Learning Through Play: Developing and Customizing Business Games

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Business games are an effective and popular method in business education. They provide a model of workplace reality and a safe space to test possible courses of action. However, offered business games usually depict specific contexts and tasks that do not fit with the learning objectives or foci of a course. Therefore, business games research is reviewed to identify major factors that contribute to the success of business games. The focus is put on affordable and easy-to-implement face-to-face business games. An exemplary customized business game is introduced. Data of its evaluation in an undergraduate business course are analyzed and discussed.

Keywords: business games, customization, higher education

INTRODUCTION

An important goal of business education is to develop and enhance decision-making capabilities (Gordon & Howell, 1959). Decision-making capabilities in various business disciplines can be trained through business games (Faria, 1998, 2006; Kriz, 2003). They provide a model of the reality in the workplace and a safe space for learners to test possible courses of action and their outcomes (Kriz, 2003). Business games have been around for centuries. They are based on early versions of chess that were developed in China, India, and Persia, and depicted scenarios of conflict and war (Schwägele, 2015). Business games have been introduced to the classroom in the 1950s (Meier, Newell, & Pazer, 1969), and have been frequently used in business education (e.g., Faria, 1998, 2006). Names of popular business games that come to mind are: *Top Management Decision Simulation, Who Wants to be a CEO?*, and *The Business Game* (Greco, Baldissin, & Nonino, 2013).

As such, business games offered for sale usually depict a very specific context with predetermined tasks that the players need to complete in order to succeed. Little room for customization from the part of the instructor or game coordinator is provided (e.g., Greco et al., 2013; Dietrich, 2010). Therefore, educators can find it difficult to identify a business game that aligns with the learning objectives of their course or training (Dietrich, 2010). However, more room for innovation could be given to educators. Given the unique value that business games provide (i.e., instructional effectiveness; Sitzmann, 2011; Dietrich, 2010), the usage of business games could be easily extended in decision sciences if the business games fit with the learning objectives.

Thus, business games research is reviewed in order to identify major factors that contribute to the success of business games (e.g., learning transfer, engagement). Since computer-based business games are associated with high development costs (Greco et al., 2013), we focus on affordable and easy-to-implement face-to-face business games. Subsequently, *InterNational ManagerS – Putting the Poly in Monopoly* is introduced as an example of a customized business game. Data of its evaluation in an undergraduate business course are analyzed and discussed.

BUSINESS GAMES

Business games are defined as games "with a business environment that can lead to one or both of the following results: the training of players in business skills (hard and/or soft) or the evaluation of players' performances (qualitatively and/or quantitatively)" (Greco et al., 2013: 649). A business game can be played through a computer network (e.g., *Who Wants To Be A CEO?*), face-to-face in the classroom (e.g., *Win Win Manager*), or as a combination of both (e.g., *Top Management Decision Simulation*; Greco et al., 2013).

Benefits of Business Games

Business games offer several benefits to students' learning. They provide a model of reality in which students can test and compare different alternative courses of action (Kriz, 2009, 2011) and learn from experience (Kolb & Fry, 1975). Students receive immediate feedback on their decisions (Larreche, 1987). If a course of action shows to be associated with undesired outcomes, these undesired outcomes do not affect the reality. Students do not have to be afraid of the outcomes of their actions but can focus on learning and identifying the best course of action under given circumstances (Kriz, 2009, 2011). Within the game, a world of its own is created (Schwägele, 2015). The students experience motivation (Larreche, 1987) and positive emotions such as joy, pleasure, excitement, and ambition (Schwägele, 2015). Simultaneously, various soft skills such as decision-making and communication skills are trained (Chapman & Martin, 1995). Hence, business games offer playful and sustainable learning on how to act in different situations (Lane, 1995; Larreche, 1987; Schwägele, 2015; Siebert, 2001).

Success Factors of Business Games

To develop a business game that successfully conveys these benefits, the following factors need to be considered.

Target Population

The target population of the business game needs to be clearly defined (Dietrich, 2010; Gorbach, 2010; Hense & Mandl, 2012; Karl, 2012; Thomas, 2010). The target population can include, for example, traditional undergraduate and graduate students as well as executives who take courses on a part-time basis. The target population may also have a predominant business or non-business background (e.g., healthcare, engineering). The characteristics of the target population influence the experiences that students bring to the business game. These experiences determine from where the instructor starts to support students in their learning about a topic and reaching specific learning objectives (Dietrich, 2010; Gorbach, 2010; Thomas, 2010).

Topic and Learning Objectives

The topic and learning objectives of the business game need to be determined and conveyed to students (Dietrich, 2010; Gorbach, 2010; Hense & Mandl, 2012; Karl, 2012; Thomas, 2010). The learning objectives of the business game are affected by the learning objectives of the entire course (Thomas, 2010). The learning objectives can include subject competences (e.g., facts, formulas), methodological competences (e.g., collecting and presenting information), and social competences (e.g., communicating with team members; Dietrich, 2010). Students should learn about the purpose and background of the business game so that they can effectively make decisions within its environment (Thomas, 2010). The business game

environment constitutes a model of reality (Fischer, 2012) which educators need to design carefully. On the one hand, reality should be approximated so that students can practice real-life situations. On the other hand, students should not be overwhelmed with complexity and a large amount of information (Dietrich, 2010).

Integration Into Syllabus

Based on the learning objectives of the course, the business game needs to be integrated into the syllabus of the course (Dietrich, 2010; Gorbach, 2010; Hense & Mandl, 2012; Thomas, 2010). The business game can be used to demonstrate the application of one course topic or to integrate various topics. Similarly, the business game can be an assessment tool at various points of the course, including the end of the course (e.g., final exam or project; Greco et al., 2013). Before and after the business game is played, educators can use lectures and discussions to cover content knowledge that is practiced or assessed through the business game (Dietrich, 2010; Thomas, 2010; Karl, 2012).

Available Resources

The development and implementation of the business game is limited by available resources. Important resources include rooms. Educators need to think about whether there are rooms available for the students to meet and play the business game (Thomas, 2010). Depending on the structure and content of the business game, more than one room may be necessary so that students can discuss their strategies without others overhearing them (Dietrich, 2010). If the business game is played in a face-to-face course, a classroom is usually available (Dietrich, 2010; Thomas, 2010). A classroom often provides needed technology such as a computer and projector as well as screens and boards (Dietrich, 2010). If no classroom is available, students may need to meet in group meeting spaces, which libraries can provide, or online (Thomas, 2010). Potential online platforms include Blackboard Collaborate, Microsoft Teams, and Zoom, and need to be assessed by educators (Gorbach, 2010; Hense & Mandl, 2012; Thomas, 2010). Additionally, educators need to evaluate potential costs of playing materials (e.g., prints, videos) and personnel (e.g., game coordinators or trainers in addition to the instructor of the course; Hense & Mandl, 2012).

Motivation

Students need to be motivated to participate and learn from the business game. Thus, specific interests and future goals of students should influence the setting of the business game (Dietrich, 2010). If a large number of the students is interested in the real estate industry, using this industry as the setting of the business game increases its perceived relevance and students' motivation. Similarly, integrating specific conflicts and problems as well as current events (e.g., financial crisis of 2008, COVID-19) into the business game can increase students' interest (Dietrich, 2010). Students' motivation can also be increased through engaging materials.

Engaging Materials

There are various ways to make the materials of the business game engaging. The materials should be carefully designed and approximate reality to appear authentic. Using color instead of black and white designs for printed materials is a must. However, materials should include not only printed worksheets but also various other formats and media such as posters, videos, and websites (Dietrich, 2010). A mix of methods increases student engagement (Dietrich, 2010; Gorbach, 2010; Hense & Mandl, 2012; Karl, 2012).

Roleplay

During the business game, students take on the roles of, for example, managers and organizations. They oftentimes engage in roleplay in teams so that a team represents an entire organization (Thomas, 2010). To facilitate students' identification with their roles in business contexts, educators can ask them to wear formal business attire (Dietrich, 2010).

Interpretation

Students need to get time to interpret the experiences that they have made during the business game. Educators can start supporting students' interpretation by questioning students' ideas and decisions during the business game (Thomas, 2010). Educators can also ask students to reflect on their decisions and behaviors, for instance in journals (Dietrich, 2010). Between different parts (e.g., periods, sessions) of the business game, educators can evaluate students' decisions and provide feedback so that students can improve their strategies (Thomas, 2010).

Evaluation

To constantly enhance the business game, the business game needs to be evaluated based on its purpose and learning objectives (Braukmann & Hübsch, 2010; Dietrich, 2010; Gorbach, 2010; Hense & Mandl, 2012). Evaluations can focus on students' reactions to the business game (e.g., students' likes and dislikes), increase in knowledge, changes in behavior, and learning transfer to the workplace. Although the latter two are the most relevant learning outcomes, they usually are not measured (Braukmann & Hübsch, 2010).

Various ways of data collection can be implemented to evaluate a business game. Educators can ask students to comment on the business game in written form or a discussion. Students can discuss and evaluate different elements of the business game and their experiences after they have played it. They can explain, for instance, which elements they liked, which elements were confusing, and which elements they would like to be different (Dietrich, 2010). In addition, journals and surveys can be used to get feedback from students as well as educators. Journal and survey questions can target students' and educators' perceptions of the appearance (e.g., authenticity, content), motivational potential, expectations, relevance, understandability, logic, coherence, learning, mechanisms, and processes (e.g., interaction with students and educators, scheduling) of the business game (Braukmann & Hübsch, 2010; Fischer, 2012). Questions can also refer to students' behavioral intentions (e.g., "What do you want to remember from the business game and implement in the workplace?"), and experiences (e.g., "Which experiences were surprising and changed your point of view?"; Braukmann & Hübsch, 2010). To test students' knowledge increase, quizzes or tests can be administered throughout or at the end of the business game (Karl, 2012). These methods can be supplemented with behavioral observations and follow-up interviews if feasible (Braukmann & Hübsch, 2010).

EXAMPLE: INTERNATIONAL MANAGERS – PUTTING THE POLY IN MONOPOLY

InterNational ManagerS – Putting the Poly in Monopoly is discussed as an example of a customized business game. It was developed to integrate various topics of an introduction course to organizational behavior and management.

Purpose

The purpose of the business game was to train undergraduate students of various business majors (e.g., accounting, entrepreneurship, finance, human resource management) in managerial competences, including group decision-making, cross-cultural communication, leadership skills, and social network analysis. The business game was developed to give students an opportunity to practice class content in a safe space. The textbook of the course was Robbins and Judge (2017). Specifically, the following learning objectives should be reached through the business game:
- Analyze individual and group behaviors in the context of decision-making
- Analyze cross-cultural communication issues among managers
- Analyze different leadership styles of managers
- Analyze social networks in organizations

Content and Procedures

Students played the business game in four class sessions of 80 minutes towards the end of the semester. The 43 students in the course formed teams of four to six members. Each team took the role of a top management team of a large organization in the real estate industry: The Car Inc., The Dog Inc., The Iron Inc., The Lantern Inc., The Shoe Inc., The Thimble Inc., The Top Hat Inc., The Rocking Horse Inc. As top managers, the students supported the CEO in leading the organization from the headquarters in the United States. Table 1 shows the initial instructions that were given to the teams.

Each class session, the teams worked on one of four quarters. The teams got briefing folders explaining the challenge they needed to manage in the respective quarter. Tables 2, 3, 4, and 5 illustrate Quarters 1 (i.e., location choice for an international expansion), 2 (i.e., cross-cultural communication problems among managers), 3 (i.e., hiring decision for a new department head), and 4 (i.e., social network analysis within a department). These tables show the instructions and information that were given to the teams. The challenges were interrelated and required the students to prepare a memorandum for the CEO of the organization whose role was taken by the instructor.

The teams submitted their memoranda at the end of each class session and received feedback from the instructor through a learning management system (i.e., Blackboard). The teams also competed against each other for extra-credit. Extra-credit was given to the two best teams each quarter, and to the two best teams across all four quarters, based on the quality of the teams' memoranda. In addition, the students needed to keep a journal in which they reflected about their teams' collaboration after each quarter was completed.

TABLE 1
WELCOME PLAYER!

In this business game, you are part of the top management team of The Car Inc., a large organization operating in the real estate industry. The core business is the development and management of large real estate projects such as hotels and conference centers. You and your fellow managers support the CEO and lead the organization from the headquarters in the United States. Throughout the next four quarters, you will be confronted with four challenges that threaten your competitiveness. So, keep in mind what you have learned in your organizational behavior classes, watch out for the competition, and lead your company to the top!

TABLE 2
QUARTER 1: LOCATION, LOCATION, LOCATION!

Everyone is talking about globalization. Companies grow and so does the competition. Focusing on the domestic market is often not enough. You and your fellow managers catch more and more signs that it is also time for your company to expand internationally. But which countries might be profitable for you? You cannot randomly point to a country on the map and hope that you can succeed in this market.

You have to do your research! Luckily, you as top managers have a team of capable and hard-working assistants to support your decision-making process. Take a look at the memo they provided you with this morning.

Memorandum

Date: October 30, 2019
To: Top-Management Team

From: Henry Brown, Executive Assistant Team Coordinator
Subject: Potentially Profitable Markets for International Expansion

Result
We identified four potentially profitable markets for the international expansion: Brazil, Canada, China, and Sweden.

Process
We conducted a large-scale analysis of the competitive environments of real estate markets around the globe. Specifically, we included the number and size of competitors, the availability and power of suppliers, and the presence of legal regulations in the real estate industry. According to these criteria, all four countries are equally viable options for the expansion.

Action Plan
Please advise how to proceed.

Four countries are less than 195 countries, but you still can choose only one country to expand to for now. After briefly reviewing the memo, the CEO wants you to give her a recommendation about which market you would enter.

From your organizational behavior classes, you remember that there is a lot more to consider than competitive pressures, suppliers, and real estate regulations when managing an organization, and especially when managing such a complex undertaking as an international expansion. You will likely send expatriates to the foreign location to facilitate knowledge transfer between the headquarters and the subsidiary. Therefore, *cultural differences* between the United States and the foreign country and also *security risks* should be considered. Besides, the overall state of the foreign *economy* could indicate the long-term success of the undertaking.

There are many resources available to facilitate your decision-making. As you have only one hour until the CEO expects a memo about your recommendation you stick to
- Hofstede Insights: *https://www.hofstede-insights.com/product/compare-countries/*
- The World Factbook of the Central Intelligence Agency: *https://www.cia.gov/library/publications/the-world-factbook/docs/one_page_summaries.html#*
- U.S. Department of State:
  https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories.html/

Assignment
1) Make a team decision about which of the four countries (i.e., Brazil, Canada, China, Sweden) appears to be the most profitable for an international expansion. Consider cultural differences, security risks, and the overall state of the economy.
2) Outline your reasoning in a memorandum to your CEO following the formatting of the memorandum that you received from your assistants.

TABLE 3
QUARTER 2: CROSS-CULTURAL COMMUNICATION

You are probably wondering whether the CEO followed your recommendation on the location choice for the international expansion. The final decision was with the CEO, and she decided to expand to China. "I love dumplings!", she said. Well, at least now you know whether she reads your memos…

However, establishing the subsidiary office in China seemed to be a breeze. You easily found six mid-level managers in the headquarters who shared the CEO's love for dumplings and were willing to commit to a one-year expatriate assignment to China. Their task is to facilitate the knowledge transfer between the headquarters and the subsidiary and to train Chinese managers. The expatriates arrived at the subsidiary a month ago and you have not heard a lot from them. So, you assumed everything was working out fine, until this morning…

You got the following Email from Elizabeth Smith, one of the expatriates you have sent to China.

Dear Top Management,

I am writing because we have huge problems with training the Chinese managers.

For example, since I have arrived here, it must have been at least a hundred times that I explained our process for requesting bids from suppliers. And it is not just me, my colleagues have similar issues. The Chinese managers appear to understand what we explain but as soon as we turn around, the Chinese managers do what they want.

I hope we can schedule a videoconference within the next few days and discuss some personnel changes.

Sincerely,

Elizabeth Smith
Head of Training
China Division
The Car Inc.

Another expatriate, Phil O'Connor, left you a voice message with similar content.

"Hi, this is Phil. I have been trying to get a hold of you for days now. I understand you are busy, but I really need to talk to you. To be blunt: I think we need to fire these Chinese managers. They do not seem to care about the business at all. They just want to go for dinner and talk about their families."

You are quite surprised by both messages. When you met the Chinese managers at the headquarters, they seemed to be very friendly and committed. They even brought you expensive gifts. Wondering about whether the Chinese managers really do not respect the US managers, you ask one of the executive assistants, Rosa Diaz, to look into the internal communication between the Chinese.

This is a lot for a Wednesday morning. You need a coffee! On the way out of your office, you overhear two mid-level managers talking in the hallway of the headquarters.

"I have heard that the China project was never supposed to work out. We have just sent some managers to reduce the company's tax burden."

This is what your assistant has found in the internal communication of the Chinese managers: texts between two Chinese managers, translated into English.

Ming Chiang:
Can you help me solve a problem with the bid request system?

Hua Li:
I am not quite sure how this works. The explanation we got was confusing.

Ming Chiang:
We cannot ask the US managers. What will they think of us?

Hua Li:
That is true.

You remember what you have recently read about China in a travel guide when you were researching your next vacation destination.

… China looks back on thousands of years of history and is willing to share it with millions of tourists each year. The Chinese put high value on respectful relationships and do not want anyone to lose face…

Now you see what the problem is…

Assignment
1) Considering all five messages, what is the problem in the subsidiary office?
2) What is your recommendation to solve the problem in the subsidiary and the headquarters?
Prepare a memorandum for the CEO following the usual format.

TABLE 4
QUARTER 3: WE NEED A NEW BOSS!

The CEO was impressed by how you handled the problem with the Chinese office. To free up your and your fellow managers' time to deal with issues in the headquarters, the CEO hired a specialist on doing business in China. What a relieve!

However, the next challenge is already waiting for you: after 20 years, Martha Li, the head of engineering decided to retire immediately for health reasons. Now, it is on you to find an adequate replacement who can lead the members of this small but highly important department. You ask Henry Brown, the executive assistant team coordinator, to get you some information on how this department works and what the members want from a leader.

This is what Henry got you.

Timothy Grey:
"I have been in this department for five years now. I know what I am doing, and I know how I have to do it. It is good to have someone there who takes the blame when everything goes south – but otherwise I – and also this department – does not need a so-called leader."

Anna Hartman:
"I liked Martha's leadership style very much! She made us do our jobs well. At the beginning of each project, she told us what she expected from us. She gave us the timeline and clarified the bonus that we could obtain when we stayed within the timeline. If we could not keep the deadline, we did not get the bonus. It was as simple as that. Martha gave us a certain structure… I liked that very much."

Bruce Salazar:
"In my opinion an often-underrated quality of a good leader is his or her ability to build trust between him or her and the team. At the same time, the department head should be able to give us a vision and pride in our jobs. I mean, we do great things here. We can be proud of ourselves! I was missing this with our previous boss. I also hope that our new boss will challenge us more."

Jessica Ramirez:
"Leading a team such as ours is a difficult task. Our jobs require high technical skills. At the start of each project, we have to engage in careful problem solving. Sometimes, it might be enticing to just overlook some issues and hope that 'future you' will take care of it. But, I think, a good leader knows how to keep us on track and change our perspectives when something becomes difficult."

Simon Felps:
"Ideally, I'd like to have a new department head that cares a little bit more than Martha did. Don't get me wrong. She was a great person! But, when I think about leadership, I think about someone who knows what's going on with their people; someone who takes time for each employee individually to talk about his or her concerns when necessary. I missed that with Martha."

It seems that almost the full range of the leadership model (see Robbins & Judge, 2017: 395) is present in this department.

Your executive assistants went also through the applications for the position of the head of the engineering department. The assistants could identify two candidates who are exceptionally well-qualified with regards to technical expertise. They only differ in their take on leadership.

Samantha Gonzalez:
"As a leader, I see myself as a facilitator. I facilitate that the employees see the big picture, the vision and mission that the company pursues. Everyone needs to be in the same boat so that the organization can be successful! In addition, I show my subordinates how they can contribute to the company's success: what are their roles, what are their responsibilities, etc."

Peter Jennings:
"My take on leadership is pretty simple. I am the boss. That means, I am the link between the employees and higher levels of management – at least, until I am the CEO... However, I am not a babysitter. I tell the employees why they are here and what we want them to do. I don't waste time with inspirational speeches or holding hands when they have a bad day. Nothing more. Nothing less. I am efficient."

Who is the better fit for the engineering department?

Assignment
1) Identify which management style each member wants in the department.
2) Identify which leadership style each candidate would bring to the department. Who do you recommend as the next head of the engineering department? Why?
Prepare a memorandum for the CEO following the usual format.

TABLE 5
QUARTER 4: WHO KNOWS WHO?

You did it! You found a great new leader and head for the engineering department. To help the new head understand the dynamics of the engineering department, you want to conduct a social network analysis. You know this fancy social network analysis software that basically does everything for you. You just need some information to feed it with. Henry Brown takes the week off to go snorkeling in the Caribbean. So, you asked his right hand, Melanie Santiago for her assistance to get the needed information. With her excellent people skills, she is the ideal fit for this job. A couple of hours later, she has everything you need.

Timothy Grey: "Timothy likes to work with Anna the most. She focuses on the job that needs to be done. Working with Jessica is a lot harder; she always talks too much. In his free time, Timothy likes to go fishing. It is supposedly such a calming experience. Simon joins him once a month."

Anna Hartman: "Anna goes for lunch with Jessica to the food trucks that are outside the office once a week. The rest of the week, she spends her lunch breaks with Bruce. Anna does not know much about Simon because they have never before worked on a project together."

Bruce Salazar: "Bruce spends his lunch breaks with Anna except for Tuesdays. They will get married in May. On Tuesday, Bruce eats with Simon and Timothy."

Jessica Ramirez: "Jessica runs every morning in the same park as Simon does. Afterwards, they get breakfast together. Jessica works on most projects with Bruce because of their complementary expertise. Both are foodies and could talk about food for hours."

Simon Felps: "Simon is into sports. Both practicing and watching. He meets Bruce at the gym about twice a week. They mostly chat about basketball. Simon is also friends with Timothy. Simon says about Timothy that Timothy does not talk a lot about sports but that's okay – Simon does not consider fishing a sport…"

Melanie has worked with the social network analysis tool you want to use before. Of course, she did: networking is her expertise. Melanie recommends using the following point system to characterize the relationship between two department members:

No interaction at all	*0 Points*
Pure work-related interactions	*1 Point*
Work-related and some work-unrelated interactions	*2 Points*
Work-related and much work-unrelated interactions	*3 Points*

Assignment
1) Conduct a social network analysis using the information above.
2) Print your results as a PDF for the new department head.
3) Based on your results, who is the most central and who is the least central member of the department. Why?
Prepare a memorandum for the CEO following the usual format.

Evaluation
    To evaluate the business game, data were collected from students and analyzed.[2]

Data Collection
    Following a pre-/post-test evaluation design, data were collected at the beginning and at the end of a class session (i.e., before and after the students played the business game). At the beginning of the class session, students were given a quiz on paper about the content that was covered by the respective quarter. Table 6 shows the quiz questions. At the end of each class session, students were given another quiz on paper about the content that was covered, and additional questions about the business game. These additional questions included "This part of the business game was engaging." (1 = strongly disagree; 5 = strongly agree), "This part of the business game enhanced my learning in this course." (1 = strongly disagree; 5 = strongly agree), "What did you like about this part of the business game?" (open-ended), and "What did you not like about this part of the business game?" (open-ended).
    Students' responses from before (i.e., pre-test) and after (i.e., post-test) the class session were matched using participant numbers that the students had drawn before the first quiz and indicated on each quiz. Hence, all data were collected anonymously. The quizzes were not graded, and students' participation was voluntary.

TABLE 6
QUIZ QUESTIONS PER QUARTER

Quarter 1   **1. Hofstede provides a model to describe** _____ .
a) attitudes
b) emotions
c) personalities
d) cultures
2. Hofstede's model includes three dimensions.
a) true
b) false
3. The terms 'groups' and 'teams' are interchangeable.
a) true
b) false
4. The nominal group technique restricts discussion or interpersonal communication during the decision-making process.
a) true
b) false
5. Brainstorming can overcome pressures for conformity.
a) true
b) false

Quarter 2   **1. In organizations, communication takes place only downward from a higher hierarchical level to a lower hierarchical level.**
a) true
b) false
2. Differences in national culture between the sender and receiver of a message can cause issues in the communication process.
a) true
b) false
3. Informal communication through the grapevine should be prevented by managers.
a) true
b) false
4. In organizations, rumors should be ignored by managers.
a) true
b) false
5. All communication channels can transmit an equal amount of information.
a) true
b) false

Quarter 3   **1. Transactional leaders provide their subordinates with a clear vision.**
a) true
b) false
2. Transactional leaders contract exchange of rewards for effort.
a) true
b) false

3. Transformational leaders only intervene if performance standards are not met by subordinates.
a) true
b) false
4. Transformational leaders provide their subordinates with a vision and mission.
a) true
b) false
5. Transformational leaders do not have time to give personal attention to each subordinate.
a) true
b) false

Quarter 4   **1. An organizational sociogram illustrates only hierarchical relationships among employees.**
a) true
b) false
2. Social network analysis can only be conducted with a paper and pencil approach.
a) true
b) false
3. Social network analysis reveals which employees have the smallest network in an organization.
a) true
b) false
4. Social network analysis identifies which employee has the largest influence on other employees.
a) true
b) false
5. Social network analysis requires a large amount of financial resources.
a) true
b) false

Data Analysis

Data analysis was performed with STATA 16.0. To analyze the quiz questions, a quiz question was coded 1 if students answered it correctly, and 0 if students answered it incorrectly. If students did not answer a quiz question, the data on the question of a student did not enter the analyses. For each student, the pre-test scores and post-test scores were summated per quarter. Descriptive statistics were calculated (i.e., mean, standard deviation, median).

Moreover, several means-difference *t*-tests were performed. First, for each quarter, the pre-test mean across all students was compared to the post-test mean across all students. Second, the pre-test mean across all students and all quarters was compared to the post-test mean across all students and all quarters. Additionally, several paired *t*-tests were performed using only the scores of the students who participated in the pre-test as well as post-test of a given quarter. First, the pre-test and post-test scores of all included students were compared per quarter. Second, the pre-test and post-test scores of all included students were compared across all quarters. The benefit of the paired *t*-tests compared to the means-difference *t*-tests is that the former have more power and thus reduce the risk of a Type II error. Furthermore, the students' scores for the additional two closed questions about the business game were separately summated to calculate descriptive statistics (i.e., mean, standard deviation, median).

Results

Table 7 shows the descriptive statistics of the quiz questions across all four quarters. A median of 1 indicates that the majority of students answered a quiz question correctly, while a median of 0 indicates that the majority of students answered it incorrectly. Since the quiz questions were coded 0 and 1, the mean indicates the percentage of students who answered it correctly. Table 8 shows the descriptive statistics of the two additional closed questions about the business game across all four quarters. Overall, the students agreed or strongly agreed with the business game being engaging and enhancing their learning.

TABLE 7
DESCRIPTIVE STATISTICS OF THE QUIZ QUESTIONS

	Quarter 1				Quarter 2				Quarter 3				Quarter 4			
	N	*Me*	*SD*	*M*	*N*	*Me*	*SD*	*M*	*N*	*Me*	*SD*	*M*	*N*	*Me*	*SD*	*M*
PrT Q1	40	.20	.41	0	25	.72	.46	1	35	.34	.48	0	33	.45	.51	0
PoT Q1	43	.67	.47	1	43	.60	.49	1	43	.63	.49	1	40	.58	.50	1
PrT Q2	40	.45	.50	0	25	.96	.20	1	35	.69	.47	1	33	.88	.33	1
PoT Q2	43	.70	.46	1	43	.93	.26	1	43	.84	.37	1	40	.98	.16	1
PrT Q3	40	.60	.50	1	25	.48	.51	0	35	.71	.46	1	33	.73	.45	1
PoT Q3	43	.65	.48	1	43	.42	.50	0	43	.79	.41	1	40	.93	.27	1
PrT Q4	40	.50	.51	.50	25	.60	.50	1	35	.91	.28	1	33	.85	.36	1
PoT Q4	43	.44	.50	0	43	.79	.41	1	43	.91	.29	1	40	.90	.30	1
PrT Q5	40	.88	.33	1	25	.60	.50	1	35	.91	.28	1	33	.88	.33	1
PoT Q5	43	.81	.39	1	43	.65	.48	1	43	.84	.37	1	40	.85	.36	1

Note. N = sample size, *Me* = mean, *SD* = standard deviation, *M* = median, PrT = Pre-Test, PoT = Post-Test, Q1 = Question 1, Q2 = Question 2, Q3 = Question 3, Q4 = Question 4, Q5 = Question 5. Each question was coded as 1 if a student answered it correctly, and 0 if a student answered it incorrectly.

TABLE 8
DESCRIPTIVE STATISTICS OF THE ADDITIONAL CLOSED QUESTIONS ABOUT THE BUSINESS GAME

	Sample Size	Mean	Standard Deviation	Median
Quarter 1				
Question 6	42	4.45	1.04	5
Question 7	42	4.24	1.05	5
Quarter 2				
Question 6	31	4.42	0.99	5
Question 7	31	4.13	1.02	4
Quarter 3				
Question 6	41	4.29	0.90	5
Question 7	41	4.37	0.86	5
Quarter 4				
Question 6	36	4.56	0.77	5
Question 7	36	4.56	0.77	5
Across all Quarters				
Question 6	150	4.43	0.93	5
Question 7	150	4.33	0.94	5

Note. Question 6 = "This part of the business game was engaging." (1 = strongly disagree; 5 = strongly agree), Question 7 = "This part of the business game enhanced my learning in this course." (1 = strongly disagree; 5 = strongly agree).

Table 9 shows the results of the means-difference t-tests. In Quarters 1 ($t(39) = 2.49$; $p < .01$), 3 ($t(34)$ = 1.52; $p < .10$), 4 ($t(32) = 1.75$; $p < .05$), and across all quarters ($t(132) = 2.95$; $p < .01$), the post-test means were significantly larger than the pre-test means. In Quarter 2, the post-test mean was larger but not significantly larger ($t(24) = 0.13$; $p = .45$) than the pre-test mean.

TABLE 9
RESULTS OF MEANS-DIFFERENCE t-TESTS

	Mean Pre-Test	Sample Size Pre-Test	Mean Post-Test	Sample Size Post-Test	Means Difference	t-Statistic	p-Value
Quarter 1							
	2.63	40	3.28	43	0.65	2.49	.01
Quarter 2							
	3.36	25	3.40	43	0.04	0.13	.45
Quarter 3							
	3.57	35	4.00	43	0.43	1.52	.07
Quarter 4							
	3.79	33	4.23	40	0.44	1.75	.04
Across all Quarters							
	3.30	133	3.72	169	0.42	2.95	< .01

Note. Each question was coded as 1 if a student answered it correctly, and 0 if a student answered it incorrectly. Scores for five questions were summed up for each student per quarter, for the pre-test and post-test, respectively.

Table 10 shows the results of the paired t-tests. In Quarters 1 ($t(37) = 2.36$; $p < .01$), 3 ($t(32) = 2.82$; $p < .01$), 4 ($t(30) = 1.33$; $p < .10$), and across all quarters ($t(126) = 3.98$; $p < .01$), the post-test means were significantly larger than the pre-test means. In Quarter 2, the post-test mean was larger but not significantly larger ($t(24) = 1.27$; $p = .11$) than the pre-test mean. Table 11 shows representative student comments from the open-ended questions about the business game.

TABLE 10
RESULTS OF PAIRED t-TESTS

	Mean Pre-Test	Sample Size Pre-Test	Mean Post-Test	Sample Size Post-Test	Means Difference	t-Statistic	p-Value
Quarter 1							
	2.63	38	3.18	38	0.55	2.36	.01
Quarter 2							
	3.36	25	3.64	25	0.28	1.27	.11
Quarter 3							
	3.61	33	4.24	33	0.64	2.82	< .01
Quarter 4							
	3.84	31	4.16	31	0.32	1.33	.10
Across all Quarters							
	3.32	127	3.79	127	0.46	3.98	< .01

Note. Each question was coded as 1 if a student answered it correctly, and 0 if a student answered it incorrectly. Scores for five questions were summed up for each student per quarter, for the pre-test and post-test, respectively.

TABLE 11
REPRESENTATIVE COMMENTS

Likes	• "[How] engaging it is while learning for future reference."
	• "Teamwork, Business"
	• "That we all talk and look [up] information"
	• "I got to learn more about my teammates, understanding our roles in the team, + learning how we work together"
	• "It was a real[-]life experience which helped me to understand the concepts that we went over in class."
	• "I liked that we had to implicate previously learned knowledge into our research."
Dislikes	• "The time crunch."
	• "As far as my group some wanted to be more head strong as in try[ing] to overpower group judgement."
	• "I actually enjoyed it, it is just too early." [The class started at 7:30 am.]
	• "I didn't dislike anything really."

Discussion

Across all quarters, the business game was effective and increased students' learning. Only in Quarter 2, the post-test did not show a significant improvement compared to the pre-test. However, this result may be due to the small sample size in Quarter 2 (Gravetter & Wallnau, 2013). Overall, the quizzes, memoranda, and reflections showed that the learning objectives of analyzing individual and group behaviors in the context of decision-making, analyzing cross-cultural communication issues among managers, analyzing different leadership styles of managers, and analyzing social networks in organizations were reached.

Furthermore, students felt that the business game improved their learning and was engaging. Their comments indicated which elements of the game contributed to this evaluation, and how the game could be improved for future use in the classroom. Students enjoyed working with their teams. A key factor contributing to this positive experience was that students were given class time to work on the business game and were not required to meet out of class. Meeting out of class oftentimes generates difficulties for team members which result in dysfunctional conflict. The students also liked that they could apply and practice knowledge that was previously covered in the course.

However, students did not like the time pressure with which they were confronted. Time posed more issues in the first quarter than the remaining three quarters. Students needed time to get used to each other's working styles and the assignments of the business game. Hence, the assignment of the first quarter could be shortened to reduce time pressure. Additionally, students experienced some conflicts when they made their team decisions. Students discussed these conflicts and their collaboration in presentations at the end of the business game. Overall, they provided reflected accounts of issues resulting from, for example, differing opinions or being late to class. Students also provided feasible strategies how these issues can be prevented in future team projects and the workplace. Hence, the business game fulfilled its purpose in preparing students for collaboration in teams and conflicts in the workplace.

CONCLUSION

Customizing a business game for a course or class session may look scary at first. However, even with limited resources, educators can put together a game environment in which students fully immerse

themselves in their roles and gain valuable experience in a safe space that prepares them for the workplace. Additionally, educators can reduce costs for students, and increase their access to an affordable and engaging learning experience. At the same time, educators can reduce their dependence on external providers of teaching and learning materials. For students as well as educators, a win-win!

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