Using a team-based online simulation to promote undergraduate student learning outcomes in a course on communication and leadership in groups and teams

Austin Council, acouncil15@ufl.edu, 352-273-2585
Jonathan Orsini, jorsini@ufl.edu, 352-328-8955
Dr. Nicole Stedman, nstedman@ufl.edu, 352-273-2585
Department of Agricultural Education and Communication
University of Florida
Rolfs Hall, Room 406
PO Box 110540
341 Buckman Drive, Gainesville, FL 32611

Introduction:

Current literature across disciplines indicates that undergraduate students prefer to learn using online game-like simulations and that student performance can be improved when taught using simulations in comparison to traditional lecture or problem based learning approaches. (Anderson, 2005, Bodnar, 2016, Seybert, 2007, Steadman, n.d.) In an effort to enhance student learning outcomes, faculty at the University of Florida introduced the Recurrence Signature Case Study (RSCS), an online team-based simulation, to the course AEC 4434: Communication and Leadership in Groups and Teams (39 students, Fall 2018). The goal of the RSCS is to use a game-like simulation to provide real world exercises where students are required to make a series of interdependent decisions as a group. These decisions generate a series of cascading crises that require a team of five students to work closely together to resolve satisfactorily. This study seeks to demonstrate how an online simulation can assist undergraduate students in learning to work effectively and collaboratively in groups and teams. Through surveys, simulation performance, and overall class performance, we hope to show that students prefer the simulation over traditional assignments, perceive better learning outcomes because of participation, perceive stronger interpersonal bonds with group members, and that performance in the simulation positively correlates to overall course success.

How it works/methodology/program phases/steps:

The RSCS is a modern approach to the case study. This online, interactive, multiplayer experience allows students to lead a company through business challenges based on real-world data and actual events. This "gamulation" provides students with opportunities to solve problems, think strategically, understand key communication and leadership concepts, (Recurrence, 2018). The RSCS requires students to sign up for one of five positions on an executive board and each position must make a decision during four different exercises (or crises) that is influenced by previous decisions made by the rest of the group. In AEC 4434, the assignment is graded based on overall score from each activity. The score from each activity is determined by shareholder, customer, and employee satisfaction scores which are all impacted by student decisions during the simulation. Students are scored as a group, and teams that are able to collaborate effectively when planning their role decisions are expected to score higher than groups working separately. This point is emphasized in class through lecture, assignments, and team building activities. There are many factors that influence student learning outcomes in team assignments at the undergraduate level, including formal reward structures, limited assignment duration, and personality conflicts. (Clinebell, 2003). To mitigate these adverse influences, faculty in the course spend the first 6-8 lectures conducting personality assessments, setting up assigned teams intentionally, and specifically work to build team cohesion through graded assignments and in-class activities. Student groups are not required to submit their first two RSCM exercises until the midway point of the semester, with the hope that effective conflict resolution strategies and defined team roles should have time to form. An IRB approved survey will be administered to understand student perceptions of the RSCS experience once the final

exercise has been completed. This survey data will be compared to overall course and RSCM performance to determine the effectiveness of the simulation.

Results to date/implications:
The RSCS has been facilitated over the past two years in an introductory leadership course with students who are minoring in innovation at the University of Florida. As a semester-long group project, Students were put into random groups and were asked to go through the program together and reflect on their experience at the end of the semester. One of the major themes that emerged from the students' reflections was how much they appreciated the collaboration aspect of the project and how it affected their leadership development. For example, one student remarked, "what [the program] teaches us about leadership is that everyone's personality comes together to bring a diverse opinion and style, which contributes to the final result." Furthermore, another student mentioned "I learned that you, even as a leader, don't have to make decisions completely alone and that it can be beneficial to have multiple opinions when making a big decision." Another important finding from the Recurrence program were certain leadership skills students developed such as communication and problem solving. For example, one student said that their team, "Developed communication skills, negotiation skills and problem-solving skills." Moreover, another student remarked, "We narrowed down to the best decision by problem-solving and communicating with one another. Essentially, we learned the basis of leadership by learning each of our skills from one another."

There are many implications of these initial findings, but most importantly, the students actually articulated that their leadership capacities were developed. It has long been disputed whether or not leadership development programs actually accomplish what they propose (Kellerman, 2012), however, this initial qualitative data shows that students believe they are developing their leadership capacities by going through this computer program. As with the nature of social science research, more data is needed, but the findings from this project suggest that the RSCS program is an effective way to develop students' leadership capacity through working in groups. On a larger scale, this program could be used in other agricultural leadership settings to assist students in their collaboration, communication and problem solving skills. Many of these skills will be needed as the world continues to become more complex and turbulent particularly in the agriculture and natural resources industry where the task of supplying food for a growing population expected to pass 9 billion by the year 2050 looms (Grint, 2010, Stedman & Andenoro, 2015).

Future plans/advice to others:
Future analysis of the RSCS on student learning outcomes should include a control group of students who do not participate in the online simulation. Additionally, future studies should engage multiple classes or classes with larger enrollment in order to collect more generalizable data. Finally, pre-simulation knowledge assessments could be provided to students at the start of

the course in both a control group and the experimental group to determine the simulation's ability to improve student learning outcomes beyond class performance as determined by GPA. Researchers and educators seeking to use the

Costs/resources needed:

- Recurrence Signature Case Study - http://recurrenceinc.com/university/
- The cost is $39.99 per student
- Educators should plan on using a 16-week (fall or spring) semester to take full advantage of the RSCS (summer semesters single quarter-credit courses are too time-limited).
- Educators should divide the class into teams and provide access and instructions for the RSCS as within the first two weeks of the semester, with a full day devoted to training students how to use the software.

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