

# An Educational Game to Help Youth Explore Careers in Agriculture, Food and Natural Resources

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## INTRODUCTION

Educational games can engage middle school students to explore careers in agriculture, food, and natural resources (AFNR). The effectiveness of games as a teaching tool has not been fully explored but research suggests it can be an appropriate method for learning among K-12 students and post-secondary students (Bunch et al., 2015). In AFNR classrooms, games have been used to educate learners about experimental design and statistics (Pollock et al.), plant care and environmental awareness (Tangworakitthaworn et al., 2020), hydroponics (Ali et al., 2017), watershed and land use (Anderson et al., 2020), animal health and management (Bunch et al.), animal neonatal care (Klit et al., 2018), and pest control (Chou et al., 2021). The lead author's career journey inspired this innovative idea.

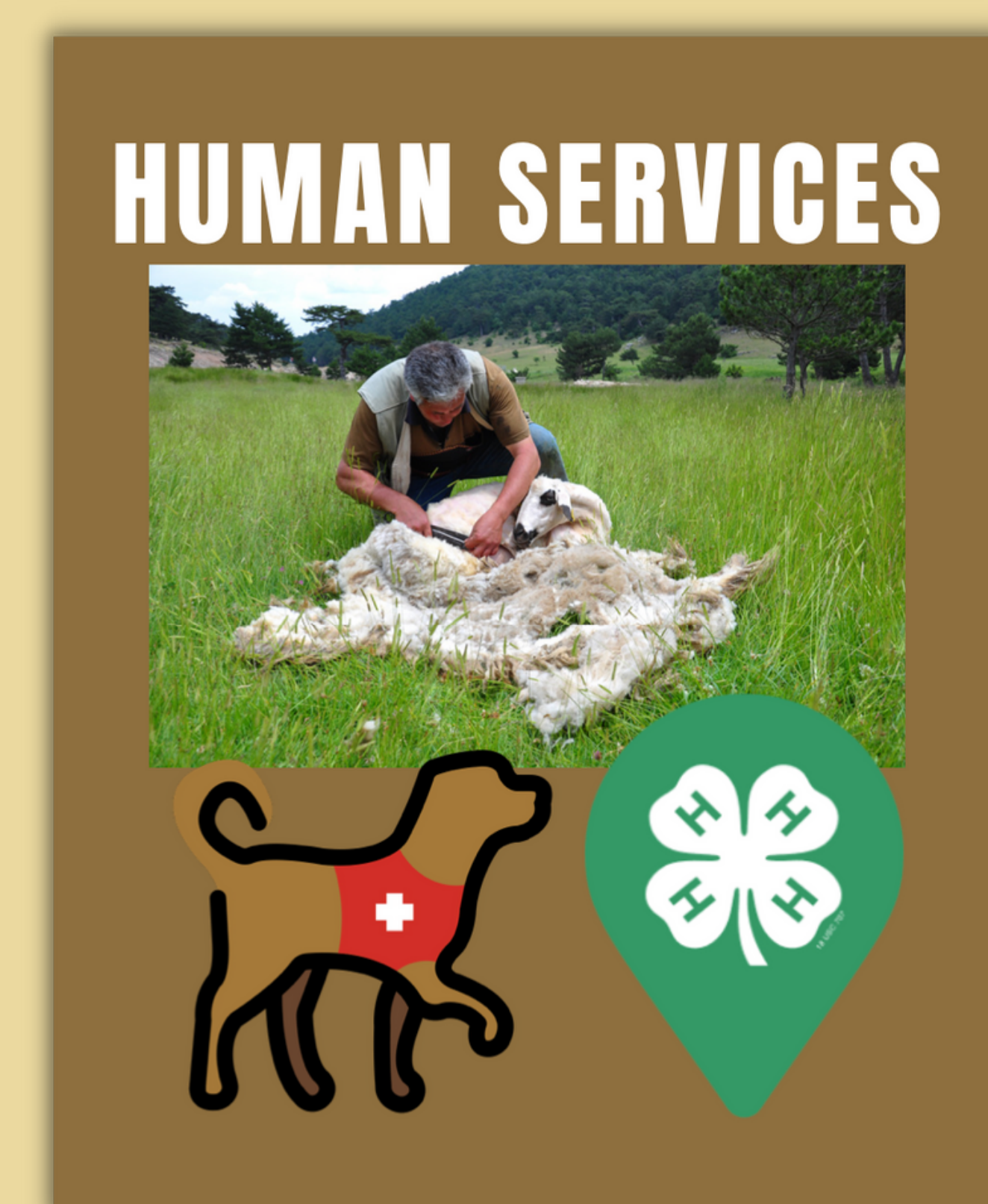
## OBJECTIVE & HOW IT WORKS

We designed this innovative idea to help middle school students in 4-H connect their career interests to AFNR-related opportunities.

Before starting the game, students were asked to fill out a Career Pathways test to identify three career codes using RIASEC to connect students careers based on their reported interests. During Steps and Slides students used their RIASEC to help them make relevant connections between their codes and some game elements.

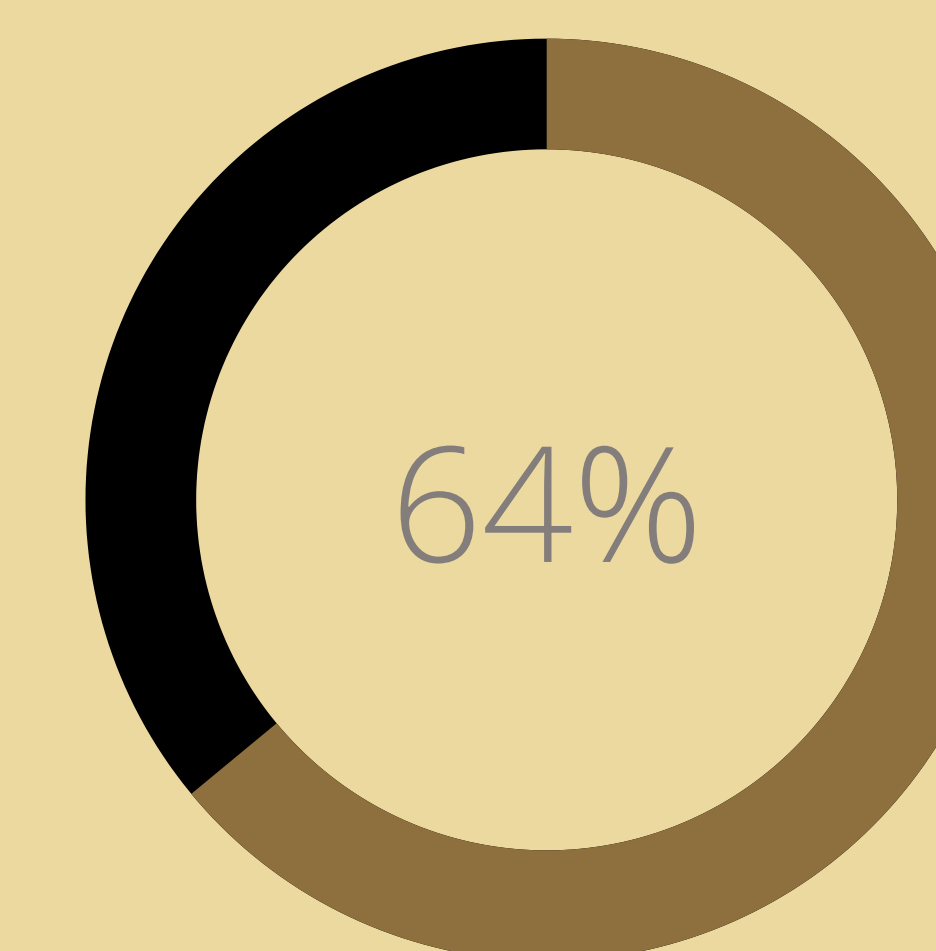
Steps and Slides plays like the classic board, Chutes and Ladders. In our game, two types of game pieces were laid out on the floor in a meandering pattern. Horizontal game pieces have career planning questions written on them, while vertical pieces depict each of the U.S. Department of Education's 16 career clusters. Thirty horizontal pieces were intended to encourage critical thinking while 16 vertical pieces were meant to inspire AFNR-related careers.

For gameplay, students were paired to support collaborative learning (Laal & Ghodsi, 2012). Like the traditional game, students rolled a dice to move through the game. Students can use traditional, oversized, or digital dice (available through online applications). If instructors want to use digital dice, students without personal cellphones should be paired with those with personal cellphones.

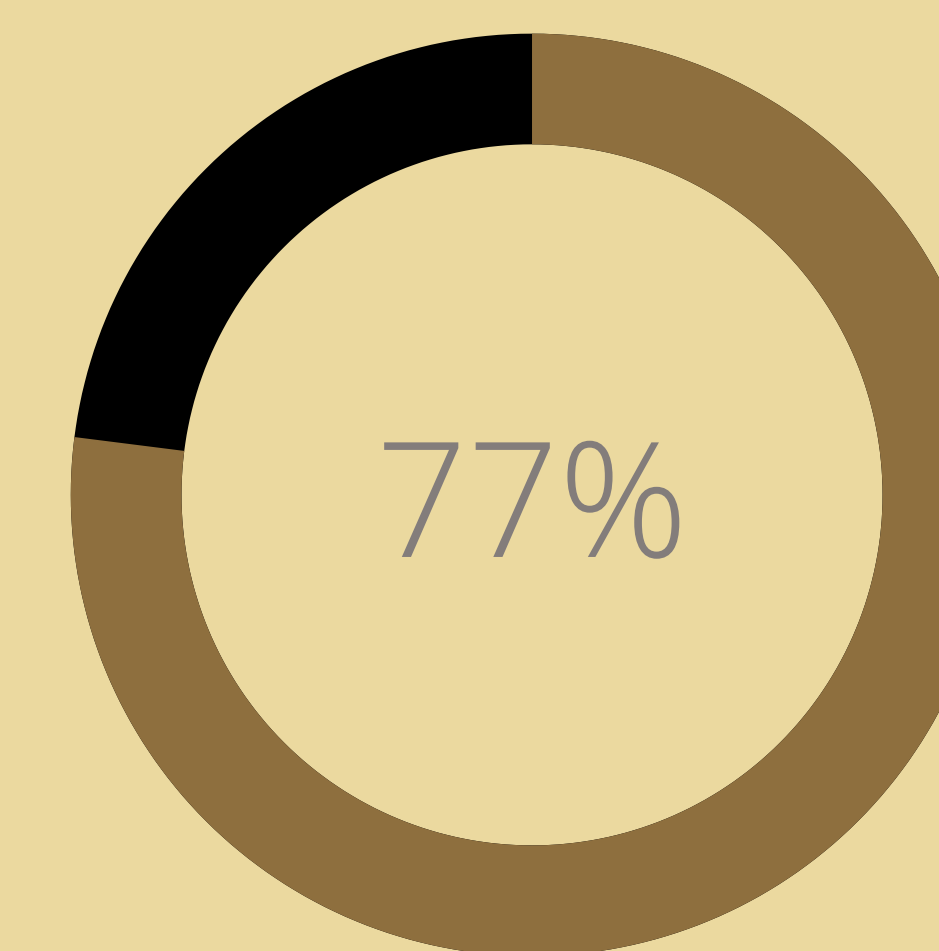


## RESULTS

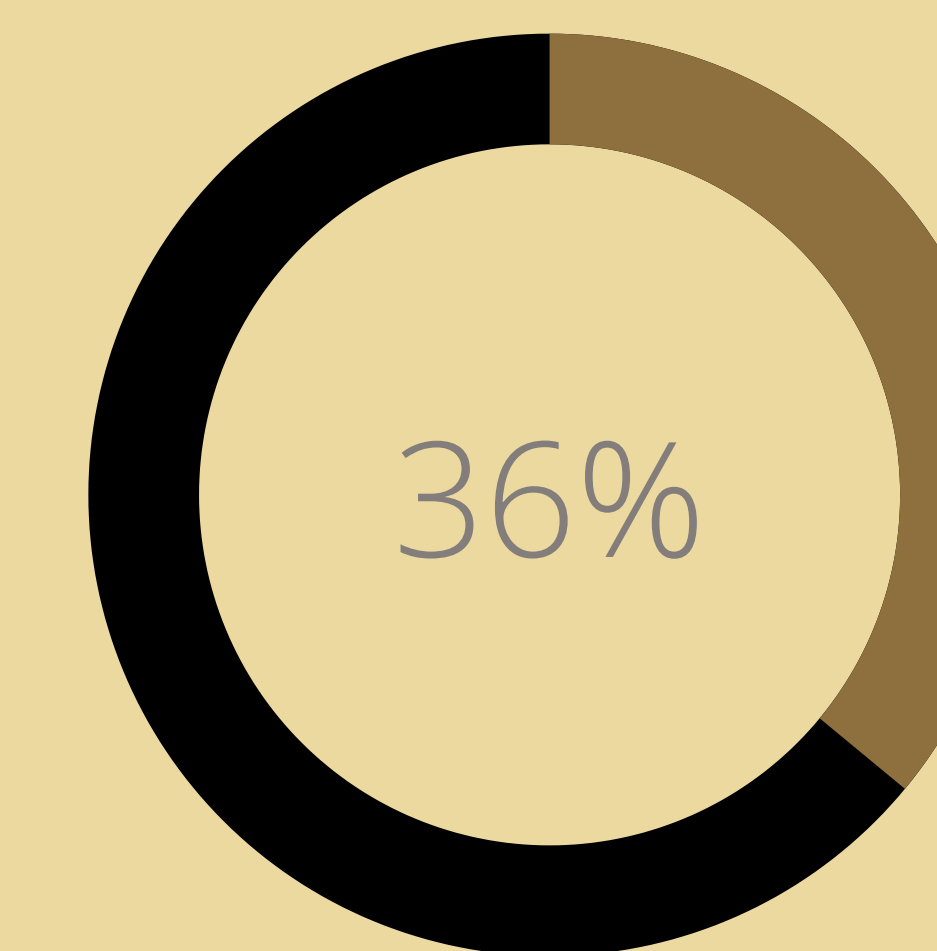
We led Steps and Slides for three student groups (n = 20, n = 10, n = 12) during the summer of 2022.



Before starting, students were asked about plans after high school and 27 of 42 students (64%) reported already knowing what they wanted to do.



After playing the game, 23 of 30 (77%) reported that they were rethinking how they should plan for their careers.



Eight students (36%) reported that the game helped them feel more confident about previous career choices and decisions.

## ADVICE TO OTHERS & COSTS

Successful integration of Steps and Slides into curriculum would likely depend on supporting teachers' needs. Awareness of curricula tie-ins increases teachers' motivation to use games (McKendree et al.). Therefore, we recommend distributing Steps & Slides with relevant learning standards to help teachers understand its usefulness. We also recognize that teachers want professional development training before incorporating games (McKendree et al.; McKim et al.).

Costs remain a reported barrier for teachers wishing to enhance classroom learning. A 2019 study of game use among natural sciences educators found that cost is the perceived barrier to incorporating games into curricula. Thus, cost was considered in the development of this game. Teachers need to print 48 game pieces for Steps and Slides and a Career Pathways test for each student. Game pieces can be laminated to make them reusable. Colored tape is recommended for the steps and slides. The game pieces and the test are available online. Using digital dice eliminates the need for physical dice, if necessary. We estimate the cost of printing and lamination of the game pieces was \$30. Steps and Slides needs a large classroom and teachers would benefit from a helper to efficiently interact with students during gameplay.

