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| 2019-2020 ANNUAL ASSESSMENTSUMMARY OF RESULTS |

# Project (Assessment) Title

SmartPen Pilot Project

# College-wide Strategic Goal

**Strategic Goal:** Achieve equity in student participation and completion.

# Assessment Overview

The premise of the Math SmartPen Pilot Project was that the student assigned to take notes for the MATH 1050 class, using the SmartPen, would be able to provide notes for the whole class as a principle of universal design. The SmartPen has the capability of becoming an audio recorder as well as function as a pen. The student taking notes has the option of recording portions of the lecture so that there would be no gaps in understanding the lecture notes. All students in class would have digital access to the notes and be able to replay portions of the lecture in addition to having a visual copy of the notes.

The DRC began utilizing SmartPens in 2012 as an affordable and effective alternative to peer note taker accommodations. Peer note taker accommodations are costly, unreliable, and time consuming to coordinate. The DRC has received positive feedback from students over the past seven years, SmartPens have become a widely utilized student accommodations at SLCC.

The DRC worked with multiple instructors and provided SmartPens to use in their classes. The DRC supplied a series of instructional videos, training, and demonstrations to faculty members to improve their understanding of how to use assistive technology in the classroom. Instructors assigned up to five students to rotate and take notes at least 85% of the time using the SmartPen each class period during Spring 2020 semester. Instructors exported the notes and uploaded them into Canvas after each class and all students were provided with lecture notes in an audio and handwritten format. A survey was provided at the end of Spring 2020 to determine the students experience and evaluation of accessing class notes via the use of a SmartPen.

# Methodology (Plan/Method)

Instructors and participating students were trained to use the SmartPen in the classroom for note taking. The hope was that using this resource would lead to successful academic outcomes.

The DRC worked with the Data Science and Analytics (DSA) team to develop a student survey which was given to students in the classes participating in the SmartPen Pilot Project.

The SmartPen Pilot Project was initiated to increase Universal Design practices in the Math 1050 courses. The idea was that it would benefit all students to have access to course lecture notes via Canvas. The DRC provided instructional videos, training, and demonstrations to use a SmartPen, export notes, upload the notes to Canvas in a pencast (handwritten notes and audio) and an mp3 format during November and December 2019. The thought was that using a SmartPen would provide support for the instructors and students and improve the quality of notes available to all students during the Spring 2020 semester.

The DRC had planned to utilize this data to determine if using the SmartPen would help increase student performance and satisfaction in the classroom.

# Timeline

November 2020 – Collected data from surveying students with a Note Taking accommodation

December 2020 – Completed Instructional videos for faculty and students participating in the SP pilot

December 2020 – Worked with Instructional Design team and Math 1050 instructors to build consistent place in Canvas to house pencast and MP3 audio notes

January/February 2020 – Provided ongoing training needed for students and instructors on using the SP

April 2020 – Contacted instructors to see if they are uploading pencast and MP3 audio notes after each lecture

May 2020 – Collected data from student survey regarding use of SP and access to pencast and MP3 audio notes

May 2020 - Evaluated data and compare to currently available data

May 2020 – Finalized data and created an action plan based on data results

June 2020 – Completed and submitted assessment

# Results/Findings

Ten SmartPens were distributed to instructors in MATH 1050 classes and the instructors assigned individual students the SmartPens to take notes for the class. The SmartPens were used in 8 of 10 Math 1050 courses throughout the spring semester. Data Science and Analytics sent out 450 surveys to the participants of the MATH 1050 classes. 25 students responded to the survey.

Ten questions were asked of each student; question #8 was the opened ended question which provided detailed answers. It stated: “Is there anything else you would like to share about using SmartPens?”.

These comments were telling, only one comment was complimentary of the SmartPen. That comment read: “I really like the pause and play buttons on the bottom of the pages. I liked that you just tapped them. Also, is there a choice about different colors of ink?” A couple of students had constructive criticism. Student 1: “As a left-hander, in my opinion, it was really hard to write with the SmartPens cause the edge of my hand would always touch the screen and make the tablet want to do something else.” Student 2: “Lags out a lot. Pen is not in sync with audio.”

Several students did not like the concept of one person taking notes for the class. Their comments were as follows:

* “Personally, I consider that it doesn’t work, at least it didn’t work in my math class because the notes are not always readable….however, I think it is an amazing gadget, but maybe if it is used in a different way…or giving students more time to write, because it was difficult for my class to take notes at the instructor’s speed, maybe that made it difficult.”
* “Everyone takes notes differently, forcing someone to take notes for the entire class is a waste of time because someone could do a really poor job at taking notes or their handwriting is poor and it then provides poor notes for those who could have taken their own notes with which they would have been able to learn from.”
* “I feel like it is time wasting for the person who took note and unuseful for the rest of the class. Math is different from other subjects. Everyone has their own way to take note as well as practice. I can’t study on other people’s notes. (Textbook and videos are way more helpful if we need to review the lesson.) If people need notes, they should write on their own way. So they can understand and remember the info longer. If people don’t then the SmartPen is also a waste of time.”
* “I have taken Math 1050 twice over the course of a year. One was online only no lecture or face to face meetings with the teacher. I tried using the smart pen notes to understand various math concepts on several occasions. The student or students who would right (sic) the notes would always write them in a way that was incoherent to what the teacher was saying. Lagging behind, or emitting (sic) whole concepts, because the student didn’t feel the need to write down exactly what the teacher was explaining or didn’t want to. Needless to say this made deciphering the concepts hard if not impossible. The second time I took math 1050 I took a live lecture class with the same exact teacher. I didn’t even look at the live scribe notes because I didn’t feel I needed them having a face to face live class and taking my own notes. I did much better and passed. I can not (sic) talk for my other peers in saying that they where (sic) not helped by the smart pen notes. However, in my own experience the smart pen notes did not help me and perhaps played a small role in having to repeat the 1050 math course and spend more time and money on my education. The smart pen notes where (sic) a hindrance to my learning and understanding in the math 1050 course.”

Data Science & Analytics supplied further information:

16 of 23 or 69.5% of the respondents did not know that a SmartPen was being used in their course.

8 of 23 or 35% did not find the notes useful and 9 of 23 or 36% were not sure if the SmartPen notes in Canvas were useful.

12 out of 16 that responded found it useful to have notes from the class in Canvas, but in the other comments – the students referred to having instructor notes, not peer notes to ensure quality.

# Action Plan (Use of Results/Improvements/Call to Action)

The message received from the students responding to the survey was that the use of the SmartPen was not helpful. Initially the Math Department was contacted to be a part of this pilot project because the course content is considered demanding and difficult. One thought is that we could reach out to other STEM departments, which have challenging content, to see if they would be interested in partnering with the DRC in another universal design project.

Could there be other tools that would assist in providing universal design? Otter is a newer Assistive Technology product that is being used in the DRC in the place of a peer note taker. Otter is a transcription app that takes the spoken word to the written word as fast as someone can speak. It is an artificial intelligence that can learn repeated vocabulary; it is currently being used as a supplement to ASL for students in Biology classes who are Deaf. We are testing this product out in classes during summer 2020 and hope for success. Otter could be a potential note taking service that would be better suited for taking class notes. Collaborating with other departments that have a high volume of note taking (English, History, Humanities, etc.,) may prove beneficial to these departments and students. At the present time Otter is not recommended for Math courses due to the complex formulas that the artificial intelligence isn’t quite ready to grasp.

# Other Notes

Although it was determined that the SmartPen was not an effective tool for students in this setting, the DRC is committed to exploring and providing other forms of universal design to assist all students. I do not consider the effort a loss, rather we have tried something and listened to the users of the product to determine efficacy.