Research Design

Research Questions

How do mobile device units used to aid classroom instruction impact academic success based on standardized testing results? In what ways do teachers utilize these devices to enhance academic success?

Procedures

There are different types of data that I will need to collect for my research. I will be collecting both statistical data as well as empirical evidence to answer both of my research questions. From my literature review I learned that it is necessary to have a plan mapped out for collecting data and a clear plan of which people or groups will be the focus of the study. To collect my data I will focus on one school, Culbreth Middle School in Chapel Hill, North Carolina. This school is comprised of students in 6th, 7th, and 8th grade. There are approximately 700 students and 50 teachers. This school was chosen because it was the first middle school in the nation to give every student in the school a mobile device to use in the classroom and at home with the goal of increasing academic success. My focus will be on all three grade levels, but looking primarily at how the iPod Touch units are used to increase academic success in reading and math. I will focus on reading and math because these are the two subjects in which all three grade levels are given standardized tests.

The first step in my data collection will to be to analyze the state standardized test scores in both math and reading for all three grade levels. I will compare these standardized test scores to those scores from the years before the school used iPod Touch devices for every student to analyze if there was academic growth or not. I will also look at the growth of the same class of students over their three year period at the school using mobile devices to note growth or a decline from year to year. This will give me definitive, quantitative data as to whether or not mobile devices can cause academic growth in schools. Next, I will observe and survey reading and math classrooms and their teachers to find out just how the iPod Touch units are being used to increase academic success. Specifically, I will focus on what academic goals are being met using the devices and how the devices are used. I will observe math and reading classrooms at each grade level two to three times throughout the year. The survey will be given to all reading and math teachers and will ask for their feedback about how they use the devices to meet academic goals. This will provide me with empirical, qualitative data that I can use to understand how mobile devices are used to enhance learning in two different subject areas. These methods of data collection will allow me to get a comprehensive view of how a school that has fully integrated mobile learning uses the devices to achieve academic success.

Assessments

The first type of assessment I will use will be standardized test scores from the middle school I will be analyzing. I will find and analyze this data by using the North Carolina Department of Public Instruction website to compare test scores by subject and grade level at this particular school over a specific time period. This will provide me with evidence as to whether academic achievement has increased or decreased since the school implemented the use of iPod Touch devices for every student. This will generate quantitative data that will clearly indicate which subjects students have increased or decreased in academic knowledge by grade level. In my literature review, I saw that many researchers used quantitative data to examine either the use of mobile devices in schools or the level of academic achievement at schools using such devices. For example, the Project K-nect Mobile Learning Initiative, which was referenced in the literature review, used standardized test scores from their sample of students to indicate academic growth and compared the data to students from the same school who did not participate in the program. Similarly, I will use the standardized test scores as data from this one school and compare the data to earlier years during which students did not use iPod Touch devices in the classroom.

To answer my second question, my assessment types will be based on empirical evidence and more qualitative in nature. I will use observation and surveys with teachers across different subjects and grades. This type of assessment will make it clear how teachers use the iPod Touch devices in the classroom in an effort to increase academic achievement. This includes observing and surveying what applications are used, how often, and why they are used, as well as the level to which the devices are used for reading, writing, and researching. In my literature review, many examples were given in which either teachers, students, or both were surveyed and observed in order to gauge an understanding of how they used mobile devices and to what effect it impacted their motivation for learning. I will be interviewing and surveying for the purpose of analyzing the use of mobile devices in regards to their academic benefits and uses, as opposed to levels of interest.

Design Rationale

This design is best suited to produce quality data for many reasons. First, standardized test scores provide a clear, definitive, quantitative measure of academic success. At the school being studied, all students in every grade are required to take a standardized test at the end of the year that tests their knowledge in math and reading comprehension. This test is meant to display what they learned throughout the year in relation to the grade level standards. By examining these test results during years that students did not use mobile devices in comparison to years when every student in the school was given a mobile device to use both at home and at school, it will be clear if there was any academic growth. Furthermore, students who are in 8th grade and have had the mobile devices to use for all three years of their middle school education will provide evidence as to the success, or lack thereof, of using mobile devices in class over time.

Standardized tests as a means of data collection will provide unbiased data for my research.

The second part of my design, combining observations of the use of mobile devices in the classroom and surveys of teachers to examine the ways in which they utilize the devices within their curriculum, will provide firsthand insight into the uses of mobile devices for learning purposes. It will make it clear how often teachers use the devices, what features they use, for what portion of class the devices are used, problems encountered, and more. To find out about mobile device usage, one needs to experience it through observation and take into consideration the teachers' viewpoints and methods for use. Such empirical evidence provides the researcher with strong data directly from the sources who have experience with this type of learning.