# The Power of a Mouse!

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Student response systems (SRS) or clickers have become the norm in K-12 classrooms as an assessment tool as well as a means to increase class participation. Like most technologies, there are varying platforms and manufacturers of SRS mobile devices ranging in cost from approximately $1500 to $3000. In spring 2010, Microsoft launched a free PowerPoint add-in program called *Mouse Mischief*. This free download, coupled with wireless mice, enables users to deploy twenty-four wireless mice across the classroom enabling students to respond to varying question formats from their desktops at a substantially lower cost than traditional systems. The following research study focused on K-12 classroom implementation of this newly released version of an SRS, which is distinctly different from the other variations currently available.

## Introduction

In the past five years, technology has surged and forged ahead captivating and drawing the attention of users, predominantly ages eight to eighteen. The Henry J. Kaiser Family Foundation (2010) reported that young people have increased their daily use of technology and media from 6.5 hours a day to slightly over 7.5 hours a day. This increase is attributed to the explosion of mobile and online media accessible to youth ages 8 to 18 years old. In knowing that this generation of students are filling today's classrooms, it is essential that teachers tap into this medium to motivate learners.

K-12 classrooms of today are now equipped with interactive white boards, LCD projectors, multiple computer stations, document cameras, speaker systems, and even student response systems (SRS) or "clickers" as they are often called (Judson & Sawada, 2002; Adams & Howard, 2009). These devices are now more the "norm" than not making the need for change in how we teach vital (Marlow, Wash, Chapman, & Dale, 2009). No more is there a need for overhead projectors, film strip projectors, opaque projectors, tape recorders, or CD players; even chalk and marker boards are almost obsolete in classrooms. Now, teachers can invite K-12 students up front to share work on the document camera, to interact with the stroke of a pen or even a finger on the active white board, or click in a response using a remote hand-held device (Wash, 2011).

The following narrative describes a research study conducted on the use of the new Microsoft PowerPoint add-in called, *Mouse Mischief* that is taking K-12 classrooms by storm as an alternative to other student response systems that have been available for over a decade.

*Clickers in the Classroom*

Student response systems consist of individual hand-held remote response devices (clickers), a receiver, a projector, and a computer. Regardless of the brand name purchased, special software is required to operate and manage the devices. Once all components are available and ready for use, questions can then be posed to the class either in presentation format or orally. Students will then respond by pressing the corresponding buttons on the remote device sending their responses electronically to the

software for class display. Some clickers allow for only multiple choice responses A-F, while other devices allow both alpha and numeric input and even short answer responses. For example, the Promethean ActivExpression clickers allow the teacher to pose short answer questions and then display and manipulate all responses on the board for discussions and clarification if needed. Additionally, several of the clicker brands even allow for self-pacing assessments that enable the students to take a quiz independently through their individual device and no class display is needed; thus allowing for both informal and even formal assessments to be provided through this instructional technology.

Prior research studies conducted on the effectiveness of clickers in the classroom support their use. Mula and Kavanaugh (2009) concluded with their study of first year accounting students that 96% of the students reported that clickers were a positive experience, that students using clickers perceived they gained an enhanced understanding of the material presented, that the use of clickers increased student participation, yet data comparing assessment performance between those using clickers and those not using clickers was inconclusive. Additionally, Kolikant, Drane, and Calkins (2010) reported three findings based on their study working with seasoned university faculty: 1) Implementing clicker technology is neither a simple nor an overnight process. It takes time and a willingness to change; 2) Provided an anonymous means to engage reluctant students. They stated that this form of participation helped provide "out of public attention" in class participation; and 3) The feedback from the student responses during class moved them from teacher-centered faculty to student-centered faculty.

With the introduction of *Mouse Mischief* to the market and its obvious differences regarding equipment and implementation, the need to research the effectiveness of this modified student response system was conceived.

*Mouse Mischief*

Spring 2010, Microsoft released a free PowerPoint add-in program called *Mouse Mischief* as an alternative student response system. This program is a free download for users of PowerPoint 2007 and 2010. The add-in allows users to easily drop in multiple choice question slides, yes/no or true/false question slides, or even drawing slides that allow participants to write or draw on the screen. What makes this a viable alternative to other student response systems is that the only additional equipment needed beyond the computer and projector are wireless mice (maximum of 24) with a minimum of 2.4GHz transmission and multiple port USB hubs. The total price of this supplemental equipment ranges between $550 and $700 while other more sophisticated SRS brands range in price between $1500 and $3000.

So how does *Mouse Mischief* work? Users can simply launch Microsoft PowerPoint, which is typically an already familiar software, and drop in question slides using the provided templates within the add-in program. Student participants are provided wireless mice as their remote devices. When *Mouse Mischief* begins, each wireless mouse is assigned a pre-set icon for ease in identification of each participant. When the question slides are provided, students move their assigned icon using their mouse to click on their answer or even draw or write responses directly on the slides from their seats. This particular feature, the drawing tool, allows for fill-in-the-blank type responses, matching responses, sequencing, parts of speech identification, and other questioning strategies.

## Research Questions

Outfitting K-12 classrooms today with the latest technology is expensive. Knowing that traditional student response systems cost upwards of $1500, the researcher opted to use a $15,000 grant award to pilot the newly released alternative

to traditional SRS, *Mouse Mischief*, in local K-12 schools. Specifically, the purpose of this study was to investigate three questions: 1) Is there a difference between perceived implementation benefits and intended usage of student response systems? 2) Is there a difference between perceived intended usage and technological limitations (such as level of Bloom's Taxonomy)? and 3) Is there a correlation between perceived implementation benefits and preparation for standardized tests?

## Methodology

*Participants and Context*

Fall 2011, the researcher, who is an associate professor with the school of education at the local university, sent out a call for proposals to all practicing teachers of K-12 classrooms in seven area school districts. These seven school districts already work closely with the university in regards to hosting clinical students, contracting courses, etc. The proposal required any interested teacher willing to implement this new technology in his/her classroom to draft a proposed implementation plan following a provided rubric. If selected, each of the teacher participants would receive 10 wireless mice, 2 seven-port USB hubs, a power-strip, and a free three-hour graduate course to provide the training and facilitate program implementation. Due to the limitation in grant funding being used to support this research effort, only twenty-one teachers were selected.

The twenty-one teacher participants ranged in grades taught from second to twelfth grade levels with subject specialization including Spanish, Mathematics, Computer-Business, English, Social Studies, and Biology. Each teacher was notified fall 2011 of his/her selection with the graduate course being offered spring 2012. During the course, teachers met face to face for three course meetings at the beginning to receive training on how to use *Mouse Mischief* and to receive and setup the required technology. The middle portion of the semester consisted of classroom implementation with purposefully designed online course structure to monitor their progress and to share celebrations as well as challenges. At the end of the semester, each teacher shared a presentation of his/her culminating experience with this new technology as well as submitted his/her survey documentation.

*Procedures*

Each teacher in the research study was trained on how to use the program *Mouse Mischief* and was provided a starter set of equipment for his/her classroom consisting of 10 wireless mice, two seven-port hubs, and one power-strip extension cord. After completing the training sessions, teachers were then charged with implementing the use of the clickers in their classrooms as appropriate for their grade level and subject areas. At a minimum, each teacher was required to develop and implement three *Mouse Mischief* engagements for the same group of students. At the end of the semester, each teacher was provided both a teacher survey to complete as well as a student survey to administer to all students involved in the use of the clickers. The survey instruments consisted of eight Likert-scale questions and three open-ended response questions for the teacher survey and two open-response questions for the student survey (see Appendices 1 and 2). A total of 784 student surveys were collected and 21 teacher surveys as well as one school administrator survey were collected for a total of 806 participant surveys.

## Results

After comparing the mean scores (see Table 1) from both the teacher surveys and the student surveys for each of the eight Likert-scale survey questions, the results yielded that teachers believe that the use of clickers in the classroom *increased participation* as well as *mental engagement*. The students believe that clickers *should be used more often in their classroom* as well as *clickers help*

*to provide them with instant feedback on what they know.* Additionally, when both groups were posed the open-ended question, *Do clickers help facilitate standardized test preparation,* 86% of the teachers responded yes and 78% of the students responded yes. Teachers were posed the open-ended question, *What levels of Bloom's Taxonomy do you feel you are able to reach with Mouse Mischief?* Fifteen of the 22 teachers surveyed or 68% stated that they felt *Mouse* Mischief allowed them to design questions at either all levels or at least application and above. However, seven teachers stated they could only address knowledge and comprehension levels.

Survey data also revealed that both groups agreed that clickers *increase participation in class*, but do not feel that clickers *stimulate class discussion based on the data received/displayed,* nor that *clickers increase learning.*

*Additional Research Findings*

In conducting action research like this study where practicing teachers are working to perfect the implementation of an instructional tool like *Mouse Mischief*, the findings go way beyond the quantitative results. Additional informally collected data included the sharing of celebrations regarding classroom management strategies through the online discussions during the implementation phase of the study. Such strategies were the sharing of the order of the pre-assigned icons to assist teachers with assigning the mice to specific groups; how to strategically place a "parking lot" on each question slide to *park* the mice icons since the mice are moving across the screen and can be very distracting; how to effectively use the pause button built into each slide's tools as well as the built-in timer; to how to develop questions on each slide to prevent the "follow the leader" aspect that can occur because the icons for all mice are visible until an answer is clicked. These lessons learned are invaluable and assisted each teacher participant with the overall implementation of the instructional technology.

## Discussion

The data supports that clickers increase participation in class, that students feel they should be used more often in class, and that clickers facilitate standardized test preparation. Additionally, the teachers overall feel they are able to use *Mouse* Mischief to reach all levels of Bloom's taxonomy. However, contrary to the aforementioned data results, the data also reveals that neither group believes clickers increase learning. This result seems in contrast of the other supporting data revealed through the study and lends itself to a follow-up study.

As with all technology, there are both pros and cons of this instructional tool. Table 2 is a chart displaying the similarities and differences between *Mouse Mischief* and other more expensive student response systems. As shown in the comparison chart, there are distinct differences revealed through this study between the programs.

*Mouse Mischief* is a relatively new, less expensive student response system alternative for the classroom that can be used for informal assessment and classroom participation. The data supports that students and teachers feel it is a viable instructional tool for both stimulating participation and providing practice for standardized tests. As such, *Mouse Mischief* should be considered when vying for a SRS device for the classroom.

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## About the Author

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## Tables

**Table 1**

*Mouse Mischief Mean Data*

| **Survey Question:**<br><br>**Clickers…** | **Teacher Responses: N=22** | **Grades 2-5 N=166** | **Grades 6-8 N=301** | **Grades 9-12 N=317** | **Overall Mean: N=806** |
|---|---|---|---|---|---|
| Increase my participation in class. | 3.82 | 3.53 | 3.45 | 3.48 | 3.57 |
| Increase my mental engagement in class. | 3.59 | 3.44 | 3.41 | 3.22 | 3.42 |
| Facilitate positive interactions in my class. | 3.45 | 3.37 | 3.28 | 3.37 | 3.37 |
| Help provide me with instant feedback on what I know. | 3.50 | 3.54 | 3.47 | 3.41 | 3.48 |
| Increase my learning. | 3.23 | 3.49 | 3.38 | 3.25 | 3.34 |
| Stimulate class discussions based on the data received/displayed. | 3.32 | 3.44 | 3.31 | 3.26 | 3.33 |
| Should be used more often in this class. | 3.36 | 3.64 | 3.67 | 3.51 | 3.55 |
| Should be used more often in all classrooms K-12. | 3.50 | 3.47 | 3.47 | 3.43 | 3.47 |

**Table 2**
*SRS Comparison Chart*

| Mouse Mischief: | Common to All SRS: | Other SRS Platforms: |
|---|---|---|
| • Informal Assessment<br>• Affordable ($550 - $750)<br>• Mice are Fragile<br>• Uses PowerPoint – a Familiar Program<br>• Requires USB Hubs to House Mice Receivers<br>• Data Cannot Be Exported<br>• Maximum of 24 Clickers (Mice) Can Be Used<br>• Input Includes Drawing or Writing On Board<br>• Responses Are Visible As Icons Move On Screen | • Individual/Team Use<br>• Active Board Compatible<br>• Show/Hide Correct Responses & Data<br>• Anonymous Responses<br>• Increases Participation<br>• Motivates Learners<br>• Requires Batteries | • Formal or Informal Assessment<br>• Expensive ($1500 - $3000)<br>• Durable Clickers<br>• Uses Special Software – Unfamiliar Program(s)<br>• Requires One Receiver<br>• Data Can Be Exported and Saved<br>• Infinite Amount of Clickers<br>• Input is Limited to Alpha and/or Numeric<br>• Responses Being Selected Are Invisible to Class |

## Using *Mouse Mischief* in the Classroom – Teacher Survey

**Please respond honestly to the following questions:**

**Subject Area(s):** English Math Science Social Studies

Foreign Language Computer Science Other_____

**Grade Level:** 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th

**Please circle one response for each of the items below.**

Strongly Agree --- SA
Agree --- A
Disagree --- D
Strongly Disagree --- SD

["**Clickers**" represents *Mouse Mischief* and the wireless mice]

| | | | | |
|---|---|---|---|---|
| 1. Clickers increase participation in class. | SA | A | D | SD |
| 2. Clickers increase mental engagement in class. | SA | A | D | SD |
| 3. Clickers facilitate positive interactions in the classroom. | SA | A | D | SD |
| 4. Clickers help provide instant feedback on what students know. | SA | A | D | SD |
| 5. Clickers increase learning. | SA | A | D | SD |
| 6. Clickers stimulate class discussions based on data received/displayed. | SA | A | D | SD |
| 7. Clickers should be used more often in my classroom. | SA | A | D | SD |
| 8. Clickers should be used more often in K-12 classes. | SA | A | D | SD |

**Short Answer (use the back if necessary):**

9. Briefly describe your experience with ***Mouse Mischief*** in your classroom setting.

10. Do you think ***Mouse Mischief*** facilitates standardized test preparation? Explain why/why not.

11. What levels of Bloom's Taxonomy do you feel you are able to reach with *Mouse Mischief*? Explain.

## Using *Mouse Mischief* in the Classroom – Student Survey

**Please respond honestly to the following questions:**

**Subject Area(s):** English Math Science Social Studies

Foreign Language Computer Science Other_____

**Grade Level:** 2nd 3rd 4th 5th 6th 7th 8th 9th 10th 11th 12th

**Please circle one response for each of the items below.**

Strongly Agree --- SA
Agree --- A
Disagree --- D
Strongly Disagree --- SD

["**Clickers**" represents the wireless mouse you use in class]

| | | | | |
|---|---|---|---|---|
| 1. Clickers increase my participation in class. | SA | A | D | SD |
| 2. Clickers increase my mental engagement in class. | SA | A | D | SD |
| 3. Clickers facilitate positive interactions in my class. | SA | A | D | SD |
| 4. Clickers help provide me with instant feedback on what I know. | SA | A | D | SD |
| 5. Clickers increase my learning. | SA | A | D | SD |
| 6. Clickers stimulate class discussions based on the data received/displayed. | SA | A | D | SD |
| 7. Clickers should be used more often in this class. | SA | A | D | SD |
| 8. Clickers should be used more often in all classrooms (K-12). | SA | A | D | SD |

**Short Answer (use the back if necessary):**

9. Briefly describe your experience with ***Mouse Mischief*** in the class.

10. Do you think ***Mouse Mischief*** helps you prepare for the PASS, EoC, HSAP or other standardized tests? Explain why/why not.