

**Using Game-Based Learning to better engage learners in Agricultural
Environments**

by

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this creative component. The Graduate College will ensure this creative component is globally accessible and will not permit alterations after a degree is conferred.

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DEDICATION

For my family for supporting me through this trying journey. Without their support, I would not have completed this and likely would have regretted it later on.

Thank you now and forever.

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ABSTRACT

Today's learners are among the most technology literate generations our world has seen. This presents a great challenge and opportunity for educators to implement new tools into learning experiences. One of these tools is game-based learning. Games are a tool that can enhance the topics and concepts being taught in the classroom. Agriculture classrooms should be considered when implementing game-based learning. The agriculture industry is continuing to grow and preparing learners to enter careers in the industry is a priority. Games exist and are being developed to help provide learners with the opportunity to learn processes, test knowledge and prepare for hands-on experiences. By providing these opportunities for learners, interest in agricultural industries grows and learners enter the workforce with ready-to-use skills.

There are a variety of games available, each serving their own purpose. Game genres include: action, strategy, role-playing, simulation, construction and management, adventure and puzzle. Using games in the classroom has the ability to improve skills in mathematics, engineering, science, technology and others. By using new and emerging tools to teach today & future learners, we are working to prepare an educated workforce from the beginning.

CHAPTER 1: INTRODUCTION

Gaming as a learning tool is not a new concept in education, however it has evolved in recent decades as computer technology has become more common. Since the 1970s, developers have been creating games for educational and entertainment purposes. One classic example of this would be *The Oregon Trail* computer game. The game was originally developed in 1971 by three student teachers from Minneapolis, MN who wanted to better engage students in their learning outside of a textbook. The computer game became “the most successful educational game of all time” (Garnjobst, acc. 2019) and is still being published today in a variety of forms including as a video game, card game, and a smartphone application. Due to the popularity of the game, the Minnesota Education Computing Consortium (MECC) created in 1973, hired Don Rawitsch, the creator of *The Oregon Trail*, and made the game available to all school districts in Minnesota. Since then, the game has engaged generations of learners and many of the elements used to engage learners then can still be used today for all ages.

Today, more and more classrooms have chosen to implement games, particularly online or digital games, into their classrooms to help students learn various subjects. “40 percent of administrators say that their classrooms now include” (Project Tomorrow, 2015) these types of technologies as tools for learning. In the past decade schools around the United States have also been implementing 1:1 laptop and tablet programs to allow their students access to digital technology and how to use these tools for success in the classroom. 60 percent of school principals report use of a laptop, tablet or Chromebook in their schools (Evans, 2018).

Game-based learning is defined as “a comprehensive learning experience where [learners] engage in interactive cycles of assessment and feedback through the use of game mechanics” (Nadolny). Game-based learning involves elements such as “motivation, player engagement, adaptivity, and graceful failure” (Plass, Homer & Kinzer, 2015) that help to encourage players to continue play, develop strategy, and learn from their mistakes and adjust accordingly. This is all relative to the model of game-based learning (see Figure 1). The continuous cycle of being challenged, responding to the challenge, and receiving feedback creates an engaging environment for learners.

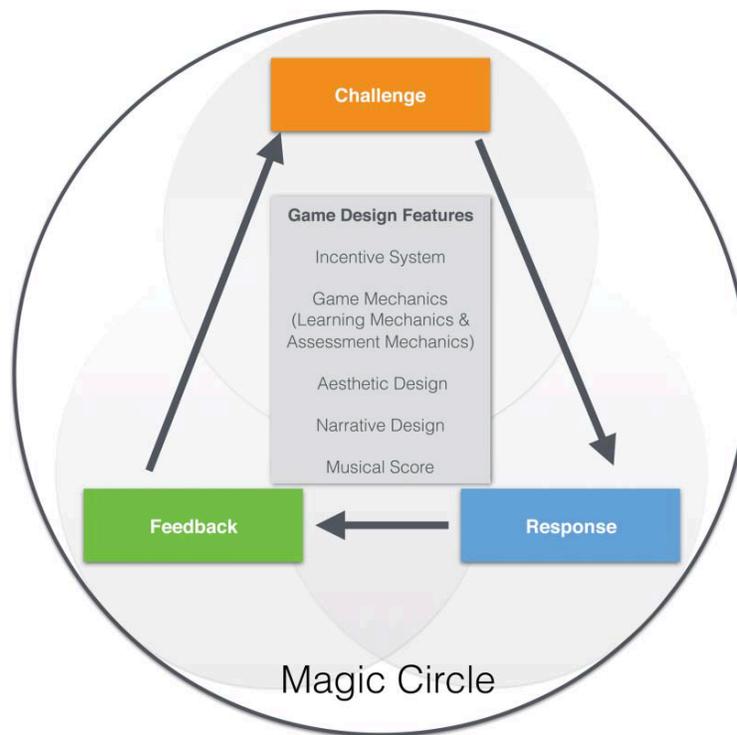


Figure 1 Game-based learning Model (Plass, Homer & Kinzer, 2015)

Agricultural education envelopes multiple learning subjects into its curriculum focusing on agriculture, food and natural resources. These educators teach applicable skills in

many areas including “science, math, communications, leadership, management, and technology” (National Association of Agricultural Educators). Developing these skills can be overlapped in a single course of learning versus taking multiple courses to achieve the same. This puts agricultural education in a unique position to utilize many learning vessels to help learners achieve success. Game-based learning is one of these vessels that has the potential to boost engagement in the realm of higher education and keep learners motivated for success as they work towards their careers.

In this paper, I will discuss how game-based learning can help stimulate motivation and engagement of learners, develop needed skills for future agricultural professionals and how the skills learned can help propel learners forward as they pursue a career in agriculture all from the perspective of higher education students in postsecondary study.

CHAPTER 2: UNDERSTANDING TODAY’S LEARNERS

The Millennial Generation, the most educated (Morrison-Williams) and largest proportion of today’s workforce (Fry, 2018), has a strong reputation of engagement with technology. Many Millennials know little to no portion of their life without some connection to the internet or a computer. In 2015, 78 percent of households in the United States had at least a desktop or laptop and 77 percent had a type of internet subscription (Ryan & Lewis, 2017). This use of computer technology is changing how today’s learners want to learn and how they learn, and higher education must change with it to keep learners motivated and excited about learning.

Pintrich and Zusho (as cited in Edgar, Retallick & Jones, 2016) stated that “student motivation is a persistent and pervasive problem for faculty and staff at all levels of postsecondary education”. This leads to the suggestion that postsecondary educators need to be incorporating more engaging modes of teaching that help learners to remain connected to the material being taught and add value to what they are learning. Morrison-Williams offers six items to implement with Millennial learners:

| | |
|----|--|
| 1. | Ensure that students have a hands-on methodology with the material. |
| 2. | Ensure there are mentors in the subject matter. That can be the instructor but should also include guest speakers and other industry experts who can give students valuable information not found in the textbook, as well as personal anecdotes and feedback about their own life and work experiences. |
| 3. | Allow Millennial students to bring their own experiences into the learning process thereby actively engaging their prior learning in the process. |
| 4. | Engage in the use of technology with apps, blogs, social media and gamification. |
| 5. | Allow Millennials to use their naturally collaborative skill set to work in teams to accomplish learning goals. |
| 6. | Encourage social responsibility in their projects as a way for students to bring their personal experience and philosophies into the learning process. Millennials value experiences and so they like to travel, volunteer and do things which make them feel better about themselves. They are serving a greater purpose than themselves. |

Adapted from Millennials – Changing the face of higher education. By S. Morrison-Williams. *The Pacific Institute*.

The six strategies detailed in Table 1 are steps in the right direction when matched with goals set by the current American Association for Agricultural Education’s national research agenda. “Creating and evaluating meaningful learning environments is essential to educating future generations” (Edgar, Retallick & Jones, 2016). The agriculture education instructional model (see Figure 2) is built on integrating experiential or hands-on learning into educational programs. This pairs closely with these goals as well as many of these experiences allow students to interact with current working professionals and develop

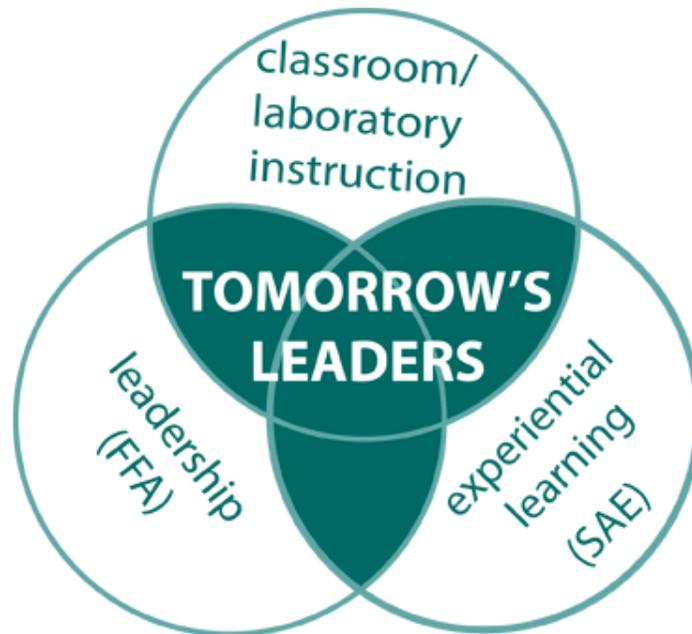


Figure 2 Agriculture Education Instructional Model (National Association of Agriculture Educators)

personal relationships and network in a certain field of study. Developing a quality relationship between the learner and a mentor or teacher has proven successful as was found by Bird, Martin, Tummons, and Ball (2013). They concluded that “the educational value of well-structured internship experiences and placement Supervised Educational Experiences (SAE) in agriculture programs should not be overlooked” (Bird, et al. 2013). These mentors have the potential to provide unique experiences for students to learn about a profession

before making the choice to pursue that as their career. By developing these types of opportunities for learners, they are able to engage in experiential learning before entering the workforce.

For today's learners, agricultural educators must be prepared to educate with current 21st century learning tools, this includes game-based learning. "[Gamification] will allow people to understand complex topics faster and with more nuances, and make the learning process more anticipated and less feared or avoided" (Anderson & Raine, 2012). Gaming technology has immersed itself into the culture of young adults with 60 percent of 18-29 year-olds reporting that they play video games often or sometimes (Brown, 2017). This included "games played on a computer, TV, game console or portable device...". This evidence indicates many young adults today have some interest in gaming and suggests education can take advantage of this to capitalize on learning results.

In agricultural education there are many ways in which game-based learning can add to the learning experience and potentially improve the quality of learning for students in agricultural education and encourage continued life-long learning.

Purpose and Objectives

The purpose of this article is to provide insight into using game-based learning strategies in the agriculture classroom. After reviewing this article, the reader should 1. Have improved knowledge of game-based learning; 2. Understand more about the goals of today's learners; 3. Improve knowledge of game genres; 4. Identify how games can be implemented in agriculture education.

CHAPTER 3: GENRES OF GAMES

There is a wide range of genres when discussing gaming including: action, strategy, role-playing, simulations, construction and management, adventure, and puzzle games (Rollings & Adams, 2003, p 42-43). This variety provides flexibility in incorporating these into lessons and using them to help learners better engage with and understand concepts. See Table 2 for more information on each gaming genre.

| | |
|-----------------------------|---|
| Action | Include physical challenges, puzzles, races and a variety of conflict challenges, mostly at the personal level. Can also include economic challenges, usually involving collecting objects. |
| Strategy | Include strategic, tactical, and logistical challenges, in addition to the occasional economic ones. Can also include personal conflict challenges. |
| Role-Playing | Involve tactical, logistical, and exploration challenges. Economic challenges are also common in the form of collecting currency or exchanging tools. |
| Simulations | Involve physical and tactical challenges, but do not usually include exploration, economic or conceptual challenges. |
| Construction and Management | Games that usually involve building a world and managing that world. These games are primarily about economic and conceptual challenges. |
| Adventure | Involve exploration and puzzle-solving. Conceptual challenges are also common. |
| Puzzle | Challenges are primarily logical, however some may include time pressure or action elements. |

Adapted from *Andrew Rollings and Ernest Adams on Game Design* by A. Rollings and E. Adams. (2003). Indianapolis, IN. New Riders Publishing. p.42-43

Game Examples

Today's learners entering postsecondary education are considered to be the most computer literate group to date. This is due to the lifestyle that members of the Millennial generation and the following Generation Z, those born after 1996, have become accustomed to. In 2010, freshmen entering their first semester at The Ohio State University Agricultural

Technical Institute were asked about their perception of their computer skills going into college. Sixty-five percent of those involved believed they had an “Intermediate” level of skill with computers and ninety-one percent of the participants believed they would gain more skills while attending college (Hostetler & Deeter, 2012). This level of skill with computers helps to support the idea that gaming in the agriculture classroom is a viable option for postsecondary agriculture educators. The following are a few examples of gaming technology have been used or designed as educational tools.

Game of Piglets (Klit, Pederson & Stege, 2018)

Game of Piglets was developed in Denmark as a tool to better educate new international employees working on Dutch pig farms and use in schools as new and innovative learning. The game is classified in the simulation or adventure genre, placing the player on a virtual pig farm. The objective of the game is to practice and learn the various procedures they would face on an actual pig farm including skills in external biosecurity and farrowing management. These skills are gained through a series of tasks that must be completed in a particular order. This is used to model the same actions made on an actual pig farm. If the tasks are not completed in the specific order or steps are skipped, the player will have a decreased survival rate of their farrowed piglets. Throughout the process of the game, the player can ask for help from the virtual farm manager, who will provide advice for how to properly complete the tasks. Once all the tasks are completed, the player will receive an evaluation of their work, including successfully completed tasks and mistakes made along the way.

Game of Piglets was used in a study of 186 young adults to determine the effectiveness of gaming technology versus hands-on experience. Eighty-four percent of the

students who played the game reported that they learned skills to increase the survival rate of piglets and of those players 23.7 percent had prior experience in pig production (Klit, Pedersen & Stege, 2018).

***AgriVillage* (Prada, Prendinger, Yongyuth, Nakasoneb, Kawtrakulc, 2014)**

AgriVillage is a game created to educate on the environmental impact of agriculture. Its intended purpose is to promote awareness and add to the discussion around this topic. The game is considered a farming simulator that allows the player to act as a farmer in making decisions about growing food and how their actions impact their local environment. The player's main challenge is to produce vegetables and sell them for profit at the local market. Since climate conditions impact the growth and value of the produce at the end of the season, players are tasked with preparing their plants and making decisions on what to harvest when.

The conditions that impact growth in the game are water, temperature, and fertilizer. For each plant option, the player is provided with optimal conditions for that plant to help make the decision on when to plant the vegetable, how to best maintain the plants growth and when to harvest. The game also requires the player to use money for all actions, adding management features to the game.

This game was used in its pilot version in a study with 20 university individuals between the ages of 21 and 50 (Prada, et al. 2014). These players identified the game taught them something about agriculture and the impact of agriculture on the environment.

***WeShareIt* Game (Onencan, Van de Walle, Enserink, Chelang'a, Kulei, 2016)**

WeShareIt is a computer assisted board game aimed at assisting policy makers with developing strategies to balance energy, food and nature needs in developing African nations.

The game challenges players to make decisions on long- and short-term basis, and the ultimate goal is to collect as many “happy faces” from citizens as they can. The decisions made by the player creates positive and negative impacts which can affect their success later in the game.

WeShareIt is a strategy game with components of a simulation style game. The game challenges the player to make decisions healthy for planet Earth, by placing them into an environment they know little about at first. However, as players learn more about their environment and the resources available to them, they are able to develop structured ideas with others in their group. These skills can be used to make real-life decisions later on in similar situations and change the reaction to environmental disasters such as major storms or drought.

Results from game play were only collected from 10 participants between the ages of 18 and 54. However, the results support that the game encouraged collaboration between teams/nations for the best result and an understanding of solutions for potential problems in their team/nation.

Conclusion

These examples provide a glimpse into the potential game-based learning has to offer to learners gaining new tasks and skills. While all were used on a small sample of participants ultimately, they were successful to their audiences, respectively. As these games were developed with simulation-style components, they provide necessary learning of skills to both those familiar with agricultural and environmental practices and those who are not.

CHAPTER 4: IMPACT ON LEARNING

It is tradition in most every classroom from primary school through postsecondary education lectures are a part of learning. Lectures were found to be one of the “most common instructor behaviors” (Stains, et al., 2018) being used 74.9 percent of the time in postsecondary Science, Technology, Engineering, and Mathematics (STEM) classes (Stains, et al., 2018). While lectures may be able to provide a great amount of information to learners, the main question to tackle is how these learners are engaging with the material being delivered. Kober (2015, p. 23) writes “that student-centered instructional strategies are more effective in improving students’ conceptual understanding, knowledge retention and attitudes about learning...than traditional lecture-based methods”.

As instructors think about bringing their classroom material further into the 21st century including incorporation of game-based learning methods, it may be wise to consider using student-centered approaches to teaching as a supplement to lecture. By allowing learners to be more involved in their learning process, they may have a greater chance of engaging with the material and retaining more information.

Impact in Agricultural Education

Agricultural education provides learners with the opportunity to utilize STEM skills in real-life situations. This has potential to aid learners in learning core concepts in science and mathematics courses through application of their skills. Bunch, Robinson, Edwards, & Antonenko (2014) studied secondary learners enrolled in an animal science course studying swine disease at the time. *Virtual Walking the Pens*®, a game developed by Pfizer® Animal Health was used to help students apply skills they had learned through their class to a virtual animal feeding operation. The learners involved were measured on the impact of the game on

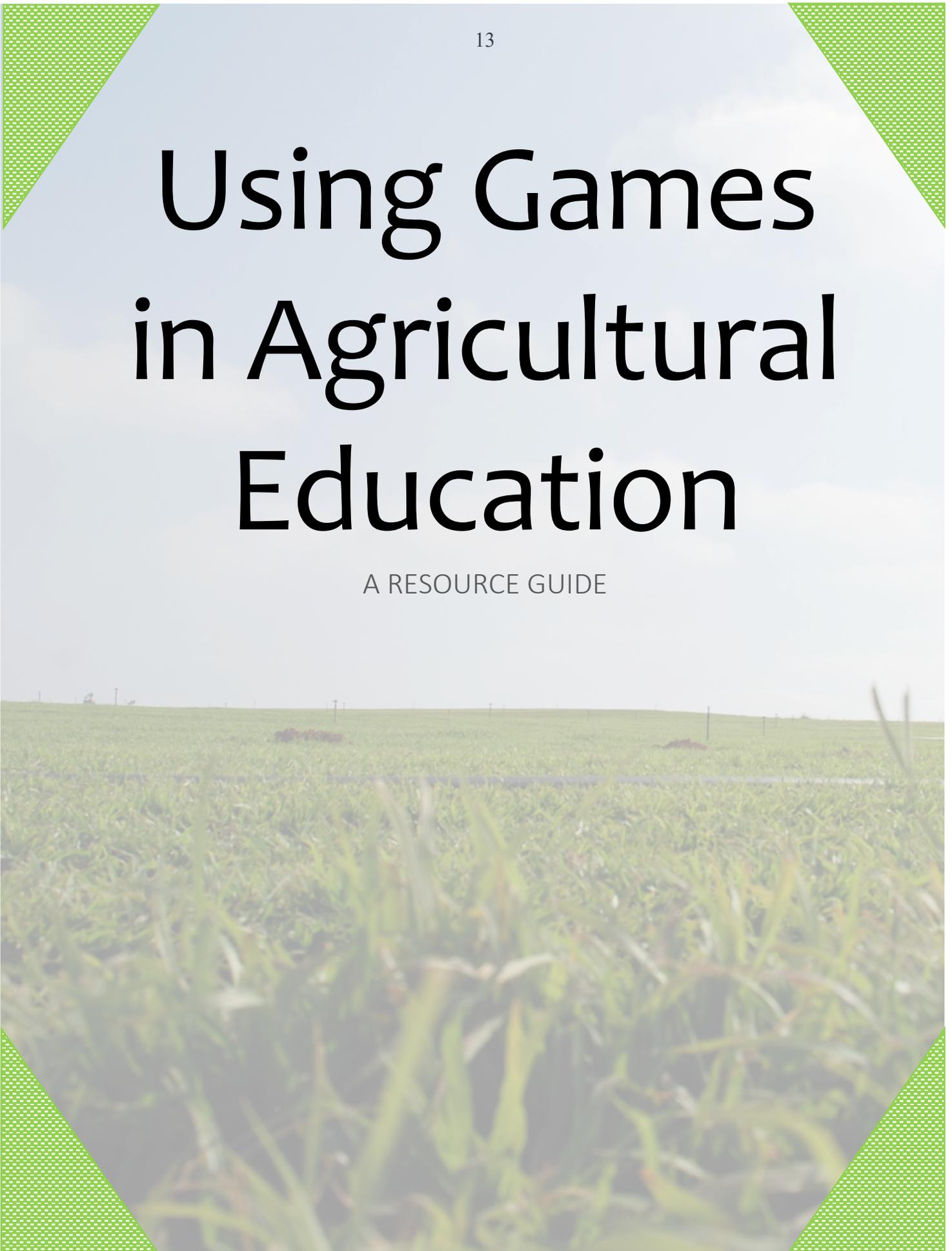
their mathematical competence. Results of the study suggested that “digital games were found to be equally effective as the traditional lecture and discussion method” provided in their course (Brunch, et al., 2014). While this study did not find a significant impact in learners’ mathematical performance, these researchers suggest that implementing digital games in the classroom for learning would “not diminish student achievement” (Brunch, et al., 2014).

Experiential learning has been shown to have an impact on students in postsecondary study. Briggeman, Detre, Landford & Doye (2012) used the game *Ag Bank Sim*, a simulation game developed by Oklahoma State University and the Oklahoma Banker’s Association, to determine if an internet based training program would enhance learning surrounding agricultural banking activities. *Ag Bank Sim* was studied in classrooms at Oklahoma State University and Louisiana State University. Through analysis of pre- and post- test scores learners at both universities demonstrated an increase in their overall score including a 30 percent increase in the average score at LSU. Due to the game being available online, those participating were able to access the game more easily and helped to develop a more clear world view of how the banking industry operates.

Increasing the use of experiential learning at the postsecondary level should be a consideration for new and updated courses. As the world learns towards technology driven processes and practices, learners need to be prepared to enter a workforce that supports learning with computer technology, but also provides quality learning experiences that focus on developing skill and retaining knowledge.

Using Games in Agricultural Education

A RESOURCE GUIDE



Using Games in Agricultural Education

Authors Note

It is the intent of this guide to provide information about game-based learning strategies to agriculture educators.

It is the responsibility of the educator to assess their classroom situation and environment to determine if a game should be used as a learning tool.

It is important that games be used in a manner that allows learners to master a skill and apply learning concepts in an engaging way. Learning outcomes should be determined by the level of skill or knowledge increased through playing the game.

Games should be used as a supplement to other learning activities with goals to enhance the learning experiences of students.

Enjoy!

Using Games in Agricultural Education

What is Game-Based Learning (GBL)?

Game-based learning is a comprehensive learning experience where learners engage in interactive cycles of assessment and feedback through the use of game mechanics.

What are the benefits of using games in learning?

Games can help to engage learners more as they have the potential to add diversity to traditional learning, that is commonly based in lecture. Providing students opportunities to learn in a variety of ways can help address learners with different learning styles and help teach skills and processes virtually before engaging in hands-on experiences.

What types of games can be used in learning?

All games are learning tools. From board games to digital games to simulations. Each provide a different experience for the player that can be used as a teaching moment. This is what makes adding games to the learning experience important.

In this guide, you will discover tips to implementing different types of games into future lessons and activities.

Using Games in Agricultural Education

Introduction to Game-Based Learning

Games can be used in teaching all ages from youth to adults. There are a variety of games that you can use. See below for a breakdown of the different types of games.

| | |
|-----------------------------|---|
| Action | Include physical challenges, puzzles, races and a variety of conflict challenges, mostly at the personal level. Can also include economic challenges, usually involving collecting objects. |
| Strategy | Include strategic, tactical, and logistical challenges, in addition to the occasional economic ones. Can also include personal conflict challenges. |
| Role-Playing | Involve tactical, logistical, and exploration challenges. Economic challenges are also common in the form of collecting currency or exchanging tools. |
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Adapted from *Andrew Rollings and Ernest Adams on Game Design* by A. Rollings and E. Adams. (2003). Indianapolis, IN. New Riders Publishing. p.42-43

Choosing a game for your lesson might be the most challenging but exciting part of using games to teach. In the pages to follow you can learn how different styles of games can be used.

Using Games in Agricultural Education

Action Games

Action games can involve anything from physical challenges such as races, physical puzzles or conflict challenges. These types of games can also include collecting items for a goal.

How can I use action games?

Think about how you can get your learners active. Connect them with information they are learning and reward learners for reaching their goal.

Example 1: When teaching on crop science, have learners build a common crop (corn, soybean, wheat, cotton, etc.) based on the vegetative stages (V1,V2,R1,R2, etc.). This would involve a race style of game with a puzzle.



Add a Challenge! Try mixing incorrect choices in. This added obstacle can help get learners thinking.

Example 2: Use a board game (i.e. Monopoly™, The Farming Game™, Life on the Farm™) to teach skills in financial management. Use these games as a base and make them your own by relating spaces to material you are teaching.



Add a Challenge! As learners progress through the game add obstacles such as storms, drought or market changes.

Using Games in Agricultural Education

Strategy Games

Include strategic, tactical, and logistical challenges. They can also include personal conflict challenges. Strategy games can help teach processes of working through challenging situations.

How can I use strategy games?

It is important to think about topics that require critical thinking with strategy games. Try to get learners to make an action plan for how they will work through challenges. Below are some examples to get you started.

Example 1: Address the issue of world hunger. Divide learners into teams to develop a plan to fight certain sectors of hunger (i.e. low resources, no government assistance, poor health).

-  **Add a Challenge!** Have teams research current efforts and see how they relate to their plan. Look for areas they believe they could make an impact.

Example 2: Analyze current governmental policies and determine how they are effective or ineffective. Have learners develop a proposal for potential changes.

-  **Add a Challenge!** Create a game board that applies opportunities and challenges in current policy to a character and have learners navigate through the game.

Using Games in Agricultural Education

Role-Playing Games

Involve tactical, logistical, and exploration challenges. Economic challenges are also common in the form of collecting currency or exchanging tools.

How can I use role-playing games?

These types of games allow for learners to search for information and explore. They have similar goals as strategy games.

Example 1: Have learners participate in a scavenger hunt or quest in finding information. Use the internet, real objects or a packet of materials as a means for exploring a topic.

 **Add a Challenge!** Add a time limit and a reward at the end.

Example 2: For an animal science lesson, have learners act out different biological processes (digestive system, reproductive process, growth cycle, etc.).

 **Add a Challenge!** Have an audience guess what is being acted out or have audience members fill in the next step of the process.

Using Games in Agricultural Education

Simulation Games

Involve physical and tactical challenges, but do not usually include exploration, economic or conceptual challenges.

How can I use simulation games?

Simulation games allow for the opportunity to learn and practice before interacting in real-life situations.

Example 1: Use a digital game to teach the operation of a confinement animal operation. Allow learners to work through everyday challenges and master the process of caring for animals.

- ⚙️ **Add a Challenge!** Have learners react to less favorable situations (sickness, feed shortage, broken mechanics, etc.).

Example 2: Have learners operate a tractor simulator. Provide the opportunity for them to learn the basic operations of a modern tractor and how it is used for different processes around a farm or agricultural facility.

- ⚙️ **Add a Challenge!** Have learners analyze the difference between operating farm equipment versus a regular automobile.

Using Games in Agricultural Education

Construction & Management Games

Games that usually involve building a world and managing that world. These games are primarily about economic and conceptual challenges.

How can I use construction & management games?

Use these types of games to demonstrate what goes on in building a structure, farm, or any other agricultural facility, and analyze costs, materials and daily maintenance. These games share characteristics of simulations and strategy games.

Example: Use a digital game that allows learners to start a farm from scratch. Have them work in teams or individually to decide what type of farm they want, what they will need to build it and initial costs and maintenance costs.



Add a Challenge! Introduce risk taking as market prices change positively and negatively.

Using Games in Agricultural Education

Adventure Games

Involve exploration and puzzle-solving. Conceptual challenges are also common.

How can I use adventure games?

Adventure games offer the opportunity to discover new concepts or dig deeper into concepts and ideas already learned.

Example 1: Have learners research a variety of careers in agriculture. Have them compare the different careers and determine the range of jobs that career has in agriculture.

 **Add a Challenge!** Have learners find local professionals to interview and shadow to learn more about daily duties of their chosen professions.

Example 2: Games like Minecraft can be used to teach the complexity of building a farm. Have learners use their knowledge of agriculture and farming to build a farming operation.

 **Add a Challenge!** Have learners diversify their farm by adding different crops or animals to their farm.

Using Games in Agricultural Education

Puzzle Games

Challenges are primarily logical, however some may include time pressure or action elements.

How can I use puzzle games?

Puzzle games can help learners process through knowledge and apply that knowledge effectively.

Example: Have learners make cards with terms and definitions and compile them together into a large matching game.



Add a Challenge! Have learners make clues using only pictures or icons to make up the term.

Using Games in Agricultural Education

Market Options Available

Action

- **Farm Together**
(https://store.steampowered.com/app/673950/Farm_Together/)

Strategy

- **PEWI**
(<https://www.nrem.iastate.edu/pewi/pewi3/>)
- **Farmaggedon**
(<http://bit.ly/farmaggedon-game>)
- **Banished**
(<https://store.steampowered.com/app/242920/Banished/>)
- **Nutrient Calculator**
(<http://www.nutrien-ekonomics.com/tools-to-calculate-fertilizer-needs/>)

Role Playing

- **Farmers 2050 – Mobile**
(<http://www.farmers2050.com/>)
- **Fantasy Farming – Orange Season**
(<https://hudell.itch.io/orange-season>)

Simulation

- **Farmers 2050 – Mobile**
(<http://www.farmers2050.com/>)
- **Discovering Farmland**
(<http://www.discoveringfarmland.com/virtual-experiences>)

Interested in making your own game?

- **ITyStudio** (<https://itystudio.com/>)
- **GameSalad** (<https://gamesalad.com/>)
- **Build Box** (<https://www.buildbox.com/>)
- **Game Maker Studio 2**
(<https://www.yoyogames.com/gamemaker>)

Simulation cont.

- **Farming Simulator**
(<https://store.steampowered.com/franchise/FarmingSimulator>)

Construction & Management

- **Minecraft**
(<https://www.minecraft.net/en-us/>)
- **Farm Manager 2018**
(<http://bit.ly/Farm-Manager-2018>)
- **Third World Farmer**
(<http://www.gamesforchange.org/game/3rd-world-farmer/>)

Adventure

- **Range Rambler**
(https://utah.agclassroom.org/student/games/gis/base_content.html)
- **Agricola**
(<http://bit.ly/agricola-game>)

Puzzle

- **Jeopardy!**
(<https://www.teacherspayteachers.com/Product/Jeopardy-Template-Review-Game-PowerPoint-842331>)
- **Ag Overload**
(https://utah.agclassroom.org/student/games/trivia/base_content.html)

Using Games in Agricultural Education

Plan it Out

Lesson Title/Topic: _____

What type of game(s) would you like to use?

Action

Strategy

Role Playing

Simulation

Construction and Management

Adventure

Puzzle

Other

What materials do you need?

- _____
- _____
- _____
- _____
- _____

- _____
- _____
- _____
- _____
- _____

What outcomes are you expecting?: _____

How will you measure success?: _____

REFLECTION

Through working on this project, I have gained immense knowledge surrounding game-based learning and the potential opportunities of using these strategies to teach in agricultural education. Games and learning have always been present in my life and finding a way to connect these to my love for agriculture has been an amazing experience.

The Agricultural Education graduate program has been nothing short of exceptional. When I began looking into a graduate degree program, I never expected to be as supported, motivated and encouraged as I have been through this experience. As an online student, I expected to be viewed differently from other students as I would not be present physically in courses and that interactions with students would be difficult. While the experience is unique to online students, I never felt out of place or forgotten, rather I was supported by my peers, encouraged by professors, and motivated to challenge myself. I learned from peers from all corners of the United States and gained a wider perspective on the world of agriculture education.

Through this experience I have learned greatly about myself and proved to myself that I could conquer any challenge placed in front of me. I will forever advocate for this program and department and look forward to the future of the program.

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