**Poster Type (Innovative Idea)**

# Selfies as a Learning "Tool"

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## Introduction

Since its inception at the turn of the 20th century, agricultural education has utilized agricultural mechanics and technology (power, structure and technical systems) to embed problem solving, practical mathematics, and foundational physical sciences to its curriculum. These STEM concepts have kept the agricultural mechanics laboratory real and relevant in the modern school. However, the lack of general agricultural mechanic's skills/ knowledge within the populace of recently graduated students of agricultural education programs at most universities and institutions of higher learning is alarming.

Successful agricultural science and technology teachers agreed that their undergraduate coursework did not adequately prepare them to teach the current curriculum. Unanimously, the respondents expressed a concern for the lack of depth, scope, and technical skills in agricultural mechanics currently being taught to future agricultural science teachers. (Ford, Shinn, & Lawver, 2008).

Due to these current trends in the population of agricultural educators, the strength of these important STEM skill sets taught in a mechanics setting is being lost to the underserved population of rural students. The basis behind this innovation is utilizing cellular/ compact camera technology and social media to provide a medium for basic agricultural mechanics skills; in this case, tool identification.

## Methodology

In a beginning agricultural mechanics course at West Virginia University, students are tasked with locating 100 examples of tools and materials from an assigned list of approximately 400 different tools. Students are given a list of 400 tools arranged in 22 broad categories such as; tools for gripping, hand electric power tools, stationary power tools, pneumatic tools, tools for electrical work, measuring, impact, torque, removing materials, prying, marking, welding, oxy-fuel, masonry/concrete tools, cleaning tools, personal protective equipment, welding supplies, plumbing supplies, fasteners, and electrical equipment. For each tool or material, the student is required to take a "selfie" photo of each tool, write the name of the tool and a brief description of how it is used. In addition to the photo of the tool, students are asked to include a brief one to two line description of what the tool is used for. Additionally, they are asked to record a retail price for each item and the store, website, or company where they could purchase the item. Students are required to turn in a presentation that includes 50 mandatory items and 50 optional items with at least one item from each 22 represented general categories.

## Results/Implication

The instructors have found that the students who have participated in this STEM project-based learning activity have garnered a solid foundational basis of the uses, cost, and vendors of the basic tools of an agricultural mechanics laboratory. Students are also using problem-based learning to complete this activity as they are in charge of the information they learn through tool identification, while widening their understanding of these tools (Barrows & Kelson, 1995; Burris & Garton, 2007). This hands-on approach has given students a tangible way to learn the

principles of the tools and materials, and a viable library of images and information on those tools to use in their careers. Students are allowed to take ownership and personalize the assignment. By asking students to take a "selfie," the instructor believes that the students will have the hands-on scavenger hunt to provide a more meaningful experience than viewing a PowerPoint or handout.

The assignment grew out of a desire to help the preservice teachers to build a basic vocabulary of tools and their usage. In the original iteration of the project, students were asked to provide pictures of tools, give the brief description, and provide purchasing information. However, the instructor noticed a high degree of inaccuracy in the labeling of the items. Students were not listing the correct photo for the correct tool. In further examination, the instructor realized the photo being incorrectly used was often the first image to populate in a quick search engine query. To alleviate the problem, the assignment was changed to require the students to take a picture of themselves holding the tool or material in question. This provided not only proof the student had located the tool themselves, but also the increased engagement brought about by personalization and this has led to a greater level or efficacy when it comes to tools and tool identification. Furthermore, this assignment is helpful for students with no knowledge of tools used in agricultural mechanics, and for students who have a strong background in this area because it asks students to discover a deeper understanding of these tools and their uses.

## Future Plans

As an extension of improvement to the project, it is planned to incorporate augmented reality (AR) or virtual reality (VR) to help deepen the learning, give more complete context to the project, which allows for higher levels of content retention. A mediated step to the completion of the goal to incorporate AR or VR is to involve 360 video and hyperlinked hot spots within the video. Students will be required to ID the tools in the video in order to create a proper working model. The model then can be used for assessment by the instructors or as a teaching tool for other classes, along with a teaching tool for preservice teachers. It is the goal of this lesson to have pre-service teachers complete the teacher preparation program with a minimum of conversant knowledge of the tools that would be common place in most agricultural mechanics laboratories. After completing this, preservice teachers can use this as an activity in their classrooms and with their students.

## Resources Needed

Minimal resources are needed to implement the assignment. It has been the experience of the instructor that a good working relationship with the local business is important when making this assignment. Students will inundate the hardware section of the closest chain hardware store (i.e. Lowes/ Home Depot) and are typically met with many questions. Store managers have reported that the assignment has helped them train new employees on the location of merchandise within the store if they are aware of the assignment. Lastly, time is the other necessary factor needed for this assignment, as it requires students to practice their time management skills in preparing this assignment for the final product.

## References

Barrows, H.S., & Kelson, A.C. (1995). *Problem-based learning in secondary education and the problem-based learning institute*. Springfield, IL: Problem-Based Learning Institute.

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