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The effect of using computer skills on teachers' perceived self-efficacy beliefs towards technology integration, attitudes and performance

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Abstract

The current study analyzes the relationship between the apparent teacher's self-efficacy and attitudes towards integrating technology into classroom teaching, self-evaluation reports and computer performance results. Pre-post measurement of the Computer Technology Integration Survey (CTIS) (Wang et al,2004) was used to determine theconfidence level with of 60 science teachers and 12 mixed-major teachers enrolled at the Lebanese University, Faculty of Education in the academic year 2011-2012. Pre –post measurement onteachers'attitudes towards usingtechnologywas examined using an opened and a closed questionnaire.Teachers' performance was measured by means of their Active inspire projects results using active boards after their third practice of training in computer skills and Active inspire program. To accumulate data on teachers' self-report, this study uses Robert Reasoner's five components: feeling of security, feeling of belonging, feeling of identity, feeling of goal, and self-actualization which teachers used to rate themselves (Reasoner,1983). The study acknowledged probable impacts of computer training skills on teachers 'self-evaluation report, effectiveness of computer technology skills, and evaluations of self-efficacy attitudes toward technology integration. Pearson correlation revealed a strong relationship r= 0.99 between the perceived self-efficacy towards technology incorporation and teachers' self-evaluation report. Also, the findings of this research revealed that 82.7% of teachers earned high computer technology scores on their Active inspire projects and 33.3% received excellent grades on computer performance test. Recommendations and potential research were discussed.

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1. Introduction

Computer technology has become a basic aspect of modern life. The fact that information can now be transferred with the press of a button has posed new challenges on education. In his dissertation, Saad (2013) stated that Information and Communication Technology (ICT) has become, during the last few years, one of the basic building blocks of the Lebanese society. He added that the popularity of ICT among the Lebanese citizens is growing in an exponential rate and has become an indispensable tool in performing their daily tasks. Also, Saad (2013) mentioned that the social networks such as Facebook, Twitter email, andInternet communication has become vital in today's Lebanese society.

According to Cornu (2010) the changes in the Lebanese society due to the rapid infusion of ICT and its converging technologies have influenced the way people work, communicate, and learn. In fact, it is not beneficial to teach or learn nowadays the same way as a century ago. In addition, Cornu (2010, p.11) "claimed that the quick and deep changes brought by ICT have a strong influence on knowledge, teaching, learning". The technological context that the Lebanese live in is quickly and dramatically evolving. Accordingly, the ways by which Lebanese youngsters become educated are rapidly changing; and, teachers are scrambling to adapt (Burns, 2012; Prensky, 2012; MEHE, 2012). However, despite that most educational institutes compete to catch up and introduce new digital tools, they often just deploy educational technologies to classrooms, without changing the education itself to fit the future .Consequently, teachers are found confused about how to use technology (Haydn, 2009, 2010; Prensky, 2012, MEHE, 2012; Saleh, 2008). In year 2012, the Ministry of Education and Higher Education (MEHE), announced a five –year plan to establisha strong foundation for ICT in education, called "Lebanon's National Educational Technology Strategic Plan" that aims at harnessing the potential of new technology to reform education (MEHE, 2012)."The declared strategic plan proposes that by 2017, 100 percent of students and teachers in Lebanon will have ready access to appropriate classroom technologies that support the fulfillment of curricular and instructional objectives in all subject areas" (MEHE,2012,p.28). In this regard, "the Ministry promulgated a law, that limits the recruitment for teaching only to teachers who hold specialized educational degrees" (MEHE, 2011b). "In light of this law, student teachers (the prospective teachers) are often seen as expected candidates to serve as change agents of any new educational reforms because they have more recent experience of ICT and as being more committed to its use than longer serving teachers" (Hammond et al., 2009).

Accordingly, Roblyer (2003) stated that teachers have a primordial influence on educational technology.Teachers' observation on technology are how they respond with it, how they pertain it with their teachings, and how it assists the objective of achieving their vision of teaching and learning will influence potential years of computer technology in education. Hardy (2003), said that the time spent on exploring technological potential in some teacher education programs poses some problems for those programs. Moreover, many in-service (presently teaching) and pre-service (now in training) teachers think that they are not skilled and often lack suitable tools to apply educational technology in their classrooms (Hardy, 2003). However, even though pre-service teachers receive official practice in instructional technology, most new teachers do not have sufficient awareness about integrating computer technology into curricula and their proficient practice (Hardy, 2003).This leads to the question, why are Lebanese public teachers so uncertain to adapt to technology where it can immensely assist them?

One probablemotive for the nonexistence of variation toward technologically-enhanced, student-centered pedagogy could be because of the lack of computers in classrooms in the Lebanese public schools. Another reason could be related to the outlooks that teachers embrace. According to Chen (2008), teachers attribute to their previous theories and involvements when trying to assimilate technology into their instructional exercises. These past philosophies can inspire the growth of

extraviews concerning technology integration and correlated instructional teachings. Pan and Carroll (2008) stated that teachers' theories are most likely produced throughout their time consumed in the classroom, either as teachers or students. Consequently, teachers are required to adjust their opinions and ponder in new techniques about students, subject materials, and the teaching-learning procedure in order to adopt the incorporation of technology.(Pan & Carroll, 2008, p. 38). Furthermore, Park & Ertmer (2007) suggested that these vicissitudes must be executed through exercises that stresses thecontemplation about theindividuals' beliefs and hands on occurrences. In addition, Pajares (1992) and Bandura (1997) emphasized that attitudescompels to action programs or objectives that guide people's conclusions and performances motivating people to exploit upon their viewpoints. Maintaining thatstructure in mind, this research learning will evaluate modifications in teachers' judgement as suggested by their self-efficacy with courtesy to technology integration skills in their classes after coaching in Active inspire curriculums.

Existing literature in computer self-efficacy is missing a sequence of qualitative and quantitative reports. Wall (2004), suggested that the quantifiable analysis on computer self-efficacy needs qualitative follow-ups (such as interviews). However, so far, there has not been much exploration that syndicates the two techniques. Hardy (2003) stated that some studies conducted on pre-service teachers(teachers under training or preparation) did have a blend of mixed-methodology reports, but there was no effort to advance confirm the research questions. This study used the quantitative approach due to inability to follow –up with teachers in their classroom settings because of summer vacation.Teachers were asked by the course technology coordinator program to prepare their projects during the summer 2012 at home as part of their final project. Consequently, the qualitative part was not conducted.

2. Background And Significant Information

In March 2003, Charles Clarke (as cited in AL-Badawi Hafez) said that Information and communication technologies (ICTs)goes right through the education system from early years to higher education and helps boost standards. Also, he added that ICT can make a real difference to teaching and can engage and excite students of all ages,particularly when education system evolves in the next few years , the role of ICT will become increasingly important.

The incorporation of ICT sin pre-service teacher education in Lebanon is achieving more notice after the driveregarding the "professionalization" of teaching (El Amine, 2009; Kaddoura, 2010; Ministry of Education and Higher Education (MEHE), 2010; Salameh, 2009). The evaluation of literature correlated to the current use of ICTs in pre-service teacher education in Lebanon is limited and inadequate to give a decent signal of the status quo (Baroud & Abou Chedid, 2010; El Hage & Abou Jaoude, 2009).

Numerous proposals had been launched in Lebanon, the first proposal was heldby the British Council in 2005, which started coaching teachers from the private and public sectors on ICT skills to incorporate Word, Excel, PowerPoint and different web tools in their lesson plans. Other projects in Lebanon were joint ventures between the British Council and the Center for Educational Research and Development (CERD).The first project is ICT for teachers of English, Science and Math, and the second is Strategic Leadership in ICT (SLICT) for school directors (Chahine, 2013). In the same element, the Lebanese University launched a project to teach public teachers (2009-2010 until 2012), in the Faculty of Education in Lebanon computer skills in a technology course. Both the Lebanese University and other private universities, are challenged by graduating prospective teachers proficient of using the full potential of educational technologies pedagogical affordances in their future teaching of specific academic subjects. In response, MEHE, CERD, and Faculties of Education should work together to develop a national, comprehensive, coherent, content-based professional development system that integrates content-specific pedagogies, content-specific uses of technology, and content-specific assessment methods (MEHE, 2012). Despite the national ICT-based efforts and initiatives to train in-service teachers to teach with technology, results were very limited and below planned expectations

(Baroud & Abou Chedid, 2010). Baroud and Abou Chedid (2010) claim that this deficiency is mostly because of the fact that more than 56% of school teachers in Lebanon do not hold university degrees, and consequentlydistress the sufficient preparation for using modern-day and advanced varieties of pedagogy in the classroom. As a result,they remain unqualified to capitalize on modern teaching facilitated by ICT. However, Haddad (2002, p.5) mentioned that there exist some training deficiencies too, some training sounds like a selling pitch, amplifying the great benefits of ICTs for the teacher, the students, the school and the world at large! This is a formula for intolerance and annoyance.

Also, Kaddoura (2010) points to a striking deficiency in the areas of educational technology in teachers' education. Moghaizel-Nasr (2009) highlights that because of the importance of preparing future teachers, intellectuals and educators in the area of teacher education have elevated the demand for professionalization of teaching in Lebanon, and for a national reference for teachers' competencies and standards including those related to pedagogy-based ICT standards (El Amine, 2009; Salameh, 2009), and indicated the importance of integrating ICTs in building pre-service teachers' knowledge, training and preparation programs (Hoyek, 2009).

Unfortunately, the research in the Lebanese context in thearea of educational technology, specifically in the pre-service teacher education, and in teacher education, is negligible and unsatisfactory to give a good sign of the status quo (Baroud & Abou Chedid, 2010; El Amine, 2009; El Hage & Abou Jaoude, 2009; Kaddoura, 2010; Salameh, 2009; Saleh, 2008). There is also anabsence in the technology assimilation research observing the influence of student teaching involvements on pre-service teachers' attentiveness or readiness for technology integration.

Also, few studies have been conducted that investigate the nature of self-efficacy in teaching with technology (Albion, 2001; Wang, Ertmer & Newby, 2004), and little research that has attempted to identify the relationship between attitudes towards computer technology, teacher preparation, and the perceived ability of a teacher to effectively integrate technology into their teaching practice, and slight research has been attempted to distinguish the affiliation amongst attitudes regarding technology, teacher preparation, and the professedcapability of a teacher to essentially assimilate technology into their teaching practice (Albion, 2001).

The importance of this pilot study is revolved around adding its outcomes to the literature .Moreover, information about the usefulness of technology as viewed by the science teachers and their eagerness for technology integration might enhance the pre-service teachers to progress their keenness for technology integration. In addition,this pilot research might be a proposal for ICT use in the Lebanese schools, as long as the request and the application of the Active inspire program in the teaching and learning process is still primitive (Kibbe, 2012).

3. Definitions of Terms

3.1. Information and Communication Technologies

The terms ICTs (Information and Communication Technologies), educational technology, and the broader term technology are interchangeably used along this study to indicate the term that encompasses all digital tools and devices, information and communication software applications, common productivity software, math specific software applications, software and courseware, and online educational resources. From a pedagogical perspective, they can augment mathematics teaching, learning, and management of educational environment. They also enhance the communication between teachers and all other stakeholders in education locally and globally. For a broader conception of ICTgenerally relates to those technologies that are used for accessing, gathering, manipulating and presenting or communicating information. The technologies could include hardware (e.g., computers and other devices); software applications; and connectivity (e.g., access to the Internet, local networking infrastructure, and videoconferencing) (UNESCO, 2005).

3.2. Interactive Whiteboard (IWB)

An interactive whiteboard (IWB) is a large interactive display that connects to a computer and projector. A projector projects the computer's desktop onto the board's surface where users control the computer using a pen, finger, stylus, or other device (Mellar, Kambouri, Logan, Betts, Nance, & Moriarty, 2007).

3.3. Self- Efficacy

Bandura (1997) describes perceived self-efficacy as "beliefs in one's capabilities to organise and execute the courses of action required to produce given attainments." As this applies to the integration of technology into education, self-efficacy beliefs toward technology integration have been theorized to be a determining factor in how well a teacher is able to effectively use technology to improve teaching and learning (Albion, 2001; Enochs, Riggs, & Ellis, 1993; Kellenberger, 1996; Wang, Ertmer & Newby, 2004a).

4. Methodology

4.1. Description of the Sample

In the study, there were 72 students, 60 science teachers (French and English sections), and 12 mixed majors registered in teacher preparation programs (2010-2012) at the Lebanese University, Faculty of Education, Deanery. Of these participants, 18.33% were male teachers and 81.67% were females. All of the participants were in their second semester year of a teacher preparation program. The mean age of the participants was 30 years old. The goal of this course is to help prepare students to integrate education design and technology into their classroom teaching and curriculum.

4.2. Survey Instruments

The study used statistics composed via a survey instrument originated from an existing survey instrument, the Computer Technology Integration Survey (CTIS) instrument (Wang et al., 2004a). The (CTIS) aimed to determine participant's confidence level with integrating technology into classroom teaching (Wang et al., 2004). It includes twenty-one statements using a five-point Likert scale ranging from 1, SD (Strongly Disagree) to 5, SA (Strongly Agree). All twenty-one items were positively and consistently worded with the initial stem of —I feel confident that…I….

For purposes of quantifying survey results, each of the 21 survey items had five choices using a Likert scale, which were assigned point values ranging from 1 to 5. The following point values were assigned to each descriptor:

1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree.

Participants' survey results were quantified into three categories using the aforementioned assigned point values: low-to-medium technology self-efficacy, with a point range of 22—72, medium-to-high technology self-efficacy, with a point range of 73—89, and very high technology self-efficacy with a point range of 90—105.

This survey was stated in a study "Factory Influencing Teachers' Technology Self-efficacy: A Case Study" (Farah, 2011). The author for both content and validity reviewed this survey. The content validity of this survey was found to be convincing after a panel of experts in the area of self-efficacy reviewed the survey items. The evidence of construct validity is mainly empirical in nature. A factor analysis was conducted on the survey data gathered in the similar study and the researchers found the survey to be a valid instrument for measuring the constructs.

Another instrument is a questionnaire used to measure the attitudes toward technology formulated by the coordinator of the technology course (assembled of seven open ended and seven closed ended questions).

These two questionnaires have been used to evaluate the anticipated approach and effectiveness of computer technologies. After data collection percentages were calculated related to willingness to use computer technology in teaching and learning, and perceived usefulness of computer technology.

In addition, the Robert Reasoner's Teachers Self-Evaluation Scale, RRTSES, was administered at the end of the training course to collect teachers sellf- rated evaluation reports, as Reasoner (1983) called Teachers' self-esteem scale, on five elements: feeling of security, feeling of belonging, feeling of identity, feeling of goal, and feeling of self-actualization .Teachers rated themselves based on 4 Likert scale (Agree, 1=Always, 2=Usually, 3=Sometimes, 4=Rarely), the calculated total grade on each self-esteem element will be classified into 5 categories: I Need help (less than 22), Accepted score (22-26), Good (27-31), Excellent scores (32-36), Brilliant (37-40).

Moreover, final grades on computer Active inspire projects were also obtained after the summer vacation to measure teachers' computer skills and performance (Reasoner, 1983).

4.3. Procedure

Current research seeks to understand the relationship between teachers' self – efficacy towards computer integration, their attitude toward ICT and performance on computer grades. Survey methodology is facilitated through the use of the questionnaire technique, which was employed in this research.

This study focused on two measurements before and after completing a course on the integration of technology into teaching practices at the Lebanese University, Faculty of Education, Deanery. The surveys mentioned above used for the pre- and post-tests measured attitudes towards computer technology and perceived self-efficacy beliefs toward integrating technology into teaching. Also, teachers' self –rating skills, and computer grades were collected at the end of the course. Prior to data collection, approval was received from the Dean of the Faculty of Education, the head of the department of Education Technology, and participants for data collection involving human subjects.

Four qualified trainers holding masters and doctoral degree in information technology taught 72 public teachers (60 science teachers and 12 mixed major) computer skills and train them on Active inspire program using the SMART interactive white board. The participants, Public teachers, were enrolled in the Lebanese University to earn an educational certificate in the academic year 2012. The course started in February 2012 and ended in July 2012.Participants were taught how to integrate word, excel, PowerPoint and web tools in their lesson plans after which they handed in lesson plans and projects using Active inspire activities. The objective of this course is to help arrange students to combine education design and technology into their classroom teaching and curriculum (Kibbe, 2012). Furthermore, importance was placed on the usage of activities templates, presentation tools by means of an interactive white board. Also, goals involved designing a good flipchart, creating and editing profiles, importing from other applications, importing and exporting resources. Therefore, the participants, the public teachers, will be able to present the Active inspire project at the end of the course and directly after the summer vacation. Pre- test regarding the teachers' attitudes and self-efficacy towards computer integration using the attitude questionnaire (7 opened and 7 closed questions) and the Computer Technology Integration Survey (CTIS) was collected in February –March 2012. Post –tests were administered in September 2012, after the Participants sat for their computer final exam, they were given a break in order to feel relaxed while answering the 2 surveys questions. It is worth noting that the assigned Active inspire projects were a major component of computer grades, and were assessed and evaluated by the same 4 trainers under the supervision of course coordinator. As a follow up on the training and for evaluation purposes of teachers' performance, the coordinator

and Head of Education Technology department (HOD) conducted classrooms examination during and at the end of the computer course to compare teachers' grades which were the basis of granting the education certificate. In September 2012, teachers filled in the post- attitude questionnaire (7 opened and 7 closed questions), and the Computer Technology Integration Survey (CTIS), as well as the Robert Reasoners' teachers' self -rating scale in order to evaluate their self –efficacy towards computer integration skills in their lesson, attitudes and self –rating after their final exam. In fact, Participants integrated the Active inspire program in their projects and they demonstrated the computer skills in their final exams in order to earn the education certificate. Hence, computer skills and Active inspire project grades were collected in October 2012.Data were analyzed using SPSS version13 to analyze teachers' self-efficacy score (CTIS) and version17 software to analyze RRTSES using Pearson correlation values, means, and standard deviations.

5. Theoratical Approach: Self-Efficacy Theory

Introduced in the early 1970s, Bandura's theory of self-efficacy is a key concept in social cognitive theory. The theory triangulates the relationship between the individual's personality, behavior and environment (Chao, 2003). Self-efficacy can be best described as the individuals' decisions of their aptitudes to perform specific and trained courses of behavior(s), or to finish specified tasks (Bandura, 1997). Cassady (2000) labeled self-efficacy as regulating whether tools and aptitudes are essential to achieve certain tasks. Existing theoretical tactics to the addition of technology recognize that learners' computer understanding, skills, and proficiency do impact on their observed self-efficacy. In turn, Jungert and Rosander (2010) claimed thatrising self-efficacy is demanded to improve learners' academic presentation and the institutional environment. As a means of seeking a local catalyst for effective change, there appears wisdom in seeking new knowledge related to these key issues. That is, teacher beliefs and habits as well as their levels of confidence and related competence using the new technologies in schools. The research discoveries testified below support accompanying understandings (Jungert and Rosander, 2010).

6. The Research Questions

The following research questions were probed:

1. How do teachers perceive their self-efficacy as measured by The Computer Technology Integration Survey (CTIS) in regard to the integration of ICTs into their current training and prospective pedagogical teaching approaches?
2. Are the perceived teachers' self- evaluation subscales such as feeling of self-actualization and feeling of goal as measured by Robert Reasoner Teacher Self Rating Scale is associated with their results on Active inspire computer program?
3. 3-How do teachers change attitude with technology integration, and how has their usefulness of technology with respect to science classroom changed over the course of instruction?
4. What tools did teachers prefer to use to effectively institute technology into their science classrooms?
5. After learning about the various methods of integrating technology into the science curriculum, was there positive momentum toward incorporating technology into their final projects or still favoritism toward using a more classical teaching approach?
6. What is the effect of Active inspire training on teachers' post self-efficacy (CTIS) measurement, technology integration and computer performance?
7. What is the level of self-actualization and goal subscales of teachers as measured by RRTSES?

4. Results

4.1. Overview

The mean evaluations of all of the elements, showed in Table 1,is a change from the start of the course as compared to the end of the course. Assessments in perceived rankingsof teachers' self-efficacy with technology assimilation were higher at the end of the course. To assess variations within each group, Table 2 uncoverscontrasts of change in self-efficacy beliefs concerning technology integration were completed using a paired-samples t-test for each group. The pre-test and post-test rankings of perceived self-efficacy evaluations were compared in order to recognize any note worthy fluctuations in these ratings over the course of the semester within each group. The investigation suggested that note worthy alterations in self-efficacy ratings happened in all groups.Significant modifications in computer technology integration occurred in both of the Physics and mixed majors classes, but no major deviations were distinguished in either of the Chemistry nor Biology classes.

Table 1. Mean ratings of self-efficacy toward technology integration

	Pre-Test	Post-Test	
Group	Mean	Mean	St. Dev
1. Physics	2.22	89.61	12.52
2. Biology	2.93	83.70	11.30
3. Chemistry	2.81	88.71	9.20
4. Mixed Major	2.57	86.45	10.64

4.2. Evaluating Changes within each group

The contrast of alteration in self-efficacy views towards technology assimilation were made using a paired-samples t-test for each group. The pre-test and post-test ratings of perceived self-efficacy ratings were compared in order to identify any significant changes in these ratings over the course of the semester within each group. The analysis in Table 2 indicated that significant changes in self-efficacy ratings occurred in all groups. Significant changes in computer technology integration occurred in both of the Physics and mixed majors classes, but no significant changes were detected in either of the Chemistry nor Biology classes.

Table 2. Changes by group self-efficacy ratings

Mean Difference (pre vs. post)	
Group	Self-efficacy
1. Physics	15.91*
2.Biology	7.47*
3. Chemistry	8.61*
4. Mixed Majors	13.42*

* indicates significant difference (p<.05)

4.3. Relationship between RRTSE and CTIS

Examination of the relationship between RRTSES mean and CTIS mean scores revealed a high value of Pearson's correlation r = 0.99. Table 3 shows a linear relationship indicating that the teachers' self–rating reports on Reasoner's five elements are highly correlated with teachers' self-efficacy value on CTIS.

Table 3. Pearson's Correlations

Mean Self-efficacy	Mean RRTSES
37.04	2.93
37.4	2.64
36.37	2.22
37.37	2.57

r = 0.99

4.4. Pre/Post attitude Surveys

Pretest results related to the attitude towards technological skills and computer revealed that 18.33 % of teachers attended a class using Interactive Whiteboard as compared to 66.66 who did not. Also, 80% like to see how Interactive Whiteboard works since 46.66% have partial awareness about ICT. Thus, 83.33% like to use technology in the teaching as compared to 16.66% only.

In examining the original pre-survey questions for this action research analysis, we exposed that 46.66% of teachers had inadequate experience of technology in concerns to science education, i.e., they concentrated predominantly on cell phones, computers, and calculators. However, 80% like to know about the communicating board that can be incorporated into science since 18.33 attended a class using an interactive white board.

The post survey discovered anintense, yet positive, change in teachers' helpfulness of technology, including, for example, SMART boards, cameras, and videos. Moreover, there was confident change in mindsets and 80% of teachers stated that they like the use of the White Board because it facilitates teaching.

The assimilation of diverse technological tools (78%), the use of Smart board, and iPad model applications ("apps") as well as other simulations from websites in students' post science plans proved a transformation in their perception in regards to technology assimilation as mirrored by their good computer averages.

The analysis of teachers'opinion regarding their final Active inspire projects and activities clearly showed that they enjoyed those activities that integrated technology and technological tools. They stated that the technology lessons were more organized, updated, creative, enjoyable, and engaging. Thus, 80.0 % emphasized that Lebanese schools should be supplied with these interactive boards in all levels in order to increase teacher-student interaction as well as students' academic performance and classroom organization.

Accordingly, the evaluation of post attitude survey related to Active inspire final projects revealed that 80% of teachers' beliefs regarding technology integration could influence their use of technology. In fact, post test revealed that 78% of teachers will use various technological tools such as the use of Smart board, and iPad simulation applications ("apps") as well as other simulations from websites. Also findings showed that the teachers'lesson plans incorporated the use of Active inspire program and other technology tools which demonstrated a change in their perception regarding technology integration. Consequently, they had acquired the learned computer skills as reflected by their good computer averages.

4.5. Final Computer Projects

The evaluation of teachers' final Active inspire projects in Table 5 revealed that 82.7% received good scores and Table 4 revealed that 33.3% of teachers received good computer grades , which means that most of the teachers had acquired the computer skills as they integrated technology in their lesson plans.

Table 4.Computer average scores

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Need help	3	4.2	4.2	4.2
	Accepted	11	15.3	15.3	19.4
	Good	27	37.5	37.5	56.9
	Excellent	24	33.3	33.3	90.3
	Brilliant	7	9.7	9.7	100.0
	Total	72	100.0	100.0	

Table 5.Activeinspire Average

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	10	9.6	9.6	9.6
	good	54	82.7	82.7	92.3
	very good	8	7.7	7.7	100.0
	Total	72	100.0	100.0	

4.6. The RRTSES results:

The purposefulness of this study was to concludeif teaching computerskills and the application of Active inspire computer program) had aneffect on the depended variables(teachers'computer self-efficacy, attitudes and computer grades and Active inspire project scores). The data from this research reveals that participants, after computer teaching and Active inspire training, were able to be affirmative about applying technology.This was obvious by their post surveys, self-report, and post science computer final projects presenting a confident attitude toward technology integration. The findings recommend that familiarity and viewpoints can inspire teachers' use of technology in the classroom, especially as proven by their final projects grades.Apositivity for using technology established along with understanding and proficiency, leading to an added self-efficacy in technology integration (Cullen & Green, 2011). This recommendation overlaps with the Person's correlation r=0.99 suggesting that teachers have high self-efficacy scoresto meet the various technologyuse in science classrooms in order to boost student learning. Endorsing science learning with technology would yield the greatest importance in educational involvement for students. The research examined helps us grasp the mentality of teachers with concerns to technology integration. It offers anopening for teachers to discover and expand technological content information and improvements, which escalates their self-confidence with technology use in a science classroom.

Furthermore, it offers the opportunity to modify their insight about technology integration through the science methods course. Nevertheless, research is constantly an ascending climb, as we must still conclude to what degree teachers trulyrealize technology-enhanced lessons in their classrooms once they have finished their teacher education programs.

4. Discussion and Conclusion

A crucial discovery of this study is that the RRSES subscales reported by teachers was an element in their computer self-efficacy status. Specifically, it was established from a relationship between teachers' RRTSES subscale scores using the Pearson correlation. The most important correlation was revealed between the sense of actualization and the sense of goal with 0.484 correlation is significant at 0.01 level, and another good correlation is shown between the sense of goal and the sense of belonging with 0.54 correlations significant at 0.05 level. Consequently, when teachers planned their lessons their goals were to integrate technology appropriately as they become competent with computer skills (Saad, 2013).

This finding proposes that there is a demand in teacher preparatory institutions to familiarize some form of computer-usage, encouraging courses that would specifically assist the science preservice teachers. Such targeted courses would empower these students will help in catching up with their science concepts, increase their computer self-efficacy and abilities which might enhanced the efficient assimilation of computer technology into their lessons, when they start teaching (Saad, 2013). Moreover, the outcomes recommend that science teacher should be encouraged to register in an advanced computer training course. This would boost computer usage in this vital area that operates as the establishment years for young students. Further, there is a much higher necessity in teacher preparatory institutions to present some form of computer-usage uplifting courses across all levels in all areas and to follow –up teachers in classrooms to help in computer usage after technology training.

5. Limitations

A simultaneous qualitative and quantitative data would enhance potential research on computer self-efficacy for preservice teachers (Creswell, 2003; Tashakkori and Teddlie; 2003; 1998). More specifically, follow-up interviews with in -service teachers would contribute in acquiring more thorough data on the qualitative portion of a study of this subject. Potential research needs to inspect pre and post computer self-efficacy viewpoints of preservice teachers' education programs thereby further investigating aproduction that the current study probed at in the preservice program. Also, additional research can contain teachers' follow-up in their classes in order to give reaction about their performance. Finally, more research into the instructional design, improvement and delivery of important and appealing educational technology learning practices for pre-service teachers to advance their computer skills, their self-efficacy, and their teaching practices with technology is desired (Roblyer, 2003; Parker, 1993).

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References

Abou Hamad Chahine, Samya. (2013). Training Lebanese School Directors on ICT. La Revue Pedagogique, Janvier, 53, 53-55.

Al-Badawi Hafwz, Ghina. (2013). The Strategic Leadership of ICT: Leading for Sustainable Change. LA Revue Pedagogique, Janvier, 53, 56-59.

Albion, P. R. (2001). Some Factors in the Development of Self-Efficacy Beliefs for Computer Use Among Teacher Education Students. Retrieved from the *Journal of Technology and Teacher Education, 9*(3), 321- 347.

Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. New York: W.H. Freeman.

Baroud, F., & Abou Chedid, K. (2010). Patterns of E-learning Development in Lebanon's Mosaic Educational Context in U. Demiray(Eds.). Retrieved from Cases on Challenges Facing e-Learning and National Development: Institutional Studies and Practices, Vol.1 (pp. 409-424). Eskisehir, Turkey: Author.

Bauer, J. F. (2000). A Technology Gender Divide: Perceived Skill and Frustration Levels among Female Pre-service Teachers. Retrieved from paper presented in November at the Annual Meeting of the Mid-South Educational Research Association, Bowling Green, KY. (Eric Document Reproduction Service No. ED 447137).

Cassidy, S., & Eachus, P. (2002). Developing the Computer User Self-efficacy (CUSE) Scale: Investigating the Relationship between Computer Self-efficacy, Gender and Experience with Computers. *Journal of Educational Computing Research, 26*(2), 133-153.

Chao, W. (2003). Self-efficacy Toward Educational Technology: The Application in Taiwan Teacher Education. *Journal of Educational Media & Library Sciences, 40*(4), 409-415.

Chen, C. H. (2008). Why do teachers not practice what they believe regarding technology integration?. *Journal of Educational Research, 102*(11), 65-75.

Cornu, B. (2010). Digital Natives in a Knowledge Society: New Challenges for Education and for Teachers. Proceedings of International Conference IITE: ICT in Teacher Education: Policy, Open Educational Resources and Partnership. UNESCO Institute for Information Technologies in Education, Moscow: Russian Federation, 10-17.

Creswell, J. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (2nd ed.).* Thousand Oaks, CA: Sage Publications.

Cullen, T. A., & Green, B. A. (2011). Pre-service Teachers' Beliefs, Attitudes, and Motivation about Technology Integration. *Journal of Educational Computing Research, 45*(1), 29-47.

El Amine, A. (2009). Valorisation du Metier d'Enseignants. Proceedings of The Professionalization of Teaching in Lebanon Conference, French Version, pp.10-38, March 28, 2009, USJ, Beirut, Lebanon.

El Hage, F., & Abou Jaoude, S. (2009). Carrefour d'échanges 2009: Recherches en didactique des sciences au Liban (2002-2008). Retrieved January 31, 2012, from http://www. agora.usj.edu.lb

Haddad, W. D. (2002). Technology and Teacher Education: Making the Connection. *Techknowlogia, 4*(4), 5-7. Retrieved Sept. 20, 2012, from: www.TechKnowLogia.org

Hardy, M. D. (2003). It should have been stressed in all education classes: Preparing pre-service teachers to teach with technology. Retrieved from Report: Search, AR. (Eric Document Reproduction Service No. ED 478379.

Hoyek, S. (2009). La Formation des Enseignants Professionnels. Retrieved from Proceedings of "The Professionalization of Teaching in Lebanon" Conference, Arabic Version, 107-142.28, March 2009, USJ, Beirut, Lebanon.

Jabbour, K. K. (2011). Web 2.0 Technology Tools for Global Education in Lebanon. *International Journal of Advanced Engineering Sciences and Technologies (IJAEST), 7*(1), 151 – 168.

Jacobsen, M., Clifford, P., & Friesen, S. (2002). Preparing Teachers for Technology Integration: Creating a Culture of Inquiry in the Context of Use. *Contemporary Issues in Technology & Teacher Education, 2*(3), 363-388.

Jungert, T., & Rosander, M. (2010). Self-efficacy and Strategies to Influence the Study Environment. *Teaching in Higher Education, 15*(6), 647-659. Retrieved from: <http://dx.doi.org/10.1080/13562517.2010.522080>

Kaddoura, B. (2010). Mapping Pre- and In-Service Teaching and Training Programs for Early Childhood Professionals Available in Lebanon. Background paper for the Regional Consultative Workshop: Advancing the ECCD Agenda in the Arab Region, March 2010, Amman, Jordan

Kibbe, I. (2012). Interview Regarding the Teachers' Technology Program at the Lebanese University. Head of master's education program, coordinator of master's in education technology program at the Lebanese University, Faculty of Education. 20, May, 2012.

MEHE. (2010). Quality Education for growth, National Education Strategy Framework and Education Sector Development Plan (General Education) 2010 – 2015, The General Education Sector: Facts and Figures. Ministry of Education and Higher Education, Beirut, Lebanon. Retrieved Feb. 25, 2011 from http://www.mehe.gov.lb

MEHE. (2012). Teaching and Learning in the Digital Age: Lebanon's National Educational Technology Strategic Plan. The Ministry of Education and Higher Education Strategic Planning Development Team, Beirut, Lebanon. Retrieved December 10, 2013, from http://www.mehe.gov.lb/Uploads/file/TLSP.pdf

Moghaizel-Nasr, N. (2009). Retrieved from Forward Proceedings of the Professionalization of Teaching in Lebanon, Conference, French Version, pp.9-11, March 2009, USJ, Beirut, Lebanon.

Pajares, M. F. (1992). Teacher Beliefs and Educational Research: Cleaning up a Messy Construct. *Retrieved from the Review of Educational Research, 62,* 307-332.

Pan, A. C., Carroll, S. Z. (2008). Pre-service Teachers Explore Instructional Software with Children. Retrieved from *The Educational Forum, 66*(4), 371-379.

Park, S. H., & Ertmer, P. A. (2007). Impact of Problem-based Learning on Teachers' Beliefs Regarding Technology Use. *Journal of Research on Technology in Education, 40*(2), 247- 267.

Parker, M. F. (1993). The Use of Technology by Education Majors". Retrieved from paper presented in November at the Mid-South Educational Research Association. New Orleans, LA. (Eric Document Reproduction Service No. ED369743)

Reasoner, Robert (1983). *Enhancement of Self – Esteem in Children and Adolescents,* 35-40

Roblyer, M. (2003). Integrating Educational Technology into Teaching (3rd ed.). Upper Saddle River, N.J: Merrill/Prentice Hall.

Saad,.M (2013). Information and Communication Technology in Building Progressive Teachers' Knowledge Base: Cohort of Secondary Mathematics Pre- Service Teachers in Lebanon. Retrieved from a Doctoral dissertation in Sciences of Education, Beirut-Lebanon.

Salameh, R. (2009). Vers un Référentiel National des Compétences des Enseignants de L'enseignement General au Liban. Retrieved from the Proceedings of The Professionalization of Teaching in Lebanon, Conference, French Version, 39-73, March 2009, USJ, Beirut, Lebanon.

Saleh, H. K. (2008). *Computer Self-efficacy of University Faculty in Lebanon.* Retrieved from Education Tech Research Dev, *56*, 229-240. DOI 10.1007/s11423-007-9084-z

Tashakkori, A., & Teddlie, C. (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches.* a Thousand Oaks, CA: Sage.

Tashakkori, A., & Teddlie, C. (2003). *Handbook of mixed methods in social behavioral research*. Thousand Oaks, CA: Sage.

Wall, A. (2004). An Evaluation of the Computer Self-efficacy of Pre-service Teachers. Retrieved from Unpublished doctoral dissertation. *Tennessee State University.* Nashville, Tennessee.

Wang, L., Ertmer, P. A., & Newby, T. J. (2004a). Increasing Preservice Teachers' Self-Efficacy Beliefs for Technology Integration". Retrieved from the *Journal of Research on Technology in Education, 36*(3), 231-250.