The Maker Moment: Making Digital Assessment Technology Accessible, Available, and Manageable for Pre-Service Agriculture Teachers

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Introduction/need for innovation or idea

With the creation of many free and easy-to-use internet-based assessment tools, instructors have a plethora of choices when it comes to choosing alternative or innovative methods for formative and summative assessment of their students. However, it is often challenging to find ways to incorporate these new forms of technology into learning activities at the post-secondary level due to time, technology, and digital comfort constraints. To address this issue, The Maker Moment was incorporated into a teaching methods course for pre-service agriculture teachers at a land grant university. It replaced the short, traditional five question pen-and-paper quizzes that were held each week with a digital assessment using new and different web-based platforms.

The transition to digital assessment was taken for a number of reasons. It is becoming increasingly more popular in the agricultural education classroom due to its beneficial nature for both formal and informal formative assessment (Sung, Chang, & Liu, 2016) and it allows students to receive instantaneous feedback and results on their completed assessments (Van der Kleij, Feskens, & Eggen, 2015). Many forms of digital assessment also include elements of gamification, and while they are not a stand-alone game, they serve as an existing form of assessment that has been enhanced with the addition of game elements (Armstrong, Ferrell, Collmus, & Landers, 2016). It has been recommended that agriculture teachers consider incorporating gamification into their existing pedagogical practices without fear of decreasing student learning and achievement (Bunch, Robinson, Edwards, & Antonenko, 2014)

How it works/methodology/program phases/steps

The Maker Moment was incorporated from the first week of the semester as a class procedure for informal assessment. Students were made aware that they would be assessed each week using their digital devices and a different digital assessment platform. Each week, students were provided with a short video and best practices card for each new technology platform prior to using it for their assessment. From there, their weekly assessment was conducted with the platform and allowed them to experience "learning by doing" as they demonstrated their knowledge of what they had learned each week. The goal of the Maker Moment was to increase the digital comfort level of students by exposing them new forms of technology. This was done via the introduction of the different forms of digital assessment, and it showed the students multiple ways to turn five minutes of paper-and-pencil based assessment into five minutes of engaging practice with new forms of technology.

Methods/Procedures

The creation of each week's Maker Moment took approximately one hour. The design process, organized by day of the week, tasks, and time commitment is as follows:

- Monday: Choose digital assessment platform, explore platform, create account (20 minutes)
- Tuesday: Create and print best practices handout cards, find relevant informational video on YouTube (20 minutes)
- Wednesday: Generate questions on weekly material (5 minutes)
- Thursday: Prepare assessment within digital platform (10 minutes)
- Friday: Deliver Maker Moment (5 minutes)

Results to date/implications

The Maker Moment was created and overseen by a graduate student and used with pre-service teachers, university supervisors, and teaching faculty as part of a teaching methods course. A summary of participants for the first semester of implementation is outlined in Table 1.

Table 1

Individuals Engaged in The Maker Moment

Type	No. of Individuals
Pre-Service Teachers	10
University Supervisors	6
Teaching Faculty	3
Total	19

Seven different digital assessment platforms: GradeCam, Kahoot!, Mentimeter, Plickers, Purpose Games, Quizziz, and Socrative, were used for the Maker Moment. Kahoot!, Mentimter, Purpose Games, Quizziz, and Socrative included elements of gamification to attract the attention of participants. GradeCam and Plickers demonstrated instant grading using smart devices to demonstrate alternative grading methods. A best practices card was created for each digital assessment platform. The cards included information about the type of assessments available, cost, and unique features of the platform. Assessment types available on the platforms were authentically reflective of those commonly used in the classroom and included true/false , multiple choice, short answer, rubric, discussion, matching, and survey/poll.

Future plans/advice to others

The Maker Moment will continue to be implemented as part of course procedures in subsequent semesters of the teaching methods course. The digital assessment platforms will be revisited on an annual basis to check to relevancy and compatibility with current course goals and educational technology usage trends. One of the drawbacks of game-based digital assessment is the novelty effect, in which gamification first holds positive effects, only to diminish over time as the newness of the game elements wears off (van Roy & Zaman, 2018). To combat this, new platforms will be added and other platforms will be removed as needed.

Costs/resources needed

The Maker Moment can be replicated with any digital device that has internet connectivity. It can be used successfully with smartphones, tablets, or computers. Students were provided with an iPad to use during class, but also had the option of participating with their personal devices. All of the digital assessment platforms used in the first semester of implementation were free, and do not require any type of paid membership. The videos used to show the highlights of each platform were found on YouTube, and the best practices cards were created using GoogleDocs and a printer with the capability to print on cardstock. Access to a computer with a projector is helpful to show the videos on how each platform works, and to show real-time results as students complete assessment activities.

References

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