

GAMES: Virtual Worlds and Reality

Selected Papers of ISAGA 2008

Eugenijus Bagdonas & Irena Patasiene (eds.)

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Unexpected multicultural experiential learning

Elizabeth J Tipton Murff

Abstract

When the players differ culturally from those for which a game is originally designed, unexpected lessons may emerge. The game “So Long Sucker” has been used in an applied game theory course in the United States to allow students to discover how potentially unethical behavior necessary for winning was inherent in the structure of the game. When the enrollment demographics of the course shifted, an insightful and far-reaching experiential lesson on culturally motivated behaviors occurred instead.

Keywords: game theory, cultural learning, “So Long Sucker”.

The lesson as planned

Active learning, defined as “anything that involves students in doing things and thinking about the things they are doing” (Bonwell & Eison, 1991), is known to promote both critical thinking and problem solving (Sivan, Leung, Woon & Kember, 2000). Experiential learning occurs when students take part in an activity and are then debriefed to help them reflect and learn based upon their experiences (Dewey, 1938). When learning by doing, students tend to be more curious, more attentive and more motivated to think abstractly than they are by other methods of instruction (Shubik, 1972). Just as it has been shown that workers found to be interested in their job are more productive than their counterparts, students are more successful when they are actively engaged and interested in their learning experience (Cropanzano & Wright, 2004). Participants in pedagogical games frequently imitate their teammates and even their opponents in their quest to learn what works and what does not work. After all, “experience is the name everyone gives to their mistakes” (Wilde, 1893). Learning often goes above and beyond the factual material of the game to result in deeper insights, especially into the participants’ own behaviors (Frazer, 1978). With this in mind, the game “So Long Sucker” was chosen for use in a recent applied game theory course taught in the United States to allow the students to discover how game structure can provoke behaviors some may consider hostile or unethical.

Game theory has been shown to be an excellent way to introduce discussions of trust, cooperation and ethical behavior in the classroom (Campbell, 2004). The game “So Long Sucker” was designed over fifty years ago to demonstrate problems in cooperation that occur when unstable coalitions are inherent in a system (Shubik, 1987). It is a simple bargaining game played with poker chips that usually takes about 20 minutes to play. The rules may be found in Shapley, Nash, Hausner and Shubik (1964). The insights to be gained by playing this game were planned based on prior experience using it in courses entirely composed of American students. It was expected that the students would realize that it was inherent in the game structure that behavior that many might consider to be unethical, in particular forming a coalition and then breaking it, was necessary for winning (Shubik, 1987). It was desired that the students would recognize that their antagonistic behaviors during the game play could have been predicted based on their analysis of the game prior to actual play. It was hoped that the students would discover business situations, such as business-to-business negotiations, where hostile behavior was not due to personalities but rather to the external structure of the situation. These were not the outcomes when the course was composed of students from the United States and from Taiwan in equal parts as these two distinct cultural groups had very different behavioral and emotional reactions to this particular game.

Observations during game play

To allow time for abstract conceptualization, the rules of the game were given as homework one week in advance for the students to analyze and prepare a strategy for actual game play. Repeated in-class play provided active experimentation. No set of players was duplicated and the students were allowed to alter their strategies each round based on the results of prior games. Immediate

feedback on how well each student's strategy worked supplied concrete experience and the opportunity to learn from others' successes and failures.

When American students predominated, play was aggressive and quick with only minimal negotiation. Players worked together and discussed moves only long enough to eliminate other players. Much of their talk during play was not actually relevant to the game. They readily formed coalitions with those who had double-crossed them in prior games. Brief discussion with the instructor revealed that these students saw the exercise as "only a game."

When Taiwanese students predominated, play was hesitant and lengthy with extensive negotiation. Players worked together and discussed moves to keep each other in the game. They only discussed the game and did not stray into other topics during play. They tried to take care of each other by providing suggestions to everyone, not just those with whom they were allied. They persisted in attempting to find a team solution even when it was quite clear that such was not possible for this game. When a player was double-crossed by his coalition as was necessary near the end of the game, he was hesitant to form an alliance with those players in later games. Brief discussion with the instructor revealed that these students felt that the exercise was an endeavor to be taken very seriously.

With evenly balanced groups, behavior changed as the game was played repeatedly. In the early games, the Taiwanese students quickly formed a coalition that eliminated the American students who were not as quick to form an alliance. A game of slow attrition would then form, similar to the games with a majority of Taiwanese players. In the later games, the American students learned from the behavior of the Taiwanese students. The American students adapted their methods, becoming much more assertive in forming longer-term coalitions quickly. They then became aggressive in eliminating their opponents, similar to the games with a majority of American players. The Taiwanese students did not adjust their behavior during the class session and always persisted in seeking a team solution even though one was not possible due to the inherent structure of the game.

The lesson that emerged

The debriefing session immediately following the game, designed to encourage reflective observation, made the effects of culture even more apparent. Learning styles often vary depending upon the culture in which a student is reared (Hall, 1973). Concrete experience with reflective observation tends to be preferred in collective cultures such as Taiwan, while abstract conceptualization with active experimentation is generally preferred in individualistic cultures such as the United States (Auyeung & Sands, 1996).

The Taiwanese students had done more extensive analyses in preparation for the game play than the American students. The Taiwanese students also indicated that they expected that the American students would play the game in a different manner, while the American students did not have this expectation. The American students, while initially not as well prepared, learned more rapidly from their mistakes during actual play. They indicated that they were frustrated that the Taiwanese students would not play more quickly. The Taiwanese students were quite uncomfortable with this particular game, irrespective of wins and losses. The American students found this surprising as the game caused them no discomfort at all. Although the Taiwanese students were more respectful of the instructor during the debriefing and had to be prompted, all of the students were far more inclined to participate and discuss the application of the game than would normally be expected in the lecture-based classroom.

As the discussion continued, these students realized that their cultural differences affected how they played this game, even though they were all participating in the same MBA program. They then discovered how their cultural differences were affecting their emotional responses to the game. This was followed by the recognition that their cultural differences were affecting their behaviors during the debriefing itself. These students abstracted this experience by commenting on how they would prepare for and handle multicultural negotiations differently in the future. The students had reached the point of identifying with each other and had gained insight into the human psyche and interpersonal dealings.

In business dealings and negotiations, identifying with others is crucial in order to arrive at resolutions. With little knowledge of cultures and their associated values, social interactions, and negotiation propensities, business dealings in a foreign environment are often inhibited as identification is more difficult. Yet, identifying with others can act as a catalyst for coming to a sort of symbiotic relationship in which each party is considered, leading to successful business negotiations. As such, it is imperative that students enrolled at a business school, and particularly those at the graduate level, are exposed and brought to an awareness of cultural differences.

This game changed these students' prior theoretical knowledge of cultural differences into behaviors, emotional responses and reflective analyses consistent with Hofstede's studies of cultural dimensions. In particular, the following differences in Hofstede's five cultural dimensions (Franke, Hofstede & Bond, 1991) were noted:

- **Power distance** – As all of the game players were MBA students in the same program, this factor does not appear to have been important during game play. During the debriefing by the instructor however, the American students were more relaxed, quicker to ask questions and quicker to respond to questions about how the game made them feel than the Taiwanese students. The Taiwanese students also indicated that, as preparation and play were course assignments, they took both very seriously, while the American students took a more casual attitude.
- **Uncertainty avoidance** – The Taiwanese students found the game more disquieting than the American students, especially when dissenting opinions about the rules occurred. The American students took greater risks for smaller payoffs during play, even when these choices were clearly counterproductive. The Taiwanese students persisted in trying to avoid the risk of offending others throughout all game play. Furthermore, the Americans were much more willing to take the risk of trusting someone who had double-crossed them in prior games than the Taiwanese students.
- **Individualism** – The impact of this factor was clearly seen during the game play as the American students discussed a variety of topics that each found interesting, while the Taiwanese students stuck to the immediate issues facing the entire group. The Taiwanese students more rapidly formed more stable coalitions than the American students. The Taiwanese students also stated during the debriefing that they found the need for alliances to be obvious due to the importance their culture places on relationships. The American students only found the need after repeated game play, when they adopted the more stable coalitions used by the Taiwanese students.
- **Masculinity** – During game play, the American students were more competitive and goal-oriented than the Taiwanese students, who were more nurturing of other players. The American students were frustrated when it became apparent that the Taiwanese students were going to persist in their slow supportive play. Furthermore, the American students were more assertive in their responses to the debriefing questions.
- **Long-term orientation** – This was most clearly seen during repeated games in the ready adaptation by American students to the techniques of the Taiwanese students without a similar adaptation by the Taiwanese students to the techniques of the American students. Additionally, play went rapidly in the terminal phases of American-dominated games while Taiwanese-dominated games ended only by slow attrition. Finally, the long-term attitude of the Taiwanese students was reflected in how they expected behavior by their opponents to remain consistent from game to game, while the short-term attitude of the American students resulted in an expectation of behavioral change during play.

For these students, this theory was now supported by personal experience. The behavior of corporations from different cultures became understandable. The Taiwanese students grasped the cultural source of the more competitive, acquisitive, individualistic attitude towards expansion held by American companies entering new markets. Similarly, the American students became aware of the cultural source driving the preference for Asian companies to create and develop strategic alliances (Paik, 2005).

Conclusion

This game, in conjunction with the multicultural nature of this particular class, provided an extensive demonstration of cultural differences. Even more important, this game resulted in a discussion of the need for understanding cultural differences in our global society. As this lesson came from the experience of the game rather than a lecture by the instructor, discovering this need seemed to make a great impression on these students. Students were increasingly engaged in the exercise, and as such, applied themselves more effectively in their overall learning experience. They had the luxury of identifying and imitating during the game play. During the debriefing period, the students reflected to self-recognize cultural sources for their own negotiation styles and bargaining behavior. They also applied their insights to grasp how their cultural differences impacted their ability to work with and compete against each other. Hopefully, this insight will help them handle intercultural negotiations and businesses well in the future. Furthermore, the students identified situations in which the behaviors they exhibited during the game can be seen in business dealings today. While the learning outcomes from this game were not those that were initially planned by the instructor, the resulting lesson was insightful, consequential, and far-reaching. This is not bad for a simple game played with a few poker chips.

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References

- Auyeung, P. & Sands, J. (1996). Cognitive styles and multicultural populations. *Journal of Teacher Education*, 39(1), 2-9.
- Bonwell, C.C. & Eison, J.A. (1991) *Active learning: Creating excitement in the classroom*. ASHE-ERIC Higher Education Report No. 1. The George Washington University. Washington DC, School of Education and Human Development.
- Campbell, G.M. (2004). Using game theory to introduce ethics in decision sciences. *Decision Sciences Journal of Innovative Education*, 2(2), 229-234.
- Cropanzano, R. & Wright, T. A. (2004). The Role of Psychological Well-Being in Job Performance. *Organizational Dynamics*, 33(4), 338-351.
- Dewey, J. (1938). *Experience and Education*. New York: Collier Books.
- Franke, R., Hofstede, G. & Bond, M. (1991). Cultural roots of economic performance: A research note. *Strategic Management Journal*, 12, 165-173.
- Frazer, R. (1978) Educational values of simulation gaming. *Exploring Experiential Learning: Simulations and Experiential Exercises*, 5, 269-275.
- Hall, E. (1973). *The Silent Language*. New York: Doubleday Anchor.
- Paik, Y. (2005). Risk management of strategic alliances and acquisitions between western MNC's and companies in central Europe. *Thunderbird International Business Review*, 47(4), 489-511.
- Shapley, L. S., Nash, J. F., Hausner, M. & Shubik, M. (1964). 'So Long Sucker,' A four-person game. *Game Theory and Related Approaches to Social Behavior* (M. Shubik, ed.). New York: John Wiley & Sons, Inc.
- Shubik, M. (1972). On the scope of gaming. *Management Science*, 18(5), 20-36.
- Shubik, M. (1987). What is an application and when is theory a waste of time? *Management Science*, 33(12), 1511-1522.
- Sivan, A., Leung, R.W., Woon, C. & Kember, K. (2000). An implementation of active learning and its effect on the quality of student learning. *Innovations in Education and Training International*, 37(4), 381-389.
- Wilde, O. (1893). *Lady Windermere's Fan*. London: Elkin Mathews.