Students as game designers and developers: developing cooperative strategy board games to teach team leadership skills

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Abstract

Purpose – The purpose of this manuscript is to highlight how gamification is transforming recruitment, retention and training to resolve employee engagement challenges in the ever-changing workplace. In collaborating with game industry experts and designers, the authors taught students team leadership skills by demonstrating how to design and play their own original cooperative strategy games. In doing so, students learn what gamification is and how it can be used to train our multigenerational workforce; how designing board games teaches team leadership skills (e.g. communication, conflict management, power, decision-making); and how to develop cooperative strategy game elements (player characters, roles and actions) that motivate engaging gameplay with successful learning outcomes.

Design/methodology/approach – In this paper, the authors discuss the practical implications of a three-phase semester-long experiential learning experience, where game design demonstrates to students how employees can work collaboratively together in teams. Students' developed storylines (i.e. strategic objectives) including motivation challenges, social media communication breakdowns, sabotage, global sustainability and other real-world challenges. In Phase 1, students learn about how companies are using gamification in training high-performing teams. In Phase 2, students play a cooperative strategy game Forbidden Island with their student teams. In Phase 3, students design (and play) their original cooperative strategy game, instructions booklet and build a facilitation guide.

Findings – Approximately, 400 students developed 48 original cooperative strategy games that can be used to teach team leadership skills. These student teams designed cooperative strategy board games – in which the entire team either wins or loses based on their control of valued resources and player actions as key decision-making points. The data and feedback indicate that the learning experience helped them practically consider team interdependence in making effective decisions, and in creating creative self-efficacy, resilience and self-confidence in their own leadership voice. In this manuscript, the authors focus on providing an overview and implementation plan for our semester-long experiential learning exercise.

Originality/value – This experiential exercise was implemented from 2019 to 2023 in different learning modalities (face-to-face, hybrid, 100% synchronous online learning) and during challenging times (prepandemic, pandemic and postpandemic learning environments). These varying experiences provided them with a challenge to persevere and learn about their own interpersonal skills and resilience in a creative engaging way with limited resources. Students developed 26 original games during 100% synchronous remote learning due to COVID. To the best of the authors' knowledge, no other business school is working with gaming industry experts and game designers to teach team leadership to this degree during pre- and postpandemic environments.

Keywords Leadership, Experiential learning, Gamification, Team building, Board games

Paper type Conceptual paper

As Millennials and Gen Z rapidly transform the workplace, gamification, which uses game-thinking and mechanics in nongame scenarios, is transforming recruitment and retention by engaging and motivating employees (Ergle, 2015). We partnered with a gaming industry executive, Ryan Bruns, from Arcane Wonders, to teach students team leadership skills. Since 2019, nearly 400 students have designed 48 original cooperative leadership strategy games. Our multi-week activity consists of three phases to engage students as game designers and developers (see Table 1 for Instructions) while simultaneously teaching them how leadership development can be gamified and engaging. We developed this activity so instructors can use it in their own classrooms to teach various management concepts. Working in teams, students developed original cooperative strategy board games, which included designing game storylines and powerful player roles that required decision-making skills to effectively use valuable resources to overcome challenges interwoven in each storyline. Thus, after completing all three phases, students will learn leadership skills to lead teams effectively; how to use gamification in training a multigenerational workforce; and how to develop cooperative strategy board game elements (player roles and actions) that result in teams working interdependently toward a common goal.

Designing games as experiential learning. While competitive games require players to strategize by prioritizing their own goals over opposing players due to zero-sum outcomes (Swab & Johnson, 2019), in cooperative games, everyone wins, or everyone loses as a team (Zagal et al., 2006). In the cooperative strategy game Forbidden Island [1] (FI), which students play in-class, players collaborate to achieve win-win conditions because "two or more social entities [from the same team] actively and reciprocally engage in joint activities [to achieve] at least one shared goal" (Bedwell et al., 2012, p. 130). Therefore, in working as a team, all team members share both success and defeat in cooperative strategy games.

This activity creates experiences for students to learn "multi-person decision making" (Basar & Olsder, 1999, p. 1) and leadership skills formalized through game design. Students' positive feedback from the past five years indicates that this experience effectively taught them how to lead teams due to creating a "cooperative", not "competitive", strategy game and, further, playing it. Based on gaming literature (Zagal et al., 2006), students were informed that their original game must have four specific cooperative strategy game characteristics. First, their game storyline must have a central team challenge requiring all players to collaborate, share strategic resources and make decisions benefiting the whole team, not one individual player. Second, during each player's turn, players must move through the game by discussing how they are going to use valuable resources that other players control as a collective unit; thus, each player's turn required the whole team to discuss the decision the player had to make, though the player themselves makes the final decision about what to do based on the needs of the team. Our students, just like the player roles they design, shared their knowledge and diverse perspectives with each other, while also inspiring individual members to share their ideas vocally (Homan et al., 2007; Lebrón & Lasley, 2022). Third, students, just like the players, identified the benefits and consequences of

	Required content

Cooperative Strategy Game

- **Final Team In-Class Presentation** (15 min) – Present your game, how it teaches team leadership skills and a 1- to 3-min videoclip of team playing the game
- **Gameboard or what the visual is of the game** (photos/links)
- **Videoclip** Record videoclip of your team playing the game to show the game is "playable" (30 min to 1.5 h based on the game)

Game Instructions Booklet

- **Overview** - Tell the game "story" (plot) and how team wins or loses. Describe main objective that must be accomplished and 3 SMART goals to play game successfully
- **Set-up** – Imagine the HR trainer "opening the game 'box'". List all the game materials and how they should "set it up" with pictures
- **How to Play and Player Roles**
- Roles-Describe player roles, the valuable resources each control (abilities, knowledge, items), and how they move through the game
- Actions – Describe when turn begins and ends. How do players use valuable tangible and intangible resources other players need? What additional resources can they find?
- Challenges – Describe obstacles they will face in the game
- Incentives – What rewards can be earned? What penalties exist for bad decisions?

"Train-the-HR-Trainer" Facilitation Guide

- **Game Overview and Leadership Skills Learned**. What three team leadership skills will participants learn by playing your game?
- **Purpose and Leadership Learning Objectives** – How does playing the game benefit the company and team playing it?
- **Real-World Application** - How does this game apply to the real world today? (Support with current news stories and weblinks)
- **Steps for manager or HR Trainer to use game as a leadership teaching tool.**

  - Preplanning and Set-Up
  - Introducing Game
  - Playing Game – Describe how the game is played
  - Debriefing Game – Explain how the game teaches three team leadership skills and provide five debriefing questions for each skill

Notes: Imagine your team was hired to develop a cooperative leadership strategy game to help employees learn how to lead and work in teams. Design a playable cooperative strategy game, game instructions booklet and facilitation guide that managers or HR trainers can use to teach employees team leadership skills. Develop a final presentation that explains how your game is an effective training tool to improve team performance
Source: Table by authors

Table 1.
Assignment
instructions
summary [4]
(Phase 3)

actions, as they had to trace their decision-making steps to evaluate outcomes (Zagal et al., 2006). Finally, students' games must include rewards that players earn from selflessly cooperating, and penalties for making decisions that did not optimally use other players' resources (e.g. each player had one "superpower" strategically needed).

Target Audience/Course. Any undergraduate leadership, human resources or organizational behavior course that teaches students how to lead and/or work in teams. Class sizes of 12–36 students are recommended.

Learning Goals. By designing cooperative strategy board [2] games, participants learn and use team leadership skills, including negotiation, self-disclosure, trust-building, team interdependence, power, persuasion, decision-making, creative problem-solving and conflict management. Instructors can adapt this activity to teach other management concepts, such as the human resources (HR) topics of training and development or organizational learning or the organizational behavior topics of individual differences or team development.

Instructions to present the exercise

Phase 1: using gamification in leading teams (pre-assignment: Week 3)
Materials Needed and Activity Steps: As a homework assignment, students learn how companies use gaming and gamification to increase employee engagement. The instructions are "In this assignment 'Gamification for a Changing Workforce', you will read an article by Ergle (2015) explaining how gamification is used in human resources to engage employees. Then, you will view a video, 'Gamification to Improve our World' by Cho (2014), with examples of creative game companies that are motivating employees to improve employee engagement and performance" (see Table 2 for question examples).

Phase 2: Forbidden Island gameplay experience and debrief (in-class; Weeks 4–5)
Materials Needed and Activity Steps: Students learn what cooperative strategy games are by playing FI – a board game in which adventurers retrieve four treasurers from a rapidly sinking island. Set up the classroom so that each team of two to six students (semester-long project teams of equal size) has their own table and one F1 game to play.

Session 1 (60–75 min): students play Forbidden Island

- Give each team a copy of FI to use at their own table. Instruct them to open the game, use the instructions to teach themselves how to play and successfully "win" the game by the end of the class period. Ask the class to determine a goal for how much time they need to play the game and "win" (usually 35–45 min). Instructors can increase the level of challenge by limiting/extending time or by offering incentives to the team that finishes first. Students cannot ask instructor questions but must rely on their own team. Once they think they "won", they show the instructor, who will verify the game has been won (FI instructions). [3]

Session 2 (30 min): debriefing and designing FI "'Train the HR trainer' facilitation guide"

- After the time is over, instructors say, "Now design a guide (questions and answers) to debrief what leadership skills your team experienced playing FI. For example, let's do one as a class together first".(see Table 2 for sample leadership skills and debriefing questions). Write one debriefing question on the board and discuss answers as a class. Then say, "Great! Continue collaborating with your team to produce four more debriefing questions and answer them. Take notes so you can develop your own questions to recommend to HR facilitators when they debrief your game with their employees".

	Instructor and Student Instructions
PHASE 1 (Wk 3)	*Pre-Assignment: "Gamification for a Changing Workforce"* – Sample assignment questions:
	• Brainstorm one way that employers can use gamification today to recruit and retain Gen Z employees
	• Engaging Generation Z employees through gamification is an effective way to lead in 2023 more than ever. "Do you agree or disagree with the statement written above? Explain why making a specific, clear, argument
	• True/False (Ergle, 2015): "Only 20% employees are engaged in their work" (True) "Forecaster was AirBaltic's game to increase employee engagement by having players compete with each other to develop the most innovative idea with a pre-determined budget" (True)
	• True/False (YuKai Cao video): "Average gamer is 35 years old" (True); "68% gamers are over 18 years old" (True); "Gamification is taking all the fun of games and pouring them into nonfun, boring contexts" (True)
PHASE 2 (Wks. 4-5)	*Forbidden Island Cooperative-Strategy Debriefing Questions*
	• Describe your team's leadership strategy to win the game
	• How effectively did your team communicate playing the game?
	• Describe the central problem-solving challenges the team faced in playing this game
	How did your team work together to use each other's special skills and abilities (power)? What other leadership skills did your team use in playing the game? Evaluate how (in) effectively your team was able to teach yourselves to play the game
	• Considering time limitations, how did players' self-doubt and trust impact how quickly you used self-disclosure to communicate information other players needed? What did you learn about yourself in terms of the roles you tend to play on teams?
PHASE 3 (Wks. 6-15)	*Game Designers in Action: Designing a Cooperative Leadership Strategy Board Game* Now that students have experienced what a cooperative strategy game is, they understand how teams work together interdependently to share valuable resources for common objectives. When in hybrid format, some questions were turned into team assignments that students answered prior to class
	Step 1. Game Designers: Developing Game Storylines (Week 6), Players (Week 7), Game Materials (Weeks 8–9), and Playtesting (Week 10)
	a. Summarize cooperative leadership strategy game characteristics. Remind students they must develop a "cooperative strategy" type game, meaning that either everyone on the team wins, or everyone loses. We shared with students some "best practices" of cooperative strategy games, and that competition will lead to failure while collaboration will lead to success. However, each player should not need the input of the group when making decisions (make sure each person has voice and is engaged). When designing the game, provide benefits for effective decisions/actions, and negative consequences for ineffective decisions
	b. *Instruct students to develop the main storyline or plot of their game. How do all players "win" the game or "lose" the game?* Ask students to imagine a story context or problem that will motivate anyone playing the game to solve. In FI, the player adventurer team had to discover 4 hidden treasures before the island sinks. Describe plot examples of student games, such as Espionage Invasion, in which players were HR professionals for BrainTech in search of a company spy (Kornias, Aquino, & Gedge, 2019)

(*continued*)

Have students brainstorm player roles and the valued resources they possess. What roles are necessary for the players to successfully work together to solve the problem? What valuable resources do they control that others need? For example, in FI, the Diver could swim through island titles that have 'sunk'. In some games, students gave players unique abilities to retrieve secret codes hidden in the game to stop threats (e.g. enemy attacks, floods, etc.)

c. Tell students to sketch a gameboard for their storyline. *Sketch a gameboard on a dry erase board or a piece of paper.*

d. Develop player decision-making actions to resolve the problem. *"Actions" represent "decisions" that must be made by the player, in collaboration with the team. Brainstorm actions that players can take to resolve the central problem (e.g. move on the gameboard). In some student-designed games, when a puzzle was solved correctly, players received a piece of the secret code to achieve the final objective.*

e. Develop final gameboard and components (e.g., player pieces, gamecards, player role descriptions, etc.) based on game storyline context.

f. Name and play game. Video record your team playing the game.

Step 2. Game Designers: Design the Game Instructions Booklet (Week 11)

- Instruct students to develop their Game Instructions Booklet. Students begin working on instructions in class and finish out-of-class to submit by the deadline. We provided them with a handout with specific information to include. Then they worked in small groups during class time to develop answers. Provide feedback on their ideas. Students continue to work on instructions as they simultaneously develop the game

Step 3. Train the Trainer: Develop a "Train the HR Trainer" Facilitation Guide (Week 12)

- Ask students to then imagine themselves playing the game. Ask them to describe what team leadership skills are used in the game (e.g. communication, problem-solving, conflict management, power and influencing tactics, self-disclosure, negotiation, etc.).

Step 4: Presentations: Teams present their original game (Weeks 14–15)

End-of-Semester Optional Debrief Questions**:

(1) Looking at the list of team leadership topics in the course, where did your team excel and where was your team weak in operating as an effective team?

(2) How did your team intentionally design the game to teach problem-solving, conflict-management, and negotiation leadership skills? Furthermore, why is the chosen focus important to leadership based on your team's experiences?

(3) How did your team work together (or not) regarding using your leadership voice? How would you like to improve upon this in a later team project?

(4) How did the assignments and game design process change your views on what is required to be a successful leader?

(5) What did you discover about yourself as someone who will manage teams in your career?

Notes: **The instructor can facilitate some of these questions during class or create individual or team assignments with these questions to submit during the semester for feedback
Source: Table by authors

Table 2.

Phase 3: design an original cooperative leadership strategy game (Weeks 6–15)
Materials Needed and Activity Steps: Now, students understand how team members must work interdependently to share valuable resources for common team goals. In *Phase 3*, students work in teams to develop their game and deliverables:

- Step 1. Game Designers: Developing Game Storylines (Week 6), Players (Week 7), and Game Materials 9 (Weeks 8–9) and Playtesting. (Week 10)
- Step 2. Game Designers: Design the Game Instructions Booklet with detailed step-by-step instructions. (Week 11)
- Step 3. Train the Trainer: Develop a "Train the Trainer" Facilitation Guide that explains how their game teaches five leadership skills and how the game is relevant to current leadership business challenges by providing theory and current news stories placing the game plots in a real-world context. (Week 12)
- Step 4. Presentations: Teams present their original game. (Weeks 14–15)

Students as Game Designers motivates students not only to bring their game development experience to real-world leadership situations but also to find power in their leadership voices and positively impact our world today.

Notes

1. Forbidden Island: How to Play.

2. In online and hybrid learning environments, it is best to give students latitude on how to interpret "board game", e.g. card games, tiles, adventure games. They become more innovative around using various online tools or even PPT. In addition, instructor messages about valuing diversity and the unique different resources each person brings to the team can further encourage their creativity.

3. Forbidden Island is currently retailed for US$25 but can be found at reduced costs online new or used, such as on Amazon for US$17. Unlike most computer-based simulations that highlight similar management concepts, once purchased, the game can be used repeatedly without renewing or paying for additional licenses. This suggests that when viewed over time, this limitation is mitigated (Mercer et al., 2021).

4. Due to space limitations, we have provided a brief overview. For detailed instructions, please contact corresponding author. See YouTube playlist "Cooperative Leadership Strategy Games 2.0 (Instructor Tips & Examples of Students' Games)" for a video of experts' tips for students when designing their games: www.youtube.com/@LeadershipMotivationwithDrMar

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Further reading

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