice teachers' beliefs about the Internet.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

Please answer the questions truthfully to reflect your own personal feelings and to the best of your ability.

When you are done please leave the questionnaire in the room.
Participating in the study requires only about 10 minutes on your part to answer the questions. Nothing other than answering the questionnaire and returning it is required from you.

**POTENTIAL RISKS AND DISCOMFORTS**

There are no risks at all as a result of participating in the proposed study.

**POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

This research will be used to develop a motivational framework associated with Internet use for instruction to assist those with teacher-training programs.

**PAYMENT FOR PARTICIPATION**

Subjects will receive no payment for participation.

**CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. Once the questionnaires are received from the participants, the accompanying consent form will be kept in a locked file. After collecting all the
questionnaires, data will be kept in locked files that will only be accessible to the researcher. Anonymity will be guaranteed.

PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. This study
has been reviewed and received ethics clearance through the University of Windsor Research Ethics Board. If you have questions regarding your rights as a research subject, contact:

Research Ethics Co-ordinator
University of Windsor
Windsor, Ontario
N9B 3P4
Telephone: 519-253-3000, # 3916
E-mail: ethics@uwindsor.ca

SIGNATURE OF RESEARCH SUBJECT/LEGAL REPRESENTATIVE
I understand the information provided for the study "Preservice teachers’ Internet Beliefs" as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

______________________________
Name of Subject

______________________________
Signature of Subject

Date: April 5, 2002
SIGNATURE OF INVESTIGATOR

In my judgement, the subject is voluntarily and knowingly giving informed consent to participate in this research study.

________________________________________
Signature of Investigator

Date: April 5, 2002

Supervisor: Dr. David Kellenberger
Vita Auctoris

NAME: Salah Zogheib

PLACE OF BIRTH: Beirut, Lebanon

YEAR OF BIRTH: 1971

EDUCATION:

Alnajah Secondary School, Baalbek
1984-1887
Secondary School Diploma

Lebanese University, Fourth Branch
1988-1992
Honours Degree in English language
and Literature

Lebanese university, First Branch
1996
Secondary Teaching Certificate

Lebanese University, Fourth Branch
1996-1999
Honours Degree in Educational
Psychology

University of Windsor, Windsor
2001-2003
M. Ed. (Curriculum)