Enhancing student learning with a virtual team-based activity in online distance learning environments: Utilizing game-based learning for transversal skills development

Stephen Ko The Hong Kong Polytechnic University

Eric Kong University of Southern Queensland

Abstract

In an era of globalization, it is not uncommon for multinational companies to have their employees collaborate virtually. Working effectively in a virtual team has become more important than ever before. This has called for pedagogical designs to foster teamwork competency among university students. The purpose of this session is to have a dialogue about the use of a three-week online team activity specifically designed to help students develop teamwork skills in online environments. Survey results show that interactivity with instructor(s) results in creation of an active, collaborative online learning environment, which in turn increases virtual team effectiveness.

Keywords: Virtual team effectiveness, interactivity, pedagogy

Introduction

In an era of globalization, it is not uncommon for multinational companies to have their globally distributed employees collaborate virtually on issues and challenges facing a company at the international level (Dulebohn & Hoch, 2017). Research also suggests that interpersonal skills relating to the ability to work in a team are desirable among employees (GMAC, 2016; NACE, 2016). Therefore, there is an urgent call for more pedagogical designs and programs related to fostering students' teamwork in higher education institutions (Ritter, Small, Mortimer, & Doll, 2018). But it presents a big challenge to many academics in higher education. Because face-to-face interaction is usually not available in an online environment, it is difficult to teach transversal skills such as teamwork geared to industry needs. All this prompted to the idea of developing a virtual team-based activity for an online course (Kong & Ko, 2018). This initiative allows online students to participate in a team-based exercise, and to develop their transversal skills by improving their ability to work in virtual teams effectively.

In the team exercise, online students are divided into police and prisoner groups. The two groups are able to travel to different locations using various delegated resources including buses, trains, police cars, stolen cars, taxis and helicopters (see Figure 1). The objective of the police group is to catch the prisoner group within the required time limit, whereas the prisoner group is to avoid being caught given the time limit. Therefore, the purpose of this session is to have a dialogue about the use of a three-week online team activity specifically designed to help students develop hands-on experience with teamwork in online environments.

Upon completion of the subject, a quantitative study was conducted to evaluate students' perceived teamwork effectiveness by examining the effects of interactivity and the mediating effect of active, collaborative online learning environments based on the team-based activity.

This line of inquiry re-emphasizes a central role of instructor(s) in the teaching and learning process through setting the stage and fostering interactivity around the team-based activity. This is because an instructor is usually the focal point in the classroom, but online learning environments lack this connectivity. Without meaningful interaction with the instructor and among the team members, students can feel disconnected and become demotivated. Our survey results show that interactivity with instructor(s) results in creation of an active, collaborative online learning environment, which in turn increases teamwork effectiveness. But interactivity with peers was not related to creation of an active, collaborative online learning environment. Conference attendees could leverage our findings and reflect on their pedagogical design and delivery in higher education.

Theoretical Foundation / Teaching Implications

In a recent study, scholars have suggested an industry-driven approach to examine the alignment of undergraduate business education with industry requirements (Azevedo, Apfelthaler, & Hurst, 2012). Based on inputs from both employers and graduates, the research assessed managerial competencies of business graduates by using eight key generic competencies: influencing and persuading; teamwork and relationship building; critical/analytical; self and time management; leadership; ability to see the bigger picture; presentation; and communication. Their study showed that competencies of communication, teamwork and relationship building and self and time management were among the top three within-country rankings in the sampled countries, including Austria, United Kingdom, Slovenia, and Romania, and the ability to see the bigger picture also had the highest ranking in Austria and the United Kingdom. Competencies of presentation and leadership however had lower average scores and within-country rankings. All this has prompted us to explore how to develop these essential transversal skills especially teamwork among our future managers.

Learning Objective

The specific objective of this new teaching initiative is to assist students to acquire and develop teamwork competency virtually.

Exercise Overview

The team exercise was used from 2016 to 2019. Around 100 to 150 students participated each year in the team exercise in the course. While the course does not have any prerequisites, students are usually advised to only enrol the course in their final year as the course covers the advanced knowledge and skills required to managing knowledge and learning for innovation in organisations. This paper aims to evaluate the effectiveness of this in-house developed online team exercise and shed some light on understanding the impact and best practice of game-based learning on online distance learning students at the Higher Education level.

In the team exercise, online distance learning students were divided into two main clusters: Police Force and Prisoners. Each main cluster had a number of sub-groups in which each subgroup contained six to eight members. Each sub-group was required to work with other subgroups in their own cluster to achieve their objective. To the Police Force, their objective was to catch all the prisoner groups within the time limit while the Prisoners' objective was to escape without being caught. Altogether, there were ten rounds for the team exercise and students had three weeks to complete it. This allowed time for students to share learning and build teamwork. Each sub-group was required to use different resources (i.e., cars, buses, taxis, trains and helicopters) for catching the prisoners or for escaping from the police on a virtual map. Each type of transportation had different travel distance. For example, a train could travel in a much longer distance without requiring to stop in every node while a squad car was required to stop in every node. The virtual map allowed the two main clusters to visualise the locations of their own as well as the others. Figure 1 shows how the map looks like in the online team exercise and Figure 2 shows the resources used in the activity.

Figure 1.

Map of the team-based activity



Figure 2.

Resources used by students in the team-based activity



"<u>Statistically Correct Criminal</u>" (<u>CC BY-NC-ND 2.0</u>) by <u>bheathr</u>









"<u>Policeman 71000 Lego Minifigures</u> <u>Series</u>" (<u>CC BY-NC-ND 2.0</u>) by <u>brickdisplaycase.com</u>

As the travel distance for each type of transportation was different, in each round students were required to negotiate with their own group members (as well as in the cluster) via a Moodle discussion forum for planning strategies, sharing knowledge and managing resources. They then came up with an agreed decision in each round on where each group would be travelling to (from one node to another) and what resources (types of transportation) they would use for travelling. Both Police Force and Prisoners needed to use a virtual map to visualise where their groups were (see Figure 1) and plan where they would like to travel to (using appropriate transportation types). Each move had to be planned carefully and strategically in order to gain strategic advantage and achieve Police Force and Prisoners' objectives (i.e. for police officers to catch prisoners and for prisoners to escape from the police force) in the online team exercise. Once students had made a decision, they could submit it to the Course Examiner via a delegated Moodle discussion forum. After the team exercise is finished, each student prepares their own self-reflection report based on the learning experience they have had individually in the team exercise. This self-reflective report helps students to realise what they lack and what they can do to acquire the essential skill. The self-reflective report as a piece of writing assessment helps students to reflect on their learning journey in the online exercise. Furthermore, we conducted a student survey on the effectiveness of teamwork as to whether interactivity with peers and instructor(s) would result in an active, collaborative online learning environments, which in turn increases perceived teamwork effectiveness.

Session Description

This session will run as a facilitated discussion. We will begin the session by introducing to attendees about (1) the use of our team-based activity in online environments, and (2) how they evaluate the effectiveness of this team-based activity in addressing the teaching objective. This

initial audience participation will serve as an ice breaker for the roundtable discussion, and attendee comments will also be documented and referenced throughout the session to facilitate participant involvement. Following the session introduction, we will briefly highlight quantitative findings from our research on perceived teamwork effectiveness as a result of interactivity with instructor(s) (β = .70, p < .05) and the mediating effect of an active, collaborative learning environment (β = .40, p < .10). But interactivity with peers was not related to creation of an active, collaborative learning environment (β = .05, n. s.). After highlighting these findings, we will quickly return to the audience input from the beginning of the session to explore how our findings relate to participant' anecdotes of positive and negative experiences when teaching transversal skills in online environments. While the remaining discussions will be largely dictated by the attendees' experiences and interests, we provide some topics below that we are both prepared to discuss and address pertinent issues related to teaching transversal skills especially teamwork in higher education:

- Timing of activity and assessment. When should be the best timing to administer the team-based activity and assessment respectively? Right after the team-based activity is finished, one week after it is finished, or any other possible arrangements?
- 2. Appropriateness of the team-based activity (or other instruments) in addressing the teaching objective(s) in online environments. What activity or instrument is best suited for teaching teamwork virtually?
- 3. Type of student. How does teaching undergraduate versus postgraduate courses, and local versus exchange students, relate to the appropriateness of our team-based activity and the assessment method instructors could implement to reach the learning outcome(s)?

4. Role of instructors. What is the role of instructors throughout the teaching and learning processes (e.g., how to better interact with online students, how to encourage online students to connect with one another)?

Taken together- we aim to provide empirical evidence from the students we have sampled, in combination with instructor experiences, to develop fresh perspectives on how to use our teambased activity effectively in online environments. As a tangible take-away, we will also provide attendees with template of our team-based activity that can be used to improve teamwork among online students. With this template, attendees can better plan their pedagogical design and delivery for upcoming semesters by considering the use of our team-based activity, empirical data, and the insights gained during this roundtable discussion. In doing so, we aim to fulfill the underlying goal of this session: for attendees to reflect on their goals, designs and delivery when using team-based activities in online environments, and to leverage our findings to design assessment tools that help them achieve their goals. This session will contribute to effective teaching and learning in the field of management by promoting reflection and reassessment of the approaches we use to provoke learning. This line of inquiry places a central role of instructor(s) in the teaching and learning processes by setting the stage around which interactivity with instructor(s) is encouraged; and more importantly driving students to work collaboratively with one another in online environments throughout the iterative decision-making processes (Shea, Li, & Pickett, 2006; Swan, 2001; York & Richardson, 2012).

Although the current study provides initial support for interactivity with instructor(s) resulting in creation of an active, collaborative online learning environment, which in turn increases teamwork effectiveness, future research could be extended to include observational data. As interactivity with peers was not related to creation of an active, collaborative online

learning environment, subject lecturers could monitor how students interact in a team activity through assessing the frequency of communication and conducting content analysis of their discussion forum within online learning environment, which may provide plausible accounts for the unsupported hypothesis. Also, evaluation data from employers and supervisors would bolster support for the transfer of our team-based learning experience to the workplace.

| Session | Time | eline |
|---------|------|-------|
| | | |

| Phase | Summary | Purpose | Duration |
|---|--|--|---------------|
| Opening | Session introduction and solicitation of attendee feedback | Introduce the use of team-based activity | 10 minutes |
| Survey results on perceived teamwork effectiveness | Summary of empirical findings | Share major findings in a roundtable discussion | 15 minutes |
| Closing | Sharing of teaching materials | Assist attendees in planning the use of team-based activity for upcoming semesters | 5 minutes |

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