

The Effect of Transitioning to Paperless Assessment in a High School Biology Course



Background

I conducted my capstone research project in response to the increased use of technology in the classroom, changes in end of year standardized testing, and comments made by students regarding the use of technology for assessment. I have used paperless assessment before in class and noted many advantages and disadvantages from the instructors point of view, but never from the students point of view. My school district has also invested heavily in new technology and a 1:1 Chromebook initiative. This led me to believe that the paperless classroom is coming. My capstone research is a first step into understanding the effect a paperless classroom will have on student ability to show learning and understanding.

Research Question

Focus Question

What is the effect of a paperless format on student performance on assessments.

Sub Questions

1. How do students viewpoints and their perceptions of their performance on paper and digital assessments change?
2. How does the instructors time devoted to correcting and using the different forms of assessments in the classroom compare between digital and paper assessments?

Methodology

The study consisted of three distinct phases; the pre-treatment, treatment, and post-treatment phases. The unit selected was cellular energy and the carbon cycle. Three classes were selected and students in each class were randomly assigned as digital or paper assessment groups. The pre-treatment phase began with a pre Likert survey, student interviews, and a pre assessment. This was followed by the treatment phase. The treatment phase consisted of three lessons on photosynthesis, the structure of leaves, and the carbon cycle. There were two formative assessments and a summative assessment. The assessments were given as either digital or paper depending on which group the student was put into at the beginning. The post-treatment phase consisted of a post Likert survey and student interviews. Student performance and their answers on the surveys and interviews were used to answer the questions raised in this study.

Results

Students performed significantly better on paper over digital assessments, specifically with low level achievers. Student perceptions of digital and paper assessment did not change, but students were more vocal in their disapproval of digital assessment. Instructor time devoted to correcting and creating the different forms of assessments, was in favor of digital assessments. Digital assessment save instructor time and allow for greater flexibility.

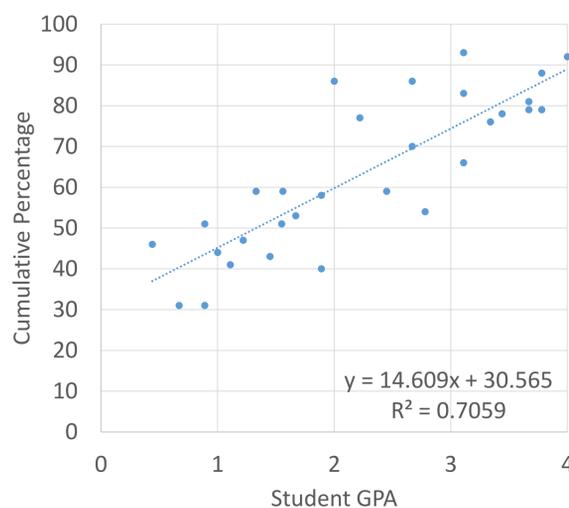


Figure 1. Student Cumulative Percentage on Digital Assessments Compared to GPA, (N = 30)

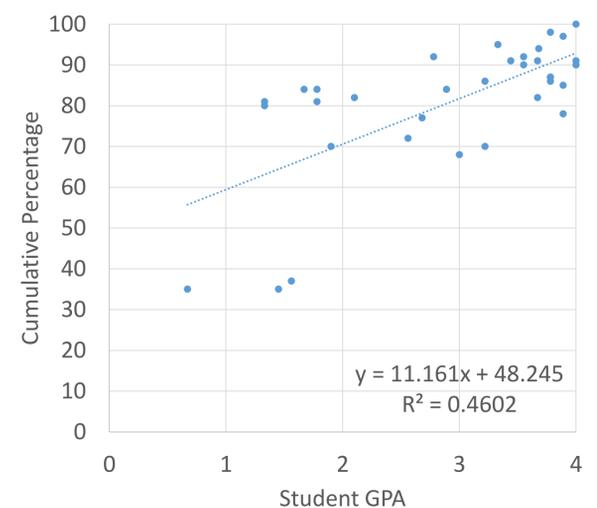


Figure 2. Student Cumulative Percentage on Paper Assessments Compared to GPA, (N = 34).

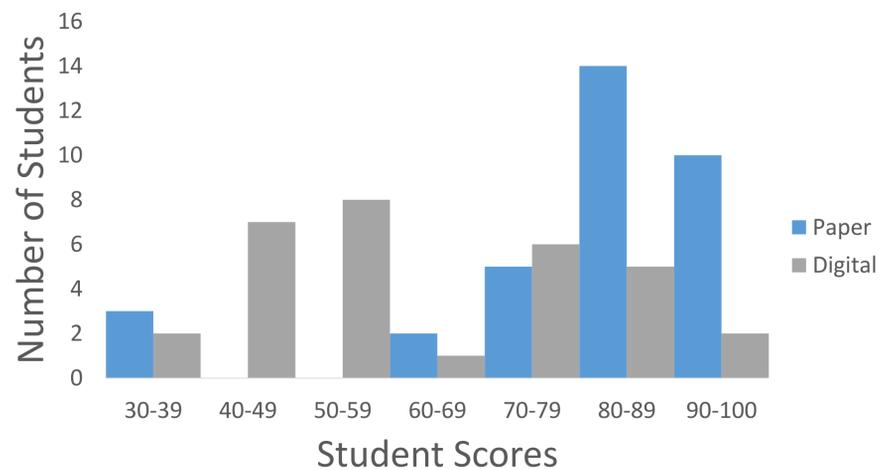


Figure 3. Student cumulative percentage scores, (N = 64).

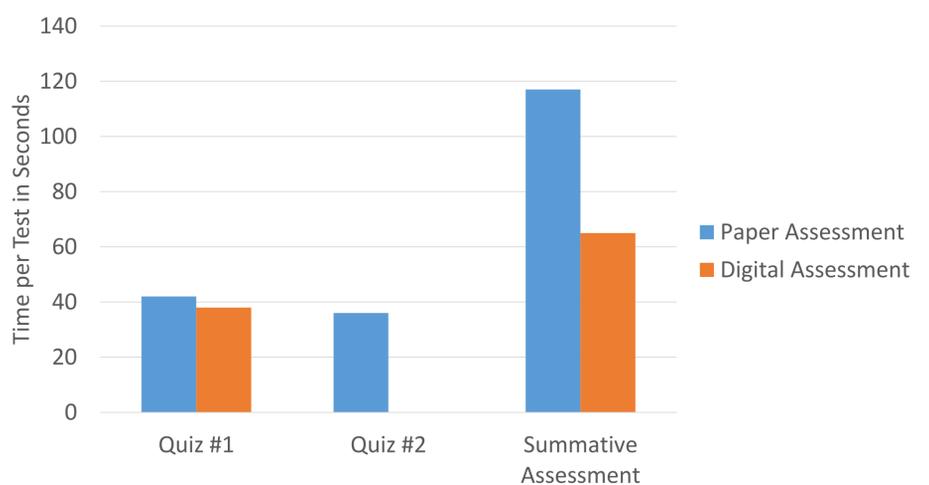


Figure 4. Instructor time devoted to correcting assessments.