To Keyboard or Not to Keyboard? That is the question.

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Introduction

Elementary teachers often struggle to find the appropriate tool from which students will best learn and master key concepts. This is a problem for teachers when it comes to choosing appropriate technology tools for the students, as well. We are interested in exploring this problem in greater depth. The struggle over devices in the form of touchscreens versus the use of keyboards is a common discussion in the lower elementary grades. With the popularity of the iPad, teachers and students have gravitated toward this user-friendly format in the lower grades, while laptops like the Chromebook, which rely on keyboarding, are primarily used in the intermediate and upper grade levels.

Many teachers and students like the ease of use of the iPad and similar touchscreen technologies. With thousands of applications to choose from in both Apple and Android formats, teachers and students can enhance learning and improve individualized education at an adequate rate. One of the issues is the time and money spent on these devices for the younger grades, when using the keyboard is a dominate tool being used to produce things like documents and presentations throughout grades 6-12. Similarly, many schools are using Google Apps For Education (GAFE) which integrates easily into the Google Apps environment and Chromebooks. Is it appropriate to start younger students off with iPads and later transition them to keyboards or is it best to start them off utilizing both? Another factor involved in choosing the appropriate technology is in regards to the subject matter being taught. Some technology tools are more appropriate to use than others depending on the subject, and sometimes even the lesson, being taught. Some people would argue that iPads are more appropriate for math, especially with the plethora of math-related apps available on the iOS platform. Others would contend that with GAFE much of the same could be done with computers. We would like to find out if this is true and if so, is it applicable to only younger students or for all ages.

Also, many school districts struggle with implementing technology into the classroom. Decisions need to be made on what type of technology to use and for what grade level. Many school districts have a lack of financial resources; therefore, it is imperative that they make the best decisions when it comes to implementing the correct technology into the correct grade level. In addition, many students have varying experiences at home when it comes to using technology. Some students come from homes where technology is prevalent; other students come from

homes where technology is scarce. These differing home experiences with technology greatly affect students comfort level in the classroom.

This study hopes to address the best types of technology (touchscreen versus a computer keyboard) to implement in the K-5 grade levels. Also, we hope to gain students and teachers perspectives and opinions about the technology at their grade level, as well as the advantages and disadvantages to overall student learning.

Research Questions

1. In grades K-5, how do technology coordinators feel about using touchscreen devices as compared to using devices with keyboards?
2. In grades K-5, how do students feel about using touchscreen devices as compared to using devices with keyboards?
3. In grades K-5, how do teachers feel about using touchscreen devices as compared to using devices with keyboards?
4. What are some advantages/disadvantages of using touchscreen devices or devices with keyboards?

Research Approach

We plan to use the qualitative method to conduct our research. We felt that the qualitative research approach would work best because interviews/surveys with technology coordinators, curriculum directors, teachers and students, as well as classroom observations would be more accurate when answering our research questions. Responses from participants would allow us as researchers to include a point of view from administration as well as the teacher and the student. These responses may help better identify challenges both students and teachers face when using touchscreen technology and keyboard technology. On-site observations would allow us to provide a descriptive account of just how these technologies are being implemented in the lower elementary grades and how children and adults are responding to them. We felt this approach would align better than a quantitative method because we wanted to compare people's honest opinions using multiple measures such as interviews and on-site observations, rather than from statistical results from something like a standardized test, which would not help answer our problem of practice.

One strength that we felt we have as qualitative researchers is our rapport with the participants, being that most of the researchers involved are teachers and are currently in the Instructional Technology program at The University of Akron. We also felt we knew the correct language to use when trying to obtain a more in-depth answer from a participant when it came to technology use of these two forms. Another strength we possess is the comfort level we have in the classroom to make the on-site observations, thus allowing us to observe effective uses of the implementation of both keyboarding and touchscreen devices first hand. A weakness we may face as researchers would be organizing the data once it's been collected. As novice researchers, none of us have any experience categorizing themes or common responses when analyzing the

results. To compensate for the lack of experience, we would try to find out what other research has been done using similar methods as a guideline.

Participant Selection

In order to answer our research questions we felt the selection of participants would have to first include many staff members that not only plan for the use of devices like laptops and iPads, but also are involved in the decision making process of purchasing and implementing these tools. The correct tool in the hands of the appropriate age and development may play a large role in the results of our case study. We need to select participants that not only use the touchscreen and keyboards, but we also need to study those that are involved in the planning and implementation of those tools. The first selection of participants would be the technology coordinators, as they can provide us with responses that would be the most knowledgeable about how these devices compare to each other and how each would benefit student success across the K-5 grade areas. They may also be current on other possible research that would allow us to answer our research questions. Another population of participants we felt needed to be a part of the data collection process were the students, as they are the ones who use touchscreen technology and are in the process of learning the traditional keyboard. These participants could also allow us to observe classrooms where each type of device is being used and how the students feel it contributes to their learning. Finally, there would be a group of teachers to be included in the collection process. Since teachers are facilitating instruction daily with these two types of technologies, we felt that their input would be of value to help answer the research questions.

Technology coordinators will be the set of participants we first wish to have part of the data collection process. Technology coordinators may be the most valuable to our participant selection since this problem of practice directly involves a decision based on two different types of technology. Staff members that hold this position often research and purchase equipment and programs that involve any implementation of technology. They oversee which technologies fit better at which grade level. For instance, an interactive whiteboard may be a tool better purchased for students in the primary grades as opposed to those at the middle school level. Also included in this group could be technology teachers, as these positions would be specific to teaching students on a daily basis and also are in constant communication with most technology coordinators in school districts.

The target population for finding participants will be located in the northeastern section of Ohio, since this is where we are all located and work. Of course, our districts vary in size and socioeconomic background, but we all follow the same common core standards including those involving technology. We feel that this will allow us to gain an emic perspective from an administrative, teacher and student point of view point of view when collecting and analyzing our data. To begin the selection process, we will send emails to potential participating school districts describing our problem of practice. These emails will be sent as a research team to possible participants. The email will describe the problem of practice including the three main research questions. Our contact information will be included in the email as a way for potential participants to volunteer their input and time to this case study. The sampling procedure of staff

members will require participants to have held their position for at least one school year. The student sample then will require at least one classroom per grade level from Kindergarten through 5th grade. A participating teacher from each grade level would be needed for access to classroom observation conducted by us, the researchers. Once those teachers have volunteered to be a part of the process, a permission email/letter will be sent to the cooperating teacher to then be distributed to a parent/guardian as a way to formally gain access to responses and interactions with students. A group of technology coordinators, as participants across three to four local districts at varying grade levels, will be first given a survey through Google Forms as a method of data collection. Then upon receiving the data from the survey method each participant in this group will be interviewed either face to face or through a video conference. This will allow us to gain perspective on which form of technology they would choose for which age range. Technology coordinators are involved in the process of the technology curriculum itself and may help provide us with data to analyze when answering research questions of both touchscreen and keyboard technology tools

Data Collection

The data collection methods we would use include surveys, interviews, and on-site observations where both touchscreens and devices with keyboards are in use. As researchers we feel being in the environment of the topic we are researching is vital to the study. Surveys and interviews with technology coordinators/teachers will provide us with information as to the direction schools and districts feel they need to go with both touchscreen and keyboard technologies. After collecting data from these participants we will move on to the perspective within the classroom by interviewing and observing teachers and students. We will be able to see how students feel about the technology they are using by their verbal and nonverbal actions. In a journal, we will document the questions/comments they make during class and any positive or negative body language or facial expressions made by the students while learning. We also want to observe how the teachers felt about using the technology. Did the touchscreen (or keyboard) appear to make instruction easier? What adjustments, if any, does a teacher have to make when switching learning instruments? Did one instrument provide something the other did not, such as a learning application? We also felt that observations should last a week, giving us a continuous and sufficient time frame to gather enough reliable data and create a rapport with the instructors.

Interviews will also be conducted after each lesson is taught. The audio should be recorded to insure accuracy. Since the age group in the study is from 5-10 year olds, they should be questioned first to get a response that is close to the event we are studying. Afterward, the teachers will be questioned. Questions will be open-ended in nature which would allow something other than a specific response and will be based on the observational data that was collected. Questions about the specific technology that was used, the curriculum that was taught, and the outcome of the lesson taught, could also be asked. Afterward, a table could be made comparing keyboards and touchscreens as learning/teaching devices, with the answers to the questions from the teachers and students being used. The answers could then be put into categories by common theme and the themes that have the most data would provide the results. We feel using this approach with multiple methods and multiple observers will give us a strong emic perspective from which to draw our conclusions.

Strengths and Limitations

Two factors that will be strengths in the implementation of this study are the collections of participants and the value of student input. Since the researchers are already educators teaching in different districts, locating participants would be fairly simple. It is important to collect multiple perspectives and attitudes from students and teachers ranging from grades K-5, in order to have a well-rounded study. It is also significant to note that just because the schools are in the same state does not mean that each district and school has neither the same amount of funds to purchase technology nor the same amount allocated for professional development for teachers. Thus the data collected from interviews and classroom observations may be drastically different from one school to the next.

The second factor that would be a strength for our study would involve student input. Most of the time, when children feel comfortable in their surroundings they will be direct and honest about their feelings. In this case, it is imperative that students share their opinions about their likes and dislikes of using different forms of technology. Students who have technology already in their homes may differ in their views than students who do not. However, we feel that even students as young as Kindergarten can give feedback since a majority of the time, students that young have already used both tablets and computers or laptops.

Two factors that might be a challenge when completing this study include the time involved to conduct interviews and observations, as well as controlling any bias we may have about the tools. Teachers are incredibly busy ensuring that each student's needs are met and that students are learning the required material. For younger grades any time there is a distraction in the classroom it can alter the student's ability to focus on the tasks and activities at hand. Visitors can be a major distraction and may end up taking away vital instruction time. One strategy for overcoming the distractions is for the researcher to complete all teacher and student interviews during lunch or another time when students may not miss imperative instruction time. Additionally, if the observer visits the classroom multiple times and becomes a regular visitor this may help students to become comfortable with the visitor and thus become less of a distraction when the observer begins to make observations. It is imperative that the observer understand children and learn techniques in how to ask students clear questions and at their cognitive level.

The second factor that might make our study more challenging to implement is that the quality of our research could easily be influenced by any bias we might have about using touchscreens (iPads) or keyboards (laptops). Each one of us brings our own experiences of using touchscreens and keyboards into this research. These experiences, whether they are positive or negative, could influence the quality of our research. They might affect the type of questions we use for our surveys and interviews, which in turn would affect the type of responses we get from our participants. These experiences could also influence the way in which we analyze the data we collect. If we have better experiences using touchscreens than keyboards, we might interpret the data to make using touchscreens more favorable. It is important that we realize and identify any bias that we have before conducting this study. We could also try to help each other realize

any bias that we might have. Finally, as with some of the other studies we have seen in this class, we need to write about the bias in our report.

Implications

We feel that this research will positively impact us in our professional practice because most of us are current classroom teachers that are interested in increasing the use of appropriate technology in education. The results of this study will help us to become better decision makers regarding the integration of technology in our own classrooms and schools. For example, a third grade teacher is making decisions in regards to how best help his students excel in math. Along with the typical classroom instruction, he wants to incorporate practice during their time in the computer lab. Knowing the outcomes of this research will allow him to make better decisions whether students should practice the skills on the computers/laptops (with keyboards) or on the tablets. With the end result being student growth and success, our research can show which device is most appropriate at different grade levels. As technology coaches, instructors, and administrators make decisions in regards to technology in the schools, we will be able to share our expertise in regards to using keyboards and touchscreens.

Other professionals in our field that would likely have interest in this research would be Curriculum Directors, Technology Coordinators/Teachers, Intervention Specialists/Teachers, Speech Pathologists, School Counselors/Guidance Counselors and Administrators. All of these professionals work with students or their work impacts students. Knowing how the use of the various technologies will help students to achieve success will be useful to them in the field. The results from this study could help districts make important financial decisions about what technology to purchase for grade levels K-5. In closing, the conclusions derived from the data could help teachers make appropriate technology decisions when integrating different forms of technology into particular grade levels.