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| Study # 1 |  |
| **Reference** | Brown, C.A., Dotson, K. (2007). Writing your own history: a case study using digital primary source documents. *Tech Trends* 51 (3), 30-37. Retrieved from Galileo Research Library. |
| **Purpose** | The researcher wanted to see what teaching methods enhanced Information and Communications Technology skills for critical analysis of primary source documents. |
| **Research Questions** | The researcher wanted to know if digital primary source documents are useful for teaching Information and Communications Technology (ICT) literacy skills in k-12 schools. |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The media specialist and classroom teacher recommended students who were in the 12th grade English literature class. There was no mention of how many students participate, but it was only one class that received this direct instruction. The school was a rural high school in eastern North Carolina. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The researcher became a participant and an observer in this study. She worked with the classroom teacher and the media specialist to design lessons that used certain teaching methods to see if those methods would enhance Information and Communications Technology. Before each class, the three would get together to fine-tune the lesson, bookmark sites, review primary source documents, and ensure that the information’s readability was a good match for the students. After the lessons, there was considerable discussion on how they could refine the lesson to better match the students’ interests and levels. The study included an observation instrument that was created with criteria for student’s ability to locate and access information. They also used a rubric to evaluate the PowerPoint presentations the students created. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | As recommended by Education Testing Service (2003), the researcher designed a rubric to evaluate how high school students “define, access, manage, integrate, evaluate, create, and communicate” in regards to technology” (p. 18). The researcher, classroom teacher, and media specialist analyzed the rubrics. No coding was discussed. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | This research study did not mention the exact number of students who were in the 12th grade English literature study class. The fact that this class was recommended by both the media specialist and the teacher is a little troubling since they were specifically selected. This research loses some validity since there was no random assignment and the students were specifically chosen. The students, classroom teacher, media specialist, and researcher were motivated to persevere through the technological challenges so that the project could be a success. I wonder if this could be replicated in many other areas. There was a lot of collaboration taking place so that the teaching methods could be found successful. |
| **Results/**  **Findings**  What results/findings were reported? | The researcher found that it takes a lot of time for teachers to create bookmarks for websites. They also discovered that teachers need to preview the materials prior to use. Students need to be taught to generate their own research question. They were not able to create an original query that would require critical analysis of information related to the topic. Students needed to improve with their ability to define, access, and evaluate which are all part of the ICT literacy skills. Furthermore, students had trouble evaluating if the digital material supports their research. By the end of the lessons, the students were successful, based on the rubric, in using ICT skills. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Collaboration among classroom teachers and media specialists helps teachers and students learn ICT literacy skills. Students can be highly motivated to create meaningful work, but need to be taught to look for bias in research. Also, students need to be formally taught how to create their own research question. The main goal of the study was to use teaching methods that improved ICT skills for critical analysis of primary source documents. Through their study, students used higher-order thinking skills as they compared/contrasted, synthesized information, and summarized. It is evident that you can use primary source materials to effectively teach ICT skills. |

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| Study # 2 |  |
| **Reference** | Sardone, N., & Devlin-Scherer, R.. (2010). Teacher candidate responses to digital games: 21st century skills development. *Journal* *of Research on Technology in Education*, 42 (4), 409-425. Retrieved from Galileo Research Library. |
| **Purpose** | How can we improve undergraduate programs to better prepare teacher candidates for teaching in the 21st Century? |
| **Research Questions** | How can we promote learning while teaching 21st Century skills?  What academic opportunities can digital games provide for our students?  How are critical thinking, problem solving, teamwork, communication, creativity, innovation, and technology proficiency improved through the use of digital games? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | There were 25 undergraduate university students majoring in education who participated in the study. Sixteen were women and nine were male. These students attended a midsized New Jersey private university. The students were ages 20-22 and all were in their second year of education courses. They were selected because of the class that they were taking. No mention was made about the ethnicity of the participants. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | This was a mixed-methods study. The researchers studied oral and written comments from the participants in regards to the motivational factor of digital game-based instruction, and the 21st Century skills that were honed while using the digital games.  The students were given time to learn the games on their own and then they completed a Game Review Form. Then the students led the games to at-risk middle school students and high school students. The university students completed the Student Game Play Report as they taught the game to the younger student.  Lastly, the university students discussed their game in a 20-minute presentation to the class. They used focus groups to also get a better perspective about game-based instruction. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The information was coded from the surveys. This was a qualitative study that included descriptive analysis the researchers gathered from the survey data. They coded all the data from the Game Review Form, Student Game Play Report, and observation notes. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | 21 surveys were unusable because they had missing data. The two researchers exchanged their coding results and they noticed a discrepancy so they resolved that issue. The limitation was that they needed to pair the student with a teacher educator who can trouble-shoot technological issues. The reliability seems high because the two researchers coded separately and then exchanged to see if they coded the data similarly. When they noticed a discrepancy, they resolved it. The information may not be valid as there is no control group and there was no random selection. |
| **Results/**  **Findings**  What results/findings were reported? | The research showed that the students were able to identify the learning skills in the games. Most of the participants felt that peer modeling and the encouraging responses received from the students were the main reasons why they used digital games in the classroom. Of the 20 games played, participants recommended using 14 games to teach content and develop students’ 21st Century skills. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | We need to improve teacher training programs so that education majors learn how to lead digital games, design lessons for students involving digital games, and learn the best practices for using this technology.  The researcher suggested another research topic on: How many times does a pre-service candidate need to practice teaching a digital game before he/she has developed confidence to teach the game. Teachers must be trained in technology. Teachers in the primary grades need to model how to use digital cameras and MP3 players. We need to be teaching keyboarding no later than fourth grade. Word processing, spreadsheet, and presentation with Web 2.0 tools need to be integrated with students’ school lives. Also, we need to give direction to students before allowing them to experiment with new technology. We need to create lists of website links, make and use Wikis, and use Web 2.0 tools. We must change how we teach our ‘digital natives’. |

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| Study # 3 |  |
| **Reference** | Hilton, J.L. III, Graham, C, Rich, P. and Wiley, D. (2009). Using online technologies to extend a classroom to learners at a distance. *Distance Education*, 31 (1), 77-92. Retrieved from ERIC database. |
| **Purpose** | The purpose of the study was to determine the extent to which a face-to-face can be shared with distant learners. |
| **Research Questions** | Also, the researchers wanted to learn the amount of time and technical proficiency it takes to make an online course. Can learner-content and learner-learner interactions be accomplished without much effort by the professor? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The study was conducted on a course entitled Introduction to Open Education which was a graduate class for education students. Forty-two people from 11 different countries enrolled in the distance learning class. In order to participate in the study, the instructor of the course only had them sign up with their names so no demographic details are known. There were 6 face-to-face students taught and 38 original participants in the online course. Five of the six face-to-face students were in the doctoral program and one was in the master’s program. Four were male and two were female and they ranged in age from 25 to 40. The professor opened up his course online to anyone who was interested and 42 people initially enrolled. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The study was quantitative.  The independent variable was the method of course delivery (face-to-face or online). One of the dependent variables was the amount of time the students put into the course. Another dependent variable was the amount of learner-learner interaction and learner-content interaction. Two questionnaires were given to the students to find out how having online learners affected the face-to-face students’ experience of the course and how much time students put into the course. The professor taught the course using Wordpress which was a free online tool where he was able to place his course website. He posted all his course announcements, assignments, syllabus, and links to any required readings on his Wordpress site. He also created a wiki and blog so students could chat. He used ProfCast to record his lectures and post them on blip.tv and iTunes. The professor specifically chose to not invest no time facilitating learner-learner interactions. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | Two brief questionnaires were given to the students. One was for the face-to-face students and it had two additional questions which were to find out how having distance learners in their class impacted their course experience.  The researchers looked at the number of blog posts that were made. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | One limitation is that this research focuses on a single case so we cannot generalize the results. The class was part of graduate programs and different results could be found if this was part of an undergraduate course. This research could have been more valid if there was a control group since we do not have anything in which to compare these scores.  Only 29% of the students who enrolled in the distance learning completed the survey. |
| **Results/**  **Findings**  What results/findings were reported? | Of the 11 distance learners who responded, they spent an average of 15.5 hours on the course. The distance learners thought the most helpful activities were the course reading, writing and reading blog posts and watching lectures on blip.tv. Only 83% of the face-to-face students completed the survey with all of them saying that it made no difference at all to them in having the online learners in their class. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | The teacher used Wordpress instead of Blackboard because Wordpress is a free online tool for creating blogs or websites and unlike Blackboard, no one will lose all their course materials and discussions when the semester ends. The teacher used a PBSwiki also and a software called ProfCast to record his lectures. The professor was trying to take a very minimalist approach and not invest too much time and energy to the distance learners. If the professor had invested a little more effort to facilitate interactions between the two types of students, perhaps there would have been a bigger impact on the learning experiences.  The most exciting thing about this study is that you can really extend class content to distance learners with relatively little time or money. There is lots of free software available that professors can use to share their knowledge. |

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| Study # 4 |  |
| **Reference** | Willis, J., & Cifuentes, L. (2002). Moving beyond the training environment to a vision of technology integration in the classroom curriculum: a case study (August 2001). Retrieved from ERIC database. |
| **Purpose** | The study was conducted to find to what extent teachers alter their teaching methods and integrate technology into their classroom during and after a technology-training course. |
| **Research Questions** | What are the characteristics of effective training programs where teachers integrate technology into the classroom? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The teachers who participated in this study were all enrolled in a graduate level Applications of Technology course at University of Houston. There were 30 teachers. The researchers grouped the teachers into elementary and secondary teachers and then into online and face-to-face. They used circular lists ranked by skill level to make sure that the groups had equal representation of technology skill levels. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | Case study methods were used. In each of the eight cases the researchers identified and analyzed the barriers and processes affecting the impact of the training. The researchers used surveys, interviews, and observational approaches. One independent variable included the delivery model of instruction. Some participants took the training online, while others met face-to-face. The dependent variable was the teacher usage of technology in the classroom during and after training.  The researchers used surveys, interviews, and observation to analyze participant behavior.  The course was offered either in an online format or a face-to-face format. The face-to-face class met weekly for fifteen three-hour sessions. Hands-on lab assignments and content material was used in both courses. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The researchers used complementary data collection process in the eight cases to analyze the information. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | The researcher controlled for limitations by randomly assigning the groups after the ensured a varied technology skill levels within the classes. |
| **Results/**  **Findings**  What results/findings were reported? | Teachers increase the use of technology use in their classroom during and after training. They do not alter their existing teaching methods, but use the technology to support their current classroom style of teaching. There are extrinsic and intrinsic barriers that interfere with a teacher’s use of technology. The career goals of the teachers also impact to the extent in which they will apply the skills they learned in the classroom. Teachers must work through their concerns as they encounter them in the change process. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Any kind of change is difficult. Teachers must work through the Concerns-Based Adoption Model as they go through training. Concerns will be evident and need to be addressed so the change can be diffused effectively. We cannot just train teachers in technology in isolation. Rather, we need to train as related to their current practices and environment. Successful change occurs when people recognize the benefits and advantages that will happen as a result of the change. |

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| Study # 5 |  |
| **Reference** | Kay, R., & Knaack, L. (2009). Exploring the use of audience response systems in secondary school science classrooms. *Journal of Science Education and Technology*, *18*(5), 382-392. Retrieved from ERIC database. |
| **Purpose** | This study was to determine the benefits and challenges in using audience response systems for secondary school science students. |
| **Research Questions** | What are the perceived benefits of using an audience response system in a secondary school system?  What are the perceived challenges in using these systems?  How did teaching strategy influence the use of audience response systems in a secondary school science classroom? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | There were 213 students (107 males, 105 females, and one with missing data) enrolled in grades 10-12 who participated in this study. The students were in biology, chemistry, physics, and general science. The students were from seven classrooms in six different schools. All students were selected through convenience sampling and had to obtain parent permission to participate. The teachers sampled had 8-26 years of teaching experience. Five of the teachers were men and two were female. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | This was a mixed method study. The students completed the Audience Response System Survey for Students which had 11 questions that had seven-point Likert scale items. These questions focused on overall attitudes, student involvement, assessment, and learning. The survey also included an open-ended comment section.  The independent variable was the inclusion of the audience response systems into secondary science classrooms. One of the dependent variables was that 62% of the students preferred using the systems. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The researchers used a coding schemed to categorize the 255 student comments. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | Cronbach’s reliability coefficient for the student survey was 0.88. Initially, two raters were rating the student comments and they did not have high inter-rater reliability (83%) so they reviewed them and rescored and then they had an inter-rater reliability of 98%.  One of the limitations included the limited use of the audience response systems. Some of the classrooms only used the systems a couple of times. This research would be more reliable and valid if the audience response systems were used more frequently to determine their effectiveness. |
| **Results/**  **Findings**  What results/findings were reported? | The students rated the use of audience response systems significantly higher when they were used for formative assessments rather than summative assessments.  Surveys showed that there was increased stress due to time constraints when using the systems.  62% of the students preferred using the audience response systems, but only 42% said their class was better when they used the system. 70% said that they were more engaged when the systems were used.  Teachers enjoyed the immediacy of the feedback provided by the audience response systems and the opportunity to examine areas of weaknesses. Teachers felt that students were more engaged when they used the systems, but noted that creating the questions was very time consuming. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | The radio frequency audience response systems were more reliable, but only seven teachers were in the study so this is not necessarily valid.  Audience response systems encourage more student motivation and the students preferred using them. The caveat is that students did not like to use these systems for a summative test.  This study could be improved with a more detailed analysis since the positive and negative attitudes cancel each other out and lead to a more neutral rating.  Also, this study does not mention younger students’ use of the audience-response system. |

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| Study # 6 |  |
| **Reference** | Neo, M., & Neo, T. (2010). Students' perceptions in developing a multimedia project within a constructivist learning environment: a Malaysian experience. *Turkish Online Journal of Educational Technology - TOJET*, *9*(1), 176-184. Retrieved from ERIC database. |
| **Purpose** | The purpose of the study was to investigate inclusion of multimedia development in a constructivist learning environment. |
| **Research Questions** | What factors influence students’ perceptions toward multimedia development?  Should multimedia development be a part in a constructivist learning environment? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The study included 53 students in their second year of their degree. They were enrolled in the Interactive Multimedia course for their Bachelors of Multimedia degree. They were students from the colleges of Management, Information Technology, and Engineering. No other information was given about the students. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The study was quantitative since a survey questionnaire was utilized at the end of the course. The independent variable was the inclusion of multimedia development into the classroom. The dependent variables were the projects that were created by the end of the course. All the projects centered around the theme, “Malaysian Culture”, but the projects were vastly different. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The students were given a survey and then the researchers analyzed the data in regards to 5 factors that influenced students’ perceptions in creating the multimedia projects. A five-point Likert scale was used to measure the items. The survey had a good internal consistency and reliability with a Cronbach Alpha coefficient of 0.9106. The factor analysis showed a means of over 3.5 (agreed or strongly agreed) on the items on the survey.  Results of the factor and multiple regression analyses showed that the factors that influenced students’ perceptions towards multimedia development were teamwork, motivation, acquired skills, the learning environment, and the application of their skills. (Neo &Kian, page 182). |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | The survey items were analyzed and found to have a Cronbach Alpha coefficient of 0.9106 which is good internal consistency and reliability.  This course was given to students in Malaysia in their second year of course work. Their typical method of course delivery is lecture and this course was a constructivist learning environment which would have been a wide departure to how they are used to studying. I wonder if this study could be replicated in a country that offers more constructivist learning environments. |
| **Results/**  **Findings**  What results/findings were reported? | When teachers create an authentic task such as a multimedia project into a constructivist learning environment, students become highly motivated. Students are motivated to create a multimedia project when they can control the decisions. Motivation was more significant that teamwork, skills, application, and environment. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Teachers should incorporate more opportunities for students to create multimedia projects in their classrooms. Working together on a project was rewarding for the students and motivated them to do well.  I think it would be interesting to conduct this study in Australia or New Zealand where they use constructivist learning strategies routinely. Would we see a stronger factor analysis? |

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| Study # 7 |  |
| **Reference** | de Freitas, S., Rebolledo-Mendez, G., Liarokapis, F., Magoulas, G., & Poulovassilis, A. (2010). Learning as immersive experiences: using the four-dimensional framework for designing and evaluating immersive learning experiences in a virtual world. *British Journal of Educational Technology*, *41*(1), 69-85. Retrieved from ERIC database. |
| **Purpose** | This study is focused on how virtual words can be better understood and used in education and training. |
| **Research Questions** | How can virtual worlds support lifelong learners in their educational choices and career decisions? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The participants included learners studying at Birkbeck College in the IT applications program and students from Hackney Community College studying Business and Technology Education Council courses. The Birkbeck students were mature learners who were part-time students. All of them were over 18. The community college students were between 18 and 24 years old. The participants actively consented to be part of the study. No other demographic information was given. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | This study used an inductive approach where researchers constructed theories based upon real-life observations, video observations, chat logs and survey data (pre and post). Also, the study used a ‘four-dimensional framework’ to analyze the findings. The independent variable was including Second Life into the IT application course work. The dependent variable was the efficacy of a virtual world (Second Life) in a classroom setting. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | Surveys were used to analyze the data. The surveys showed that 43.75% of the students would recommend Second Life to their friends. The students from Birkbeck averaged 3.14 on how much they liked the Second Life sessions where one =didn’t enjoy the session and 5=really enjoyed the session. The students from Hackney Community College averaged 3.22. Creating the avatars created the greatest discrepancy. 2.2 was the average score of the Birkbeck learners and 3.14 was the average score of the Hackney students. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | The researchers had difficulty with technology on one day at the computer lab and this had a negative impact on the study.  The study had some flaws because it depended too heavily on prior knowledge on the students and some of them found it challenging to engage in the virtual world.  The researchers felt that they needed to allow more time for feedback and reflection because some of the scores did not seem valid. |
| **Results/**  **Findings**  What results/findings were reported? | The survey found that 42.8% of the students from Birkbeck would recommend the use of Second Life to their friends, but only 14.29% said that it would help them to reflect upon their education and career decisions. The students from Hackney Community College were slightly more positive with their recommendations (44.44%), but only 11.11% felt that they would use it to help them with their education or career. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | The study suggested that Second Life could be useful for distance and online learners, but it may need future enhancements.  Improvements with internet broadband connections, improvements to the Second Life platform, and Open Sim and other new virtual worlds may reduce the technical issues which will make these applications more appealing to a broader group. |

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| Study # 8 |  |
| **Reference** | Inan, F., & Lowther, D. (2010). Factors affecting technology integration in k-12 classrooms: a path model. *Educational Technology Research and Development*, *58*(2), 137-154. Retrieved from ERIC database. |
| **Purpose** | The purpose of the study was to examine the effects of teachers’ individual characteristic and environmental factors on teachers’ technology integration. |
| **Research Questions** | Do teachers’ demographic characteristics influence their technology integration?  Do teachers’ beliefs, readiness, and computer proficiency influence their technology integration:  Do school characteristics influence teachers’ technology integration? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | 1,382 teachers from 54 schools participated in this study. The data was collected in the spring semesters in 2004 and 2005. The teachers were all part of the Tennessee Public School System. The teachers worked for 54 schools that were participating in the first year of Tennessee EdTech Launch One and Two which were  Title II D of the No Child Left Behind Act. The largest portion of the teachers surveyed (40.7%) had taught more than 15 years. 38% of the teachers rated their computer ability as moderate and 41.8% as good.   |  |  |  | | --- | --- | --- | | Age | N | % | | 29 and younger | 226 | 16.4 | | 30-39 | 350 | 25.3 | | 40-49 | 358 | 25.9 | | 50-59 | 400 | 28.9 | | 60 and older | 48 | 3.5 | |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The data was collected by a Teacher Technology Questionnaire which was a two-part instrument to gather teachers’ perceptions of computers and technology integration. The questionnaire was rated with a 5-point Likert-type scale.  This study was done as a path analysis to determine if there is a relationship among possible predictors of technology integration. Some of the independent variables included: age of participants, years of teaching, teachers’ perception of their own computer ability level; computer availability; teachers’ readiness; overall support, and technology integration. The dependent variables which are endogenous variables were computer proficiency, teacher beliefs, teacher readiness, and technology integration. Except for technology integration, all the endogenous variables are both dependent and independent variables. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The data was analyzed in three phases: assumption checking, interaction analysis, and path model estimates. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | The Teacher Technology Questionnaire has a high reliability coefficient ranging from .78 to .89 for each subscale of the questionnaire. The main limitation with the path analysis model was that it does not offer causality. |
| **Results/**  **Findings**  What results/findings were reported? | “Teachers’ demographic characteristics (years of teaching and age) negatively affect their computer proficiency.  Teachers’ demographic characteristics (years of teaching and age) negatively and teachers’ computer proficiency positively affect their technology integration.  Teachers’ beliefs and readiness positively influence their technology integration.  School level factors (availability of computers, technical support, and overall support) positively influence teachers’ beliefs and teachers’ readiness.  Teachers’ beliefs and readiness mediated the indirect effects of school- and teacher-level factors on teachers’ technology integration (Inan & Lowther, 2009, p. 146) |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | The main implication is that teachers’ computer proficiency directly impacts their technology integration. If we want teachers to integrate technology in their classrooms, teachers need training. Also, teachers who feel ready and confident will use technology more.  Another approach to continue this study would more to add other school and demographic factors such as teachers’ workload, school culture, previous training, and pedagogical beliefs. |

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| Study # 9 |  |
| **Reference** | Kirtman, L. (2009). Online versus in-class courses: an examination of differences in learning outcomes. *Issues in Teacher Education*, *18*(2), 103-116. Retrieved from ERIC database. |
| **Purpose** | The researchers wanted to study the effectiveness of online courses compared to traditional face-to-face courses. |
| **Research Questions** | Which method is better for learners (online courses and traditional face-to-face courses)? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The participants were all pursuing a Master of Science degree in Education. Seventy-one graduate students took the online classes and 69 took the face-to-face classes. 127 of the 140 participants were female and all were elementary or middle school teachers and all self-selected his/her course. None of the participants knew that they were part of the study until after the course was finished. The courses were evaluated over three years so three online courses and face-to-face courses were researched. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The data was studied quantitatively. The independent variables were the method of delivery of the material. For the face-to-face classes, the students met once a week for 3-hour session for 15 weeks. They used small and large group work and discussion and Power point slides for instruction. The online students viewed the same power Points. The lectures were recorded and used as the Power Point voiceovers. They also participated in discussion boards.  The dependent variables included the exam scores, the scores on the written papers, and the end-of-course survey. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The data was analyzed based on exam grades. Both groups were given the same midterm and final exam. Also, participants were required to write a literature review and one other mini-literature reviews. The students in both courses were then asked to take an end-of-course anonymous survey of course satisfaction. Data was analyzed using means, standard deviations, Pearson correlations tests, and independent t-tests. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | One limitation could be that the students who met in face-to-face may have formed study groups which could have improved their learning. Also, when students met in face-to-face, if one student had a question everyone heard the answer. That does not happen in online learning since there are times when an online learner can simply email just the professor. Other limitations include how much time was spent learning the material. Prior knowledge was not assessed before the course began. Students self-selected the courses based on their own personal preference which could create a bias. Since learning was only measured by exams and papers, this too could be a limitation of the study.  The fact that the both types of courses used the same kinds of tests. help with validity, but does not prove validity. |
| **Results/**  **Findings**  What results/findings were reported? | The results were mixed. In regards to the grades earned based on the literature review paper and the mini-literature review paper, there was no significant difference between the two groups. When the researchers examined the exams, they noticed significant differences. The traditional students earned 2 points higher than the online students on the mid-term exam and the t-test results showed that there was a significant difference between those scores. This score difference was not supported on the final exam. There was no significant difference between the groups on the final exam. The survey showed that the students were more satisfied with online classes due to the pace, the focus on their own learning, and the lack of travel. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | After the researchers began their study they realized that they needed another data source to find out just how long the students who were doing the online learning spent online in the course site. So they studied the numbers of hits and correlated it with the course grade point average. They discovered that there was no significant correlation. This seemed to suggest that the number of times a student entered the course site did not relate to the grade earned. The researchers then went even further and found a significant relationship between the number of discussion posts with the grade point average.  There are similar learning outcomes whether students are in a traditional or an online class.  In future studies, the researcher suggests using other possible measures of learning (not just exams and papers). |

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| Study # 10 |  |
| **Reference** | Beavis, C., & O’Mara, J. (2010). Computer games-pushing at the boundaries of literacy. Australian Journal of Language and Literacy 33 (1) Retrieved from Galileo database. |
| **Purpose** | The purpose of the study was to showcase how computer game usage in classrooms enhances multiple curriculum areas. |
| **Research Questions** | How can computer games improve close reading and critical analysis? How can teaching how to create online games improve literacy and create the “wall-less classroom”? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | The researchers worked with 2 classrooms of boys from a Catholic Boys School in Australia. The first group was in a year nine English class and they were roughly 15 years old. The second group was year eight and they were roughly 14 years old. The groups were selected by the teachers who conducted the research. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | This research was conducted as two separate case studies.  One of the teachers worked with games to see if using computer games would help with close reading and critical analysis of text. This study involved analyzing games based on ‘violence as text’ (Beavis & O’Mara, 2010, p3). The students also completed a retrospective look at what games interest them.  The other case study involved a teacher who taught his students how to create their own computer game. The teachers evaluated the student work subjectively. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The data was analyzed by the teachers with no coding involved. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | There was no mention of reliability or validity. As this was a case study of only two classes in an all-boys Catholic school in Australia, one limitation was the study did not include girls. Another limitation was that it only included Catholic students. Reliability would be difficult to conclude based on the information since this research was done during one semester only with two separate classes. |
| **Results/**  **Findings**  What results/findings were reported? | Student engagement was high as the students were actively interested in comparing video games and writing reviews of them. As students created their own online game, they had to analyze different plots and genres to ensure that their games match the literature. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Playing and designing computer games improve literacy since the game play involves understanding plot structures, genres, and organizations. Designing virtual games extends traditional English curriculum and should be utilized in classrooms to encourage student involvement. A site was mentioned ([www.yoyogames.com](http://www.yoyogames.com)) that is a free site that students may use to create games to improve literacy.  I would like to see some different case studies with mixed gender and greater age range to see how reliable these studies are. |

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| Study # 11 |  |
| **Reference** | Yuhsun, E.S. & Mills, D. (2007). Setting the new standard with mobile computing in online learning. *International Review of Research in Open and Distance Learning*, 8 (2), 1-11. Retrieved from Eric database. |
| **Purpose** | The study was done to see how we can utilize mobile technologies in the classroom. |
| **Research Questions** | How can we better employ mobile technologies to improve teaching and learning in education?  How can we successfully motivate and engage online learners?  How would students receive the idea of completing their work on a smart phone?  Would students find this approach helpful or as a burden?  What instructional design techniques are needed in mobile learning classes to allow for the use of smart phones? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | Forty-six students in a Children’s Literature course in California State University participated in this research study. No other information was given about the students. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | Since this class was a hybrid class and the researchers were studying the effectiveness of integrating mobile technologies, the professor allowed the students to access an enhanced Moodle course via their smart phones. Text messages were sent by the professor and students to have discussions. Students were encouraged to use their smart phones to complete their digital story telling projects.  The research experiment was to see if mobile technologies added convenience and flexibility so the study focused on students’ learning outcomes, as well as the benefits and challenges students face when using mobile learning.  The researchers surveyed the students and analyzed course exams and projects created for this class. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | Data was analyzed by the use of surveys. Graphs were created to summarize the data and there were short answer qualitative surveys that yielded some interesting viewpoints. Some students were very enthusiastic about this type of learning, while others felt that this type of course was in its infancy and the small details had not been worked out so the course was not as effective as it could have been. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | There was no control group so it is difficult to say how reliable this study truly is. Perhaps the course would have been equally interesting presented in a different format, but without a control group we will never know.  Some of the limitations included the availability of the smart phones. Furthermore, the researchers wondered about privacy and intrusion into the students’ daily lives.  There was no control group so validity is questioned. |
| **Results/**  **Findings**  What results/findings were reported? | Students loved the flexibility and convenience that the smart phones afforded them. The interaction between the professor and students was improved through the use of the text messages. Students felt that they could collaborate more and loved the instruction through this medium. Other students felt that the class began before many details were worked out. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Mobile technologies are here to stay and classrooms need to adapt to meet the digital natives’ use of cell phones. If we embrace their use of cell phones, we may be able to teach in a manner that is more engaging to them. We do need to think about intruding upon students’ personal space and there may need to be some new ‘netiquette’ needed. There is another problem though. Using this technology could create another digital divide between the socioeconomic levels.  A future study could include a control group to show whether these findings from this research are supported or rejected. |

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| Study # 12 |  |
| **Reference** | Shepherd, C & Hannafin. M. (2008). Examining pre-service teacher inquiry through video-based, formative assessment e-portfolios. Journal of Computing in Teacher Education 25 (1), 31-36. Retrieved from Eric database. |
| **Purpose** | This study was investigating the use of formative e-portfolios by pre-service teachers. |
| **Research Questions** | What is the influence of self –reflection of formative e-portfolios on pre-service teachers’ attitudes? Does the use of e-portfolios help teachers make informed decisions about classroom practices?  Do teachers use e-portfolios after they are hired? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | Eleven social studies education pre-service teachers agreed to participate in this study, but five were unable to participate because their schools would not allow them to participate. Then of the six remaining, three were actually selected. Mitch was a male Caucasian in his early 20s and taught in a large urban high school. Wendy was a female African American in her early 20s who taught in a rural high school. Meg was a female Caucasian in her 40s who taught in a different rural high school.  \*All names are fictitious |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | Mitch, Wendy, and Meg created e-portfolios and had three e-portfolio development modules where they had to identify problems, propose a solution, implement the solution, and then study the outcomes of their solution. They were then to modify future implementations and complete the next development module.  Each module they video recorded and analyzed at least one classroom lesson using the Web-based Video Analysis Tool. The researchers interviewed the participants using a semi-structured protocol. The researchers also interviewed the course instructor. The interviews were audio taped and transcribed.  This was a qualitative study. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | All names were changed and the researchers used open coding and constant comparison. They also “used constant comparisons to refine codes, develop formative concepts, and identify their properties” (Shepherd, C & Hannafin. M., 33). The data was triangulated with participant and instructor interviews. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | Only three people completed the e-portfolios so this is pretty limiting. Many schools refused to allow their pre-service teachers to complete the study.  Since the researcher triangulated the data, it lends more validity to the study. |
| **Results/**  **Findings**  What results/findings were reported? | The participants acknowledged that the e-portfolios were helpful for self-analysis and growth. They felt that e-portfolios were not very useful in order to secure a job or to use once they had a job. No prospective employer asked to see the e-portfolios and veteran teachers told them that there would be no time to use them. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Even though they offer a great opportunity for self-reflection, school systems do not seem to value e-portfolios |

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| Study # 13 |  |
| **Reference** | Clausen, J.M. (2007). Beginning teachers’ technology use: first-year teacher development and the institutional context’s affect on new teachers’ instructional technology use with students. *Journal of Research on Technology in Education* 39 (3) p. 245-261. Retrieved from Eric database. |
| **Purpose** | The purpose of this study was to examine two first-year teachers’ development and how their schools culture affected their implementation of technology. |
| **Research Questions** | How did the first year progress of two novice teachers affect their technology use with students? How did the schools’ cultures affect technology use with students |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | One of the participants was Patricia. It does not say if the names were changed. Patricia was a first year teacher who was teaching third grade with 21 students (8 females, 13 males). All students were Caucasian and there was a variety of academic abilities in her classroom. Courtney was teaching second grade and had 29 students (17 females, 12 males). She taught 28 Caucasian children and one Hispanic child. The students varied in their academic abilities and their development. Courtney had support teachers in her room throughout the day. Some other participants included the two school principals, Patricia’s and Courtney’s mentors, a building technology coordinator, special education teachers, and Courtney’s fulltime teacher aide. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | This was a case study of two first year teachers. The researcher held interviews, used direct observations, field notes, classroom and teacher documents, and technology artifacts to study. Interviews were held with the teachers and their principals at the beginning, middle, and end of the school year. Over 32 hours of classroom observations took place within each of the two teachers’ schools.  This was a qualitative study. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | All interviews were recorded, transcribed, and analyzed using Qualrus qualitative analysis software. The researcher used constant comparative method also. When he triangulated the data, the researcher found some major themes. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | There were only two teachers who were studied so that is rather limiting and may not be reliable across a larger population. The researcher triangulated the data so that offers more validity. |
| **Results/**  **Findings**  What results/findings were reported? | Patricia had a lot of behavior issues to deal with in her classroom and had trouble just keeping up with day-to-day lessons. She felt overwhelmed and even though she had been trained on how to integrate technology, she did not do so. She compartmentalized her technology lessons and rarely used technology because she was afraid of the poor behavior that her students might exhibit. Courtney started off similar to Patricia, but by November she had an epiphany and realized that she needed to integrate technology into her daily lessons. In November, she reviewed her state standards and started focusing on ‘the big picture’ instead of the day-to-day classroom life. She started to see technology could be the catalyst for student learning. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | It is very difficult to be a first-year teacher. Just surviving the day-to-day life of teaching, is more than many people can handle. Integrating technology may be too difficult for some first-year teachers. |

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| Study # 14 |  |
| **Reference** | Lee, K. (2009). Technology lecturer turned technology teacher. *International Journal of Teaching and Learning in Higher Education*. 20 (2), 79-90. Retrieved from Eric database. |
| **Purpose** | The purpose of this study was to see what benefits would arise if a partnership was created with college professors who would work collaboratively with intermediate school teachers to teach technology to the middle school students. |
| **Research Questions** | Would a partnership between the intermediate school and the college create a quality approach the children’s education? Would the partnership enable the pre-service teacher an opportunity to see technology being taught thus helping first-year teachers?  Would this partnership created an opportunity for pre-service teachers to have experiences linked with theory thus improving their technology teaching? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | Six college lecturers volunteered for this study. In fact, Kerry Lee, author of this study was one of the lecturers. Two of the lecturers had been out of the classroom for over 15 years. No mention of more demographic information was stated. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | Once a week for the entire school year, 56 intermediate school students came to the neighborhood college campus and were taught technology education. The two grades (7th & 8th) were divided into 3 groups which allowed for smaller class sizes. The six professors team taught so there were 3 teaching groups. Each pair of teachers taught a series of 6-8 sessions to each of the 3 groups of students.  This was a qualitative study and they used interviews, observation, and questionnaires. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | The data was analyzed using a case study approach with interviews, observation, and questionnaires. The researcher investigated the views of the lecturers three times throughout the year and used surveys and interviews to collect data. All meetings with the lecturers to plan the program and evaluate were taped and later transcribed. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | The writer of this research was also one of the lecturers so there could be a bit of bias in this report. They used reflexivity to enhance the validity of the information. The sample size (56 students) is a little small. No control group was mentioned. |
| **Results/**  **Findings**  What results/findings were reported? | Very few college students watched the lecturers give the lessons and this disappointed the lecturers who envisioned the pre-service teachers learning about the teaching of technology through observation. There was very little collaboration between the intermediate teachers and the college lecturers and very limited interaction with the parents of the students. The intermediate students often came to class unprepared and their behavior impeded some of the progress that could have taken place.  The lecturers enjoyed being able to give real examples of teaching technology to their college students. They were excited to once again work with younger students and be able to ‘walk the talk’. The college lecturers felt that through this experience they were able to be better teachers to the students in the education department.  All lecturers felt the program was a success despite the limitations and all agreed to continue teaching the intermediate students the following school year. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | Collegiality helps with any change. With any change, there is a learning curve where people are excited about the change, and then reality in the early stages may result in people giving up. Encouragement is essential in this stage so the change can be successfully implemented.  In order for teachers to learn how to teach technology, it is preferable that they view master teachers teach technology rather than just hear a technology lecture. |

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| Study # 15 |  |
| **Reference** | Masood, M (2010). An initial comparison of educational technology courses for training teachers at Malaysian universities: a comparative study. The Turkish Online Journal of Educational Technology. 9 (1), 23-27. Retrieved from Eric database. |
| **Purpose** | The purpose of the study was to compare the different training pre-service teachers received at different universities in Malaysia. |
| **Research Questions** | To what extent is the ICT training program for pre-service teachers conducted at Malaysian universities comparable to ISTE 2008 NETS**∙**T? Is there a knowledge and skills gap between pre-service teacher training programs conducted at Malaysian universities with the ISTE 2008 NETS**∙**T? What training strategies are used to train pre-service teachers in the field of Information Communication and Technology? |
| **Participants**  Who participated in the study (e.g., number of participants, age, grade level, race/ethnicity, gender)?  How were the participants selected/  recruited? | There are nine universities in Malaysia that offer a Bachelor degree in Education and the researchers randomly chose 4 universities to study. The research interviewed five course coordinators from the 4 universities to get information about course content, structure, and delivery. The interview consisted of close and open-ended questions. |
| **Methods**  Was the study quantitative, qualitative, or mixed method?  If the study was quantitative, what were the independent and dependent variables?  What materials and instruments were used in the study? | The researcher interviewed the course coordinator from 4 different universities and then analyzed the data to see what the courses offered.  This was a qualitative study. |
| **Data Analysis**  How were the data analyzed (e.g., t-tests, correlations, coding strategies, or other data analysis techniques)? | Data was collected between March and September. They reviewed documents related to ISTE 2008 NETS**∙**T education guideline and documents of course curriculum and outlines. |
| **Limitations/**  **Reliability/**  **Validity**  What limitations were reported?  What evidence was reported for reliability and validity? | Since this study only studied Malaysian universities, it is slightly limited and may be difficult to generalize to other nations.  The researchers triangulated the data so that improves validity. |
| **Results/**  **Findings**  What results/findings were reported? | All 4 universities offered a three credit hour course on Educational Technology, but these courses varied greatly. The curriculum at all the universities needs to emphasize more the digital-age learning experiences. Pre-service teachers need more opportunities to become proficient in technology prior to beginning their teaching career. |
| **Implications**  What are the implications for instructional and learning practices?  What suggestions are made for future research? | In order for teachers to integrate technology, university courses need to emphasize teaching technology to pre-service teachers. Hopefully the skills will transfer and that these future teachers would inspire student learning through technology integration. It is essential to establish confidence in beginning teachers so that they will be ready to integrate technology into their teaching. |