Article Critique and Synthesis on Children and Educational Technology Using Three Research Studies

Michelle Wong (Student #18535039)

# ETEC 500 – 65E

Research Methodology in Education

Instructor Oksana Bartosh

March 14, 2011

Article Critique and Synthesis on Children and Educational Technology Using Three Research Studies

The acculturation of technology that is taking place among today’s students and educators has encouraged the research on children and educational technologies. In this paper, I will examine the following research articles individually and in unity to show their contribution to the educational research dialogue: “The Effects of Incorporating a Word Processor into a Year Three Writing Program”, by Natalie Beck and Tony Fetherston (2003); “Middle School Students’ Technology Practices and Preferences: Re-examining Gender Differences”, by Leslie M. Miller, Heidi Schweingruber, and Christine L. Brandenburg (2001); and “A Comparison of Fifth Graders’ Frequency using Web-based Activities Verses Traditional Activities for Self-directed Enrichment”, by Karen Hayse (2003).

**Article #1:**

The research article, by Natalie Beck and Tony Fetherston, discusses a six-week qualitative study that examines the effects of incorporating a word processor into a particular writing program. The participants were evaluated on their writing attitudes while given the following tasks: write two handwritten stories and two word processed stories, using *Story Book Weaver Deluxe,* with the aid of story starters*,* which were then assessed for writing ability. The conclusion of the study was that the inclusion of a word processor resulted in improved quality of writing and prompted motivation for the students.

In my opinion, there are some areas of concern. The study does not include the raw data from field notes, tape recordings of interviews, and writing samples, which I believe affects the validity because of the possible biased interpretations of results. As well, I think the small sample size makes it difficult to generalize to a larger population; the study could benefit from using multiple studies from a random selection of participants. In addition, I feel the two variables, handwriting and word processing, do not use equivalent mediums, as the study uses *Story Book Weaver Deluxe*, which additionally includes pictures and sound to motivate the user.

Therefore, although the study attempts to examine the writing process using traditional and technological mediums, I believe it lacks the validity and reliability to form a trustworthy conclusion.

**Article #2:**

The research article, by Leslie M. Miller, Heidi Schweingruber, and Christine L. Brandenburg (2001), examines the gender divide in computer technology use with middle school students through three factors: their self-perception of computer skills and acquisition, their exposure to technology at school and at home, and their use of media and content preferences. This quantitative cross-sectional survey study used a 68-item paper-based questionnaire, with closed and open questions. The conclusion of this study was that there was a significantly narrowed gender divide with middle school students and their use of technology.

In my opinion, there were some issues of concern. I believe the sampling method, in particular the gender balance and precise representation of three socio-economic categories, does not show examples of random sampling. Because the researchers emphasized the socio-economic categories when representing participants, I believe their study may have benefited from the discussion of the relationship between the increasing technology use in these different socio-economic households and how it affects acculturation and gender divide. In addition, I think that if the study included the survey used, then it would give a better understanding of the study itself. At times, I believe the study detracts from the initial focus, which weakens it. I think some questions, like “Do you know how to use the computer?”, do not explain what the student knows and how well he or she knows it, which would have pointed more towards the study’s focus. In my opinion, more specific questioning could have elicited more valuable study results.

Also, I think the gender divide was not addressed throughout the whole study, and instead pointed to how students can benefit from educational gaming.

Although this study provides insight on the gender divide in computer technology, I feel the reliability and validity of the study would improve if the researchers refined their interpretations and better represented the research results.

**Article #3:**

The action research article, by Karen Hayse (2003), examines which medium, whether Internet or traditional activities, is more effective in motivating children to enrich learning independently. In the ten-week study using a class of fifth grade participants with mixed abilities, Hayse (2003) introduced the Learning Site, which consisted of fifteen websites (Learning Web) and fifteen traditional resources (Learning Table). The Learning Table resources corresponded with the Learning Web resources: trivia cards and a trivia website. Students, assigned into groups of eight, had privileges to use the Learning Site and the enrichment option chosen was recorded, along with a survey at the end of the study. The conclusion of this study was that the Internet resources were more frequently preferred over the traditional resources, although other influences seemed to affect students’ motivation.

In my opinion, there are some issues of concern in this study. Despite being a self-directed enrichment, the participants were assigned into groups. I believe the result was a “common response set [that] occurs when individuals select responses that are believed to be the most socially acceptable, even if they are not necessarily characteristic of the respondents themselves” (Gay, 2009, p.153). A student suggested playing a board game from the Learning Table; as a result, students had more interest in the Learning Table over the Learning Web for the following two weeks. I feel that if the Learning Table had been more socially acceptable at any other time in the study, then that would have influenced the results.

Another issue of concern was that the study uses an already-formed group of students, “which should be avoided if possible”, (Gay, 2009, p.245). I think this differential selection of mixed-ability participants affects the validity of results, which could be improved by using random selection of students and using more participants from different classes. I believe the study does not explain the ability-level of participants, nor the survey given at the end of the study, nor the activities from the Learning Site, especially since the “*type* of activity is more influential than the *mode* of delivery” (Hayse, 2003). To add, I think the study does not show if the resources from the Learning Web actually correlate to the Learning Table. Over the ten-week study, I believe maturation occurred and affected the results as students became familiar with the activities from the Learning Site.

In my opinion, this study presents an intriguing research question for educators but it does not show a credible or valid indication that students preferred the Internet resources to the traditional resources.

**Synthesis:**

The three research articles extend the continuing dialogue on children and educational technologies. They show how web-based technologies could improve education enrichment, whether for improving and motivating writing, for general use like communication and entertainment, or for self-directed enrichment. All three articles show that the inclusion of technology increased motivation, engagement, and performance for the specified activity, which suggests the learning needs of our students that we need to address in the 21st Century classroom.

The three articles also show the need for more research and dialogue in the area of children and educational technologies. Because all three studies’ research results were prematurely concluded, the knowledge gaps could be remedied to improve generalizability by doing follow-up studies, using more valid and reliable instruments, and testing a larger, yet randomized, sample size. These improvements would allow for educators to be able to use the results for their own classrooms, regardless of the context. We can see how valuable educational technology can be for students and how it can alter the way we educate.

References

Beck, N., & Fetherston, T. (2003). The Effects of Incorporating a Word Processor. *Information Technology in Childhood Education Annual*, 139-161.

Gay, L.R., Mills, G., & Airasian, P. (2009). *Educational Research: Competencies for Analysis and*

*Applications*. Upper Saddle River, New Jersey: Pearson Education Inc.

Hayse, K. (2003). *A comparison of fifth graders' frequency using web-based activities versus traditional activities for self-directed enrichment.* Retrieved from <http://www.smsd.org/custom/curriculum/ActionResearch2003/Hayse.htm>

Miller, L. M., Schweingruber, H., & Bradenburg, C. L. (2001). Middle school students’

technology practices and preferences: Re-examining gender differences. *Journal*

*of Educational Multimedia and Hypermedia*, *10*(2), 125-140.