Chapter 2
Review of
Related Literature

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2.1 INTRODUCTION

In this 21st century one has to possess different skills known as 21st century skills. 21st century skills are Media Literacy Skills, Life Skills, Net-Savvy Skills, Techno-Savvy Skills, and Info-Savvy Skills. There are other skills also included in 21st century skills but here the investigator would like to research on Info-Savvy Skills. Info-Savvy Skills have been introduced at higher education level abroad. In India still Info-Savvy Skills is a new area.

India is a developing country and our education system is internationalised. So to prepare 21st century Citizens it becomes necessary to develop such skills which help our national development. First step has already been taken by our educational system to include ICT in education.

According to World Bank, use of Internet has increased in India. In year 2000 there were 55,00,000 Internet users and in year 2008 there were 5,17,50,000 Internet users. It shows that more and more people have turned towards use of Internet.

The investigator has divided studies into two categories for better understanding of the related literature.

- Studies conducted on ICT
- Studies conducted on Internet

2.2 STUDIES CONDUCTED ON ICT

In 2009 MHRD (Ministry of Human Resources Development) prepared a draft on National Policy on ICT in School Education. It shows that now ICT become necessity of school curriculum. To equipped students at school level on ICT first we need ICT literate teachers. Many studies conducted of ICT in education, they were as follows.

Rathod (2002) studied Perceptions of B.Ed. students towards information and communication technologies (ICT) in education- a compulsory course proposed to be offered in B.Ed. at the M.S. University of Baroda. The study revealed that the course should be mandatory at all India level. It also revealed that the course was also helpful in using the Internet for gaining knowledge from educational websites.

Bansavich (2005) studied Factors influencing pre-service teachers' readiness to integrate technology into their instruction. The purpose of this study was to investigate factors that are influencing the readiness of pre-service teachers to integrate technology into their instruction. Conclusions include recognizing the importance of student teachers' personal attributes in preparing pre-service teachers to integrate technology into their instruction; improving the student teacher teaching experience so that student teachers are given the opportunity to practice teaching with technology; and strengthening the program features to improve their influence on pre-service teachers' readiness to use technology. Suggestions for improving the program include: incorporating technology across the curriculum, continued training for the full and part-time faculty, encouraging faculty to model technology use in the classroom, and providing students with more opportunities for technology training and authentic experiences using technology in their coursework.

Fowler (2007) studied Teacher use and integration of technology in Alabama K--12 public school classrooms: Influences and barriers. This study investigated whether Alabama K-12 teachers did or did not use technology in their classrooms. Findings revealed that teachers use technology for personal and professional use, but do not use it for instructional use with students. Influences on using technology were student engagement and motivation, personal and professional reasons, and teaching 21st century skills. University training in technology, whether in undergraduate or graduate school, also was related to teachers' technology integration level.

Macklin (2007) studied Integrating information and communication technology (ICT) literacy into the first-year composition course: Impact on teaching, learning outcomes, and assessment. Two questions were posed. The first addressed the impact on students' learning outcomes in a first-year composition program. The second focused on the use of a problem-based learning approach to facilitate skills acquisition. The study addresses the pedagogical needs of moving instruction from the current practice of teaching library skills to using a problem-based learning approach to teach critical thinking for information and communication technology literacy. In concluding this study, investigator make four assertions regarding ICT literacy education: 50-minutes is insufficient to teach critical ICT skills; ICT literacy education is most effective when librarians collaborate with subject matter faculty; assessment practices for ICT skills should be on-going, throughout higher education,

so that instruction can be revised as needed; and, most importantly, ICT skills cannot be part of the curriculum until faculty and administrators accept them as necessary and appropriate for higher education.

Spaulding (2007) studied Comparison of pre-service and in-service teachers' attitudes and perceived abilities toward integrating technology into the classroom. The research questions were as follows: Do differences exist between the perceptions of pre-service (at student teacher level) and in-service teachers with regard to the benefits of and readiness to integrate technology into their teaching?, Do differences exist between pre-service teachers' expected practice of integrating technology into their future teaching and in-service teachers' self-report practice of integrating technology into their teaching?, Do differences exist between the self-reported technology skills of pre-service and in-service teachers? and Do results vary on the basis of level of perceived technology skill? This study revealed significant differences between the perceptions of pre-service and in-service teachers with regard to technology integration. Specifically, the pre-service as compared to the in-service teachers revealed a greater level of confidence to integrate technology and more positive beliefs in the benefits of using technology to improve teaching and learning. However, these differences were not evidenced when examining perceptions on the basis of self-reported technology skill levels. Both pre-service and in-service teachers who reported above average technology skills revealed significantly more positive attitudes and perceptions about technology integration than those who indicated less skill. These findings confirm the need to continue pre-service and in-service initiatives to not only better prepare our teachers to effectively integrate technology into the classroom, but to also increase their technology skills.

Amankwatia (2008) studied Teaching with technology for 21st –century learning: A multiple-case study of a school district's high school laptop initiative. This year-long, multi-case study describes the context and outcomes of 9th-grade English Language Arts, Math, and Special Education laptop implementations at two diverse, urban high schools and the effect that technology innovation had on teachers' efficacy, pedagogical beliefs, and instruction. Nonetheless, teachers also believed that computers should play only a supplement role.

Bagwell (2008) studied Conceptualizing and teaching new literacies: A multiple-case study of teachers' perspectives of information and communication technology.

The purpose of this multiple case study was to investigate the efficacy of a professional development program on the ways in which teachers conceptualized and taught new literacies and incorporated ICT. Findings suggest that it is increasingly imperative to reach a critical mass of teachers who are capable of using ICTs and teaching multilitaracies in order to equip 21st century citizens with the necessary skills for functioning fully in a global society.

Bakar and Mohamed (2008) studied Teaching using Information Communication Technology: Do trainee teachers have the confidence? This study sought to identify trainee teachers' confidence in teaching using ICT. Trainee teachers were final year students in the teacher education program. The study showed that trainee teachers were quite confident integrating ICT with teaching. The study also showed a significant difference in the level of confidence between students with teaching experience and students without teaching experience. Older students were more confident integrating ICT in teaching than younger students.

Fernandez (2008) studied Living and learning with information and communication technologies in the 21st century. This qualitative study investigated one school's use and infusion of ICT's into the curriculum to prepare students to be competent and competitive in the 21st century. The research questions addressed 21st century skills, educator awareness of students' draw toward technology, and educator response to ICT challenges. The findings propose three major themes: (a) ICT literacy, (b) a pioneer spirit, and (c) the call for a technology plan. This study suggests that project-based learning (PBL) can be an effective methodology to: (1) engage students, (2) equip them with 21st century skills, and (3) promote greater achievement through meaningful teaching and learning. The data indicated that teachers are aware of students' attraction to ICT. However, it takes a pioneer spirit to embed ICT into the curriculum. This study spawned three classifications of teachers as "Waiters," "Dabblers," or "Doers."

Perera (2008) studied How computer-related technology is incorporated into instructional methods and objectives in the secondary school classroom. The study focused on actual instructional practices teachers employ in their secondary school classrooms. The findings indicated that the participants' constructivist objectives addressed in the strategies in which they facilitated students' use of technology for communication with others; in their designing/creating/innovating skills; to think

critically about real world problems; for articulation/explanation; for exploration of information; for comprehension; for interpretation and analysis of information; for application of information; and for evaluation of information and for composition. The qualitative findings disclose different kinds of instructional objectives addressed in the technology incorporated methods such as cognitive, social, and computer skills.

Pickett (2009) studied Linking the digital divide: Assessing teacher comfort levels to increase uses of technology in the classroom. This qualitative study based on grounded theory described teacher, student, and the school principal perspectives on the importance of using technology in the classroom. The research question focused on ways to improve and increase technology integration in the classroom. Triangulation of the data revealed that teachers, students, and the school principal understand the importance of technology integration. Students and teachers reported on the need for more technology equipment and technology knowledgeable teachers.

2.3 STUDIES CONDUCTED ON INTERNET

Rapid increase in use of Internet shows that now students started to search information by themselves. Role of teacher changed to facilitator of knowledge and information and on the other hand it also increases responsibilities of teachers. Lets understand it more clearly.

Devenport (1995) studied The factors related to tennesse K-12 educators implementation of Internet into classroom activities and professional development. The study revealed that educators who have attended Internet workshops and seminars are using Internet. The study also revealed that educators would like to receive more training on how to use Internet for class activity and professional development.

Joshi (1999) studied Utilization of the Internet in educational research. The investigator used questionnaire on Internet awareness as a tool for the study. The investigator delimited the study to Faculty of Education and Psychology, The M.S. University of Baroda (1998-99). Another tool used by the investigator was interview. One of the objectives of the study was to find out the extent to which researchers in education utilize the Internet. The investigator found that beginner participants were more hesitant in using the computer independently. The

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participants who had previous experience of using the Internet were more confident in their interactions. And all participants were eager to know more than what was explained in the document.

Pfister-Brightman (2001) studied Young children's ability to utilize the World Wide Web as an educational resource. The purpose of the study was to examine the types of browsing behaviors young children exhibit while browsing the web, as observed through audio trails and videotapes of web site visitation. The data analyses of the study indicated that young children were able to navigate and recall some information presented on the web easily.

Christianson (2001) studied Teaching on the World Wide Web: A Descriptive investigation of Web-based instruction in nursing undergraduate education. The study explored and described the nature of the teaching experience in Web-based instruction at the undergraduate level, specifically in nursing courses. A national online survey of 171 faculties with experience reaching in the online format served as the primary data source for the investigation. Results of the study indicated online faculty spent significantly more time in the planning and implementation of a Web course than a traditional course.

Zschocke (2002) studied Iinstructional web sites design: an object-oriented approach. The study contributes to the ongoing research into the design of web-based instruction. The results were of interest to educators, instructional designers, and other e-learning specialists who want to implement learning objects and improve their development of web-based instruction by incorporating object orientation as the primary development paradigm and unified modelling language as the principle modelling notation tool.

Brown, Murphy and Nanny (2003) studied Turning techno-savvy into info-savvy: authentically integrating information literacy into the college curriculum. This case study reports a series of hands-on/minds-on information literacy activities that dissolve student's misconception that "techno-savvy" is synonymous with information literate. Careful and thorough instruction in the mining of popular Internet search engines for authoritative information was coupled with instruction in the use of traditional library resources. It was found that the college students studied possess a high need for clarity and a low tolerance for ambiguity, and therefore any activities assigned must be thoroughly, yet succinctly, described in order to achieve

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success. Combining traditional information literacy instruction with novel approaches appeals to the confidence in and reliance on Internet search engines that college students exhibit, while it moves this microcosm toward a higher level of information literacy and commitment to lifelong learning.

Dhodi and Goel (2004) studied Approaches adopted by the M.Ed. students for information gathering on the World Wide Web and their utility for the M.Ed. programme. One of the objectives of study was to study the approaches adopted by the M.Ed. students for information gathering on the WWW in terms of (a) Technological aptitude, (b) Competences required for finding suitable research materials, (c) Information overload coping strategies. For the study investigator used a five point rating scale as a tool. The investigator found that M.Ed. students felt that use of the web could save their time because they got lots of information in less time. But some of the students didn't know the exact mechanism of searching on the web. Students expressed the need to have some orientation programme or a workshop regarding the search mechanism.

Al Saif (2005) studied The motivating and inhibiting factors affecting the use of web-based instruction at the University of Qassim in Saudi Arabia. The main focus of this study was to identify those factors that motivate or inhibit the use of web-based instruction at the University of Qassim, especially those factors relating to organization, personal characteristics, curriculum, technology, and culture. The data of this show that the faculty in general demonstrated positive attitudes toward using technology. It was found that the faculty age and academic rank have influence on the faculty use of technology and motivation to use WBI. The skills and access of the computer and Internet, administrative support, and technical support were critical factors that motivate the faculty to use WBI. Furthermore, the faculty are willing to use WBI because they believe that WBI provides effective strategies in teaching and greater course flexibility, and it overcomes scheduling.

Beaumont (2006) studied Investigating Internet Use in Jamaican Primary Classrooms. This non-experimental, qualitative case study investigated and described the phenomenon of Internet use in two, Grade 6 classrooms in a rural and an urban school in Jamaica. Data sources included field notes, journal entries, interviews, classroom observations, photographs, a video, and Internet artefacts. Investigations were summarized into a single case study with respect to the Internet

as an agent of teaching, learning and collaborating. The findings revealed that professional training in Internet use enhanced the teaching and learning process and contributed to student-centered, multi-sensory and cooperative and collaborative learning. Internet use engaged students and supported constructivist methodologies in the classroom. It promoted higher-order thinking and learning skills and facilitated small-group access to single computers while providing content-rich resources for teachers and students, especially those with diverse needs.

Berrier (2007) studied Sixth-, seventh-, and eighth-grade students' experiences with the Internet and their Internet safety knowledge. This study focused on the children's voice by investigating the children's report of their online activities and their awareness of cyber security, ethics, and safety issues. The purpose of this study was to gain insight into the specific reported online activities and Internet safety knowledge of children aged 10-14 years along with their report of parental supervision of their Internet use. An analysis of the research confirmed that as children mature, they increase their use of the Internet and their participation in unsafe online practices. The findings indicated that the most common online practices reported by the middle-grade students included emailing, social networking (MySpace), instant messaging, publishing and sharing information about their favourite sports and activities, and using secret codes while messaging with friends. The results of this study indicated significant relationships between the household placement of the computer and the frequency of unsafe online practices; students with computers in private locations reported unsafe online practices with twice the frequency of those with computers that could be monitored. The findings reflected that, in general, students were knowledgeable about unsafe Internet practices and engaged primarily in safe practices; however, many did report practices that could potentially place them at risk. The results from this study demonstrate a need for Internet safety programs to educate parents about the dangers their children face online and how to minimize those risks and to help children to gain the knowledge, decision-making skills, and motivation necessary to make safe and responsible choices when they are using the Internet.

Coyle (2007) studied Wikis in the college classroom: A comparative study of online and face-to-face group collaboration at a private liberal arts university. This study examined online Wiki collaboration compared to more conventional face-to-face

group collaboration in higher education. The study participants were juniors and seniors taking a senior-level broadcast communications course. They were divided into two groups, and each group collaborated on writing reports using both conventional face-to-face collaboration methods and collaboration using the Wiki function in Moodle course management software. Following completion of the reports, professional subject matter experts rated the quality of the reports according to specified content and format criteria. The study's research questions addressed (1) benefits and obstacles experienced in face-to-face collaboration; (2) benefits and obstacles experienced in Wiki-based group collaboration; (3) whether there was a difference between Wiki group collaboration and face-to-face group collaboration in terms of the quality of the final product; and (4) whether there was a difference in students' experiences of learning and sense of community after Wiki-based collaboration and face-to-face collaboration assignments. Results indicated there was no difference in the quality of reports related to the method of collaboration, suggesting that Wikis are an effective collaboration method; face-to-face collaboration is more efficient in terms of communication among group members and is sometimes preferred because it is familiar; Wiki collaboration allowed students to work at their own pace and to easily see the work of other group members; students adapted Wiki capabilities to their previous methods of group work; and there was not a significant difference in students' experiences of learning and community between the two methods. Even though the Wiki software provided the capability, participants did not edit one another's Wiki work unless they had volunteered and were designated by the group to be an editor. Unless they were an editor, individual participants did not feel it was appropriate to change their peers' work.

Keane (2007) studied The role of email in faculty-student relationships toward understanding engagement and retention. This dissertation study sought to address a dearth in the information regarding the impact of email communication, despite its widespread use, on student-faculty relationships and the impact that the fostered relationship may have on engagement and ultimate college persistence. A survey was administered to a class of students in their second year of college at a small private college in the northeast, seeking perceptions about their first year experiences. Follow-up interviews were conducted to illustrate the responses of 15

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students. Survey and interview data determined that students prefer to contact their faculty members via email, especially in the first year of college. A preference to email faculty differed from a preference to connect with friends and family face-to-face. Interview data indicated that the student preference for email contact with faculty was a result of feeling intimidated during face-to-face contacts. Students indicated in survey and interview data that their trust in faculty members increased as a result of email correspondence.

Wolverton (2007) studied Internet education: A middle-range theoretical model for overcoming transactional distance. The author states that, because of this depth of knowledge there is a theory underlying the practice of teaching whether that theory is articulated or not. However, a clearly stated theoretical model for the practice will aid teachers in preparing educational material in the most effective manner. Because no appropriate theories were found, the author proposes a middle-level theoretical model of Internet education.

Yates (2007) studied Academic integrity in the Internet age. The research project created a reusable, computer-based application that supported instructors as they taught college students to write ethically. The learners were first year college students in core courses. Two versions of the product were developed; one version included student files while the other version for instructors included student files and additional plagiarism education resources. Students' papers were tested for plagiarism with Internet search engines and plagiarism detection software. Instructors rated the treatment through use of a post treatment survey instrument. Students in the experimental group regarded some activities as more serious forms of plagiarism compared to students in the control group, but results were not statistically significant. An analysis of student work for plagiarism revealed that many students from both groups had problems attributing sources properly.

Bloom (2008) studied A community of bloggers: A study of secondary school English class blogs. The purpose of this study was to determine the extent to which an online community was observable in the teacher assigned blogs of secondary English students and the characteristics that helped to form the basis for the teacher assigned blogs. Open, axial and selective coding were used along with rich description, memos and categorizing as part of a virtual ethnographic methodology to determine the observability and the characteristics that helped to form the

educational blogs. The data reported that online communities were observable in all 127 blogs used in this study. There were three characteristics that were found to form the basis of the teacher assigned blogs: commonalities, give and take relationship and commonalities.

Chen (2008) studied The presence and usage of computer technology and the Internet in the classroom: An examination of secondary school students' and teachers' attitudes. Quantitative survey questionnaires and qualitative interviews are employed as research instruments in this mixed methods study. There are 6 research questions for the student sample, 3 of which are: (1) Student Use of Computers and Internet for Information Gathering, (2) Student Use of Computers and Internet to Produce Work for School, and (3) Student Attitudes on Computers as Distractions in the Classroom. There are 6 research questions for the teacher sample, 3 of which included: (1) Teacher Attitudes Towards Help They Receive in Integrating and Implementing Computer Technology and the Internet into Their Instructional Practices, (2) Teacher Attitudes Towards Computers and Internet Implementation in Their Classrooms, and (3) Teacher Attitudes Towards Student Use of Computers and the Internet in the Classroom. The sample size for the quantitative portion (Survey Questionnaire) contained 451 student participants and 37 teacher participants from 2 comprehensive public high schools in the southern California area averaging about 2700 students. The resulting data were triangulated with the qualitative portion (Interview), which had 6 student and 6 teacher participants. . Conclusions were: (1) positive attitudes of both students and teachers have led to an increased demand for more computer-based technologies. (2) However, positive attitude does not show that positive attitudes lead to higher usage of classroom technologies; a lack of access was found to be a primary reason. (3) There is still an ambivalent attitude by both students and teachers towards the usage of computer technology and the Internet as both an instructional and a learning tool.

Eagen (2008) studied Parent and adolescent Internet use, perception, and regulation: A dyadic analysis. The purpose of the current study was to examine the degree of agreement that existed between 121 adolescent-parents pairs, or dyads, in terms of Internet use, perception of use, and regulation. Data was obtained using two parallel web-based surveys. Parents and adolescents agreed when it came to the location that the adolescent accesses the Internet, how often the adolescent uses the Internet for

general purposes (talk with friends, meet new people, look things up for school, research a product, listen to music, or play games), how often the adolescent uses various technology tools (MySpace, e-mail, IM, Google, and LiveJournal), MySpace account use, the frequency of adolescent use in a normal week, adolescent skill level, adolescent risk behaviours (MySpace profile settings, having unmet "friends," and personal identity management), adolescent cyber-bullying experience (both as participant and target), and methods of regulation (filters, monitoring software, safety discussions, and establishing rules). Parents and adolescents generally disagreed when it came to perceptions of the Internet in areas such as safety on the Internet, freedom and choice, and the personal/private nature of the Internet. This was consistent with the hypothesis that differences would be found in these areas.

Freeman (2008) studied Exploring the boundaries of academic participation for graduate students in education through weblogging. The goal of this research was to explore the potential of a weblog environment to extend academic participation beyond course boundaries for graduate students in Education. Findings from post-course surveys revealed that students did not engage with academia beyond coursework. Qualitative analysis of weblog and discussion content suggested that participants making the best use of weblogs questioned their assumptions, made connections with broader experiences, and were more engaged in a range of academic activities. Coursework failed to support student understanding of academia and their place within it. Where blogging practices emphasized writing, the weblog was interpreted as a personal course journal. Weblog was appreciated as freedom from collaborative discourse allowing participants to explore personal emotions and interests. Cross-weblog reading increased as transparency of entries improved within the aggregator. With an established blogging community weblogs hold potential to expand academic participation.

Jackson (2008) studied Online graduate students' understanding of information ethics issues: An exploratory study. This study addressed the problem that students have a varied, and sometimes weak, understanding of information ethics (IE) issues, even within the context of academic research. This can lead to dishonest behaviour which can carry over into the workplace and other post-collegiate experiences. This exploratory study utilized a multiple-case study design to explore how online doctoral students understood and applied IE issues in their academic experiences.

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Data was collected from interviews, student-produced artefacts, and existing university documentation. Analysis utilized a combined coding strategy, including auto, open, and axial coding, and content analysis. Findings supported the literature, indicating that students have varied levels of understanding of IE issues, and that even at the doctoral level more exposure to IE issues is needed. While most of the participants in this study applied IE concepts adequately in their writing, some still need a significant level of training. This study presents the opportunity to bring about positive social change by linking ethical scholarship with honesty in society.

Kelley (2008) studied The impact of weblogs on the affective states and academic writings of L2 undergraduates. This study explores the impact of blogging on the affective conditions of an undergraduate academic writing course for second language students. Qualitative results, however, indicate that students associated improvements in writing with using blogs, and that students associate their positive sense of class community with using blogs. Further, the results suggest that blogs can facilitate and enhance the instruction of academic writing. Blogging remains promising as an educational tool that might enhance the academic writing of second language international students, as well as facilitate the instruction of academic writing.

Mokhtar, Majid, and **Foo (2008)** studied Teaching information literacy through learning styles: The application of Gardner's multiple intelligences. The key for students of today to become independent learners and knowledge workers of tomorrow lies in being information literate. However, existing information literacy (IL) teaching approaches have not always been successful in equipping students with these crucial skills to ensure deep erudition and long-lasting retention. Hence, sound pedagogical approaches become critical in IL education. This research hypothesizes that students grasp IL skills more effectively when their innate interests, such as that determined by their respective dominant intelligences, are stimulated and applied to their work. Consequently, they would produce work of better quality. To verify these postulations, an IL course was designed for students undertaking project work to equip them with the necessary IL skills, by using an established pedagogical approach — Gardner's theory of multiple intelligences. Subsequently the quality of students' project work between the experimental and control groups were compared.

It was found that the performance of students who had undergone IL training through the application of learning styles was superior in their project work.

Brand-Gruwel, Wopereis, and Walraven (2009) studied A Descriptive Model of Information Problem Solving while Using Internet. This paper presents the IPS-I-model: a model that describes the process of information problem solving (IPS) in which the Internet (I) is used to search information. The IPS-I-model is based on three studies, in which students in secondary and (post) higher education were asked to solve information problems, while thinking aloud. In-depth analyses of the thinking-aloud protocols revealed that the IPS-process consists of five constituent skills: (a) defining information problem, (b) searching information, (c) scanning information, (d) processing information, and (e) organizing and presenting information. Further, the studies revealed that regulation skills prove to be crucial for the on-going IPS-process. The IPS-I-model depicts the constituent skills, regulation skills, and important conditional skills. The model gives an initial impetus for designing IPS-instruction.

Probert (2009) studied Information Literacy Skills: Teacher Understandings and Practice. This article reports on a project, involving three New Zealand schools, which investigated teachers' understanding of information literacy and their associated classroom practices. Recently published work, while lamenting school students' lack of information literacy skills, including working with online resources, provides little research investigating classroom teachers' knowledge of information literacy skills and their related pedagogical practice. The findings of this project indicate that while some of the teachers in this project had a reasonably good understanding of the concept of information literacy, very few reported developing their students' information literacy skills.

Creighton (2010) studied Perceptions of Web 2.0 tools as catalysts for teacher and librarian collaboration: A case study. The purpose of this study was to explore perceptions of Web 2.0 tools as a potential means of overcoming the time barrier to collaboration. Participants were school librarians and classroom teachers from a large suburban school district. Research questions focused on (a) ways Web 2.0 tools can be used to collaborate and (b) which tools are most effective. Data collection strategies included face-to-face interviews and participant observations. Collaborative planning documents provided by the school librarians and a

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researcher's journal were also examined. Data were analyzed using Hatch's (2007) eight-step interpretive analysis model, and included quality assurances such as peer review, member checking, and triangulation. Results indicated that (a) the practice of collaboration varied by school and depended upon school culture, time and scheduling constraints, interpersonal characteristics, and perceptions of the meaning and benefits of collaboration; and (b)Web 2.0 tools are underutilized due to a lack of training, comfort levels, dependence upon tested technology tools, and perceptions of Web 2.0.

Kilgore (2010) studied Teachers' perspectives on using e-mail to communicate with parents. The purpose of this study was to examine teachers' perspectives of the use of e-mail to communicate with parents. The questions for this study examined (1) teachers' perceptions of e-mail as a method of communication; (2) differences in teachers' perceptions regarding email communication; and (3) selected variables (gender, age, years of teaching experience, frequency of e-mail use, administrators' e-mail use, classroom e-mail access, grade level taught, and school socioeconomic level) that influenced their perceptions toward using e-mail to communicate with parents; and (4) teachers' perceptions of obstacles to using e-mail to communicate with parents. Teachers in a suburban school district participated in this mixed-methods study by completing a quantitative survey that was analyzed using ANOVA and independent t tests followed by three qualitative semi-structured interviews that were recorded and transcribed for analysis based on similarities and themes. Results suggested that teachers in higher grade levels and those who used e-mail communication more frequently reported more positive perceptions of e-mail communication with parents. Two significant obstacles to e-mail use were raised (misinterpretation of content and lack of parent access to computers). As a result of this study, teachers and parents can better understand the ways e-mail can be used to effectively communicate about student issues that can result in improved student performance and academic success.

Emerging Observations

From the review of the related literature the following observations are made.

📖   11 studies were conducted on ICT in education.

📖   25 studies were conducted on Internet.

- Most of studies were conducted outside India.
- Most of studies conducted at higher education level.
- A few studies were conducted at school level.
- A few studies were conducted on pre-service and in-service teachers.
- There was 01 study on Wikis (Coyle, 2007), 02 studies on E-mail (Keane, 2007 and Kilgore, 2010), 03 studies on Weblog (Bloom, 2008, Freeman, 2008, and Kelley, 2008) and 01 study on Web 2.0 (Creighton, 2010).
- Yates (2007), Jackson (2008) and Mokhtar, Majid, and Foo, (2008) studied on Information Ethics at higher education level.
- Most of the studies have used Surveys. Data were collected by adopting interviews, classroom observations, questionnaire and tests in most of studies. Few studies used Quantitative techniques for analysing data.
- Brand-Gruwel, Wopereis, and Walraven (2009) designed a model of Information Problem Solving- Internet.

2.4 IMPLICATIONS OF THE RELATED LITERATURE REVIEWED FOR THE STUDY

In the light of review of related literature the investigator feels the need to explore the awareness among student teachers regarding the use of the Internet and its utility for their educational work (Joshi, 1999). Professional training in Internet use enhanced the teaching and learning process and contributed to student-centered, multi-sensory and cooperative and collaborative learning (Beaumont, 2006). The study reveals that web-based learning is increasing rapidly so that attention is also given to instructional website design (Zschocke, 2002). Young children are able to navigate and recall some information presented on the web easily (Pfister-Brightman, 2001). Combining traditional information literacy instruction with novel approaches appeals to the confidence and reliance on Internet search engines that college students exhibit (Brown, Murphy and Nanny, 2003). Adolescents were frequent users of Internet and generally they use various technology tools (Eagen, 2008). But the same time there is a need to aware students and parents about Internet safety (Berrier, 2007). It increases the responsibility of a teacher that they should aware their students about risks involved in Internet surfing. For that reason, there is a requirement of trained teachers who are capable of teaching the students about the

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Internet and WWW. To improve pre-service teachers' teaching experience technology has to be integrated into their instruction (Bansavich, 2005). The pre-service as compared to the in-service teachers revealed a greater level of confidence to integrate technology and more positive beliefs in the benefits of using technology to improve teaching and learning (Spaulding, 2007 and Bakar and Mohamed, 2008). Student engagement and motivation, personal and professional reasons, and teaching 21st century skills were Influencing teachers on using technology (Fowler, 2007). It is increasingly imperative to reach a critical mass of teachers who are capable of using ICTs and teaching multilitaracies in order to equip 21st century citizens with the necessary skills for functioning fully in a global society (Bagwell, 2008). So, at B.Ed. level ICT was introduced as a compulsory course from the year 2002 (Rathod, 2002). It shows the necessity of computer literacy at B.Ed. level. Computers should play only a supplement role in teaching learning process (Amankwatia, 2008). But having only ICT knowledge is not enough, now there is a need of research investigation into classroom teachers' knowledge of information literacy skills and their related pedagogical practice (Probert, 2009).

Use of Internet has increased on rapid way, because new concepts were added on Internet like Wikipedia, Weblog, Facebook and Web 2.0. There was 01 study on Wikis (Coyle, 2007), 02 studies on E-mail (Keane, 2007 and Kilgore, 2010), 03 studies on Weblog (Bloom, 2008, Freeman, 2008, and Kelley, 2008) and 01 study on Web 2.0 (Creighton, 2010). These new ways of searching information save time and energy of a student but the same time it increase dangers also. There was a requirement of Internet safety programs to minimize those risks and to help children to gain the knowledge, decision-making skills, and motivation necessary to make safe and responsible choices when they are using the Internet (Berrier, 2007). At higher education level one of major risks is related to Information Ethics. The literature indicates that students have varied levels of understanding of Information Ethics (IE) issues, and that even at the doctoral level more exposure to IE issues is needed. If proper training is provided to students then they are able to apply IE concepts adequately in their writing (Jackson, 2008). At higher education level it was difficult to teach students to write ethically (Yates, 2007). It shows emerging need to designing Information Problem Solving Model for searching information on

Internet (Brand-Gruwel, Wopereis, and Walraven, 2009). It means there is a need to develop information Literacy Skills.

On the basis of reviews, the investigator felt that there is a need to develop a programme through which student teachers are able to develop their Info-Savvy Skills.