A New Take on Gamification:
Playing the Culture Shock Experience in a Digital Card Game
by
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Thesis submitted in partial fulfillment of
the requirements for the degree of
Master of Arts in the Department of
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ABSTRACT

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Abstract

In 2018-2019, over 1 million international students from all over the world came to the United States to seek higher education. Along with their hopes for quality education, they brought their own cultures. The clash of the United States (US) culture and the foreign cultures produces “culture shock,” the process of learning and adjusting to new environments. This process of working through culture shock, which can take from days to months, exposes the foreign students to loneliness, depression, and lack of belonging. International students also face challenges from language barriers, identity crises, and mental distress. To cope with the stress, they might choose to remain in their comfort zone and isolate themselves from other cultures, but this prevents them from taking full advantage of their new environment and communities. Many institutions offer programs to help students from different backgrounds to embrace diversity by hosting student groups, culture fest, and seminars. They have tried to solve this problem, but for many individuals, it is still difficult to encounter and address culture shock adequately.

This thesis analyzes the effects of culture shocks, the usage of games in empathy building, and their use as an aid in the understanding of cultural barriers. It first explores the challenges international students face and their coping strategies. It then surveys research into existing empathy-building games that have shown a positive
impact on the targeted audience. Finally, the thesis introduces a digital card game, Cultivated, which was developed to act upon these research findings and to create an experience that helps to address the issue of cultural shock. The game is also designed for domestic students to discover cultural differences alongside their international peers.

The players are asked to co-develop a new culture of communication together, to experience “culture shock” together, and most importantly to learn about each other’s cultures in real life. They do so by exploring the following five aspects of the culture shock phenomenon: language, value, symbol, norm, and ritual. This paper argues that a gamified approach to the problem, a digital card game thematized around addressing culture shock, can help tell the story of international students to both themselves and others. Playing the game can aid in understanding, build empathy, and help bridge cultural barriers.
Dedication

To my parents Haojun Yan and Zhenghui Wu, who taught me about my own culture and gave me the key to see the world.
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1. Introduction

1.1 Culture Shock, the Good and the Bad

The term culture shock was first introduced in 1960 by Kalervo Oberg. He described it as “an occupational disease of people who have been suddenly transplanted abroad”. Oberg described the six symptoms of culture shock as stress, sense of loss, fear of rejection, identity crises, anxiety from culture differences, and feeling of helplessness. Some foreigners experience it and recover from it quickly, but others remains in “a constant state of shock”. International students, who study abroad in a foreign country, often experience culture shock because of the cultural differences they experience after they arrive. While many institutions have implemented programs to help with culture shock, these programs are not adequate in bridging the cultural gap. The programs focus mainly on teaching international students how to transition into a new cultural environment. They neglect low cultural awareness from the local students. It is insufficient to only teach one side of the student population about cultural differences.

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1 Oberg, Kalervo. *Cultural Shock: Adjustment to New Cultural Environments*.
3 Presbitero, Alfred. *Culture shock and reverse culture shock: The moderating role of cultural intelligence in international students’ adaptation.*
One of the responses to culture shock is adaptation, an effort to make adjustment according to the environment demands. A positive adaptation can result in a successful experience and decrease in culture shock symptoms, but a negative adaptation can lead to low life satisfaction and low productivity. Those who are highly impacted by culture shock often limit their engagement in social activities with native students. Instead, they mostly only engage in monocultural interaction, which means socializing with people from the same cultural background. One study shows that monocultural interaction alone is ineffective in acculturation, the transition to cope with culture shock, in a multicultural country. Bicultural interaction, meaning building friendships across cultures, not only benefits in intercultural communication, but also decrease the negative effects of culture shock. Although this is a desirable outcome, however, engaging in bicultural interaction may be difficult to achieve because of intercultural biases, language barriers, and miscommunications.

According to the social identity theory, an intergroup bias, which means the misunderstanding towards different social groups, could result in activities that further increase the degree of racial and ethnic tension. Participating in ethnically oriented

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4 Presbitero, Alfred. *Culture shock and reverse culture shock: The moderating role of cultural intelligence in international students’ adaptation.*

5 Li, S. & Zizzi, S. *A case study of international students’ social adjustment, friendship development, and physical activity.*

student groups increases the tendency for intergroup biases and discrimination. However, culture barriers can be mitigated under certain circumstances. Rather than relying on intergroup connections alone, it is important for international students to build a cross-cultural understanding to help minimize the negative impacts of culture shock.

### 1.2 Games and Culture

Many people use games as major entertainments. Globally, over 183 million people report to playing games regularly for about 13 hours per week. Games are becoming a significant part of our daily lives. Jane McGonigal argues that “games fulfill human needs that the real world cannot”. For example, in the board game *Pandemic*, people take on the responsibilities of scientists to save the world from a worldwide disease. It gives the players the feelings of satisfaction when they win the game because they were capable to solve worldwide problems, at least in the terms of the game environment. Even if they lose, there is no real-life consequences. A common misunderstanding is that games are a waste of time, but they can be educational. The game, *Pandemic*, is a mimicry of the global outbreaks and it can be beneficial to those who are not familiar with or have no interest in public health.

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Games are also used in many fields including education, medical research, history, and culture studies to shape behaviors. A research shows that the use of games has helped improve children’s moral choices. Another study shows improvement in student’s learning motivation, problem solving skills and achievements. Games can be used to simulate serious situations. In recent years, serious games have becoming more prevalent in preparing people with traumatic events. For example, the police academy has been using VR simulation to build empathy in new officers. It helps them to understand their responsibilities, and their actions have strong impact on people. Games are also used to bridge cultural barriers. In the game, Barnga, players engage in a silent card game tournament. The twist is that each player follows a different rule. This causes tension and conflicts between the players. It simulates the challenges in intercultural communication.

1.3 Digital Component Overview

This project focuses on building empathy among players by presenting the experience of culture shock. Gamification, the process of adding game elements to non-game context, is an effective method of building empathy. Before deciding on using

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digital games, I considered using other methods to address the issue of culture shock. Board games usually have rich contents to help the players enter the game world. However, the production cost of board games is higher than card games. It is harder to make changes to board games as well as distribute the game remotely. Another option is to use VR (Virtual Reality) technology which is a rising new technology for simulations. Some universities have implemented VR in abnormal psychology classes to help student embody mental health diagnosis and treatments. Research shows that VR simulation help the students become more appreciative and aware of these interventions.\(^\text{11}\)

However, VR still has many instabilities in user-comfort level and due to its high cost, it is not accessible to a majority of the student body. AR (Augmented Reality), on the other hand, is a more flexible technology that could be highly compatible with the topic of this project. Many AR applications can be downloaded on cell phones for low cost and it adds layers to the existing content. In the last section of this paper, it will be explained how AR can enhance the user experience of this project. Currently, the project’s digital component is a digital card game. This form was chosen because of its relative simplicity, effectiveness, and ability to be played in a remote format. Because of Covid-19, it is unlikely institutions will be able to hold diversity workshops in person. The

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digital card game is designed to allow students to socialize on Zoom and to learn about culture shock at the same time. It is designed to be a casual but educational group activity that builds empathy between students.

The focus of this thesis project is to find an appropriate method to raise cultural awareness and specifically to address the challenges of culture shock. It is important to find a tool that will deliver the content effectively. The digital component of this project is built to support orientation and diversity workshops. The game is designed to be player among local students and international students. The desired outcome of this project is to create an experience that cultivates empathy for cultural differences and provides a space for conversations about those differences. In the following chapters, this paper will discuss the challenges international students face related to culture shock, how games can create spaces for sharing experiences, and the application of this research to the design of this project.
2. Facing Challenges as International Students

International students are “students who seek education in a foreign country”. ¹

In this paper, the term “international students” refer to the foreigners who come to the United States (US) for higher education purposes.

![Graph showing the trend of international students from 1948/49 to 2018/19.](image)

In 2018/19 there was an increase of **0.05%** over the prior year in the number of international students in the United States.

**Figure 1: The trend of international students from 1948/49 – 2018/19.**

In the past decade, the number of international students enrolled in the US Universities has increases tremendously. Figure 1 shows the number of international students enrolled from 1948/1949 – 2018/2019. In the school year 2018-2019, there were over 1 million international students in the US including those enrolled in an academic program and Optional Practical Training (OPT). ² It is clear to see the upward trend and it has remained in the same range for the past five years. In addition, more than 50% of

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the students were from non-European cultural backgrounds. At the same time, over 300,000 US students studied abroad in a foreign country in 2018/2019. Study abroad students, in this case, “refers to US students seeking academic credits as part of the academic program in a foreign country for a limited period of time”. These students become part of the international student’s population in the foreign nation. Over 1/3 of the study abroad students went to Anglo-western countries: United Kingdom, Spain and Italy. Additionally, over 30,000 US students participated in non-credit based work, volunteering, research and internships. While studying abroad is a mind-opening experience for the US students, international students often face many challenges in navigating them.

2.1 Defining Culture and Culture Shock

The word culture means “a set of rules, behaviors and characteristics followed by a group of people”. People in a culture performs certain behaviors, use certain languages and engage in certain activities. They tend to evaluate the members outside the group based on the norms of their group. The dynamic nature of culture also changes from person to person, and from time to time. It is almost impossible to describe a culture based on any member of the group because not one person can

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5 Gray, B, 2018.
represent the culture of the whole group. Culture is often misused to label races and ethnicities. Some cultures belong to certain groups of the ethnicity and others belong to multiple ethnicities. When an international student comes to the US, the student leaves a familiar cultural environment and enters into a foreign environment. The student will find cultural differences in clothing, food, pop culture, religion and other areas. It can be overwhelming for the student to decide on what to explore, what to accept and what to reject with the new information.

There are 5 elements in a culture: **symbol, language, norm, ritual and value.**

**Symbols** are “signs, words and objects that have specific meanings”. For example, flags are symbols that signal the identity of a group. Each country has a unique flag to show the national identity of that nation. **Language** is “a shared knowledge of how people communicate in a culture”. It can be further divided into verbal, written and body languages. The Sapir-Whorf Hypothesis suggests that “language influences how people understand the world”. For example, in the United States, people may say “Happy New Year”, but in China, people may say “Hope you get rich” or “New year is good”. These phrases represent how people in the culture view new year celebration traditionally, and they are passed down through generations. **Norms** are “expected
behaviors of a culture”. For example, one research study shows that drinking behavior differs in difference culture. In some cultures, consuming alcoholic beverage is a private event that should be contained and controlled. People in this culture show inhibition in expressive behavior because being drunk is less favored by the norm. But in other cultures, people have opposite drinking behaviors. It is common for people to show expressive behavior after consuming alcohol. Rituals are “ceremonies that are held on life events”. For example, different cultures celebrate wedding differently. In the US, brides often wear white colored wedding dresses to show purity, but in Indian culture, brides often wear brightly colored Sarees as a festive and religious celebration.

Values are “the moral standards of a culture to judge what is preferred and what is less valued”. In some cultures, people’s individual opinion is highly valued and celebrated. But in other cultures, the wellness of the family is viewed higher than individual desire.

Culture shock happens when an individual encounters a new culture in which one or more of these elements do not align. Research shows that “culture shock is associated with affective, behavior and cognitive process.” The affective process is “related to the stress the individual experiences when moving to an unfamiliar place”. For example, when an international student, who is used to the living style in home

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11 Barkan, S. E, 2016.
12 Barkan, S. E, 2016.
13 Barkan, S. E, 2016.
culture, moves to a new cultural environment, they are forced to learn new living styles. They are likely to feel stressed from this change of behavior. The behavioral process is “influenced by the amount of cultural related skills.” For example, the handshake is a sign for friendly greetings. If a student is familiar with this cultural related skill, the student is more likely to process the behavior faster. And the cognitive process “depends on the individual’s perception of self and the others,” which helps shape the student’s identity. For example, when the students face new culture, it causes them to question whether they should accept changes or remain the same. The impact of culture shock was not studied until in the 1960, Kalervo Oberg first identified “the six characteristics of culture shock: stress, loneliness, fear, confusion, anxiety, and frustration”. International students often experience a combination of these “symptoms”. A common response is that it is the students’ responsibility to make appropriate adjustments whether it means to accept or reject the new culture. While successful adaptation can help them achieve a high living satisfaction, an unsuccessful adaptation has the opposite effect.

Furthermore, culture shock not only affects the well-being of the students but also the well-being of the college community. Culture shock is not limited to international students, although they are most likely to experience it acutely. A research

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15 Pyvis, David, and Anne Chapman, 2005.
study shows that “most students whether local or international experience culture shock when transitioning into college”. One of the symptoms of culture shock is loneliness. Over 1/3 of all the students reported to feel moderately lonely, and over 1/2 of these students felt emotional lonely, which means a lack of intimate connection, instead of socially lonely, which means a lack of social interaction. The study suggests that students usually attended social events like parties and sports, but these relationships were often superficial. There is a lack of deeper, long-lasting friendship. In addition, international students showed higher rate of social loneliness than local students. They often lacked interactions when they first arrived while the locals already had stable friend groups. Regardless of the type of loneliness, loneliness is associated with depression and suicidal behaviors. The wellbeing of the college community depends on how local and international students overcome these challenges. Many institutions offer seminar and workshops to international students, but it is not enough to only educate these students. It is important to educate the local students of cultural differences and the effects of culture shock in order for everyone to learn and grow from living in community together.

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17 Diehl, Katharina et al.. 2018.
2.2 Language Barriers

Language is created to communicate and convey culture. Culture is also refined by the language. Many international students struggle with language barriers: “the barriers of speaking, listening, reading and writing; the barriers of slangs and culture related idioms; and a resulting lack of confidence to speak”. International students have to learn the basic skills of speaking, learning, reading and writing to communicate to local students. For international students coming to the US, the focus of this project, it is not easy to learn all the rules of the English language as it colloquially spoken. Even if international students can memorize vocabulary and study the grammatic structure of English, the US culture is more than the language. Slangs and idioms change with cultural fluidity and differ from culture to culture. When international students learn the US culture, they have to translate it from US English to their own language. Many cultural contexts are lost in the translation so that they cannot be directly translated. Although language barriers exist for most international students, they usually have different levels of English proficiency, interactions, and experiences. The common misunderstanding is that English proficiency is the main struggle international students encounter related to language barriers. A research study shows, however, that “a lack of self-perception of English competency might be the real reason why students have a

hard time interacting with others”. Students do not know their own level of English skills and often underestimate themselves. The less international students speak English with local students, the less likely they are to learn about their English level, and the more of a language barrier they will feel.

Unfortunately, neither the international students nor local students are strongly motivated to bridge language barriers. For many international students, academic achievements are more important than cross-culture learning. The more stressful they feel it is to socialize with locals, the less likely they will be to spend time in intercultural communication, or the communication between people from difference cultural backgrounds. Local students who already have established social circles may also not have a strong desire to interact with international students without motivation. It is easier for both international students and local students to remain in their comfort zone and speak the language that is most familiar to them. Communication difficulties can lead to “low-quality conversations and a lower desire to build relationships”. For example, a study focused on the interaction between Chinese international students and Australian local students found a lot of challenges in communication. The Chinese students appeared to be more overwhelmed with Australian English and demonstrated

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20 Ma, Junqian, 2020.
21 Ma, Junqian, 2020.
22 Salamonson, Yenna., 2013.
a lack of confidence to in speaking. The Australian students had a hard time understanding Chinese English and also reflected a lack of desire to speak with the Chinese students. The study also found that different communication norms are contributors to conflicts, expectations and constraints between the students from different cultural backgrounds.²³ For example, in some cultures, people speak with louder voice and use expressive body gestures which is the opposite from other cultures.

2.3 Identity Crises

Another big challenge associated with culture shock is identity crises. Identity crises happen when “a person is put into a culture that is conflicted with their own culture”.²⁴ The differences in culture causes the person to reevaluate their own identity. When international students come to the US, they lose a lot of the social connections in their home country. A lack of community creates a challenge for the students to practice their own culture. Research shows that “international students with high social self-efficacy show more capability to rebuild social network and lower acculturation of stress”.²⁵ Self-efficacy refers to “a person’s belief in its ability to manage a situation”, and it could be a protective factor against loneliness.²⁶ Students with higher self-efficacy are

²⁵ Tsai, W., Wang, K. T., & Wei, M., 2017.
²⁶ Tsai, W., Wang, K. T., & Wei, M., 2017.
more likely to “initiate conversations, participate in group activities and deal with rejections”. Students have higher self-efficacy with their native language than their second languages. For example, a Chinese student has higher self-efficacy when speaking Chinese. But when this student speaks English, a lower self-efficacy is shown. This could be a contributing factor to student’s culture shock experience and loneliness. Having a higher self-efficacy decreases the level of loneliness and feeling lonely lowers the self-efficacy level. When international students develop relationship with local students, they tend to develop higher living and social network satisfaction. But even to students with high self-efficacy, it is still difficult to maintain friendship because a strong cultural identity does not lead to a strong desire for intercultural friendship.

Many international students find their identity in nationality and ethnicity. It is common to join ethnicity related associations, such as Indian Student Association, because it keeps them connected with their own culture and creates opportunity for social network. Based on social identity theory, “members of an in-group tend to develop intergroup biases and even discrimination with the out-group”. In other words, in-group is the social circle a student is a part of, and the out-group is a social circle the student is not part of. Joining ethnicity related associations helps the students to develop strong self-identities. Study shows that international students who join

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27 Tsai, W., Wang, K. T., & Wei, M, 2017.
ethnicity related group show more ethnic activism and a sense of belonging to the community. Under some conditions, like comparative judgement of individuals within and outside the group, international students with strong identifications could have intergroup biases toward members of the out-group. Unfortunately, identifications with these groups can also increase the likelihood of developing ethnic victimization, the feeling of being discriminated based on one’s ethnicity. This is true to the local students too. For example, when a local student joins a Greek Fraternity, he is more likely to develop biases towards those who are not. Research study shows that students who feel ethically discriminated appear to have higher academic achievements. But it also increases intergroup tension and conflicts. When ethnic related association are exclusive, it highlights the different between cultural backgrounds. It is more likely for students to develop stereotypes and misunderstanding for the members of the other groups.

Metastereotype are the “stereotypes that the members of a group believe that they’re viewed through by the out-group”. 29 It is a common phenomenon among people who identity as black or white, men or women, religious or nonreligious, etc. 30 Past studies show that some international students have metastereotypes and falsely believe that the host country looks down on and underestimate them. Some students infer these

attitudes from the way their country is portraited in the host country and the way the professors talk with them. Research shows that international students who believe others view them with negative metastereotypes often struggle with self-disclosure, loneliness, and depression. They are more likely to conceal their identities, or not risk exposure to out-group members, so that they do not fall into the stereotypes or do they feel devalued. International students isolating themselves due to fear of rejection can lead to loneliness and depression.

2.4 Coping with Challenges

Culture shock, which as noted above may include cultural difference, language barriers, and identity crises, is challenging for many international students. So how do they cope with these challenges? In the midst of “fitting in”, acculturation is a natural process to cope with culture shock. Acculturation is “a bidimensional model that describes the process of preserving one’s heritage culture and adopting the main culture of the environment”.\(^{31}\) There are four strategies of acculturation: **integration**, absorbing the host culture into the heritage culture; **assimilation**, adjusting to the host culture; **separation**, rejecting the host culture; and **marginalization**, rejecting both cultures.\(^{32}\) Many researches use acculturation to predict international student’s adaptation

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outcome. One research study found that those who use integration strategies show less depression and those who use assimilations has better intercultural relationship and sociocultural competency in the host culture.\footnote{Arends-Toth, J., & van de Vijver, F. J. R. \textit{Assessment of psychological acculturation}. Cambridge: Cambridge University Press, 2006.}

Acculturation can be influenced by the intercultural interaction of international students. Research shows that international students mainly form the following three social interactions: monocultural, bicultural and multicultural.\footnote{Li, S. & Zizzi, S. A case study of international students’ social adjustment, friendship development, and physical activity. Journal of International Students. 8. 389-408, 2018.} In a monocultural interaction, international students build conational relationship with other students from the same country. Students often find a sense of belonging in this interaction and have increased satisfactions. Those who join ethnicity related associations often form monocultural friendships. Bicultural interaction is formed between international students and local students and is often challenging for non-western background students. Bicultural interaction is beneficial for positive acculturation, and it helps improving language barriers, homesickness and loneliness. Research shows that many Asian international students lack contacts with US students.\footnote{Arends-Toth, J., & van de Vijver, F. J. R, 2006.} There could be many reasons for this. One report shows that some local students did not like working on assignments with international students because of different working styles.\footnote{Li, S. & Zizzi, S, 2018.}
are many benefits to diversity including shared resources, new ideas and well-rounded solutions. A successful bicultural interaction requires effort from both sides of the student groups. Multicultural interaction refers to the relationship between international students from different countries. Not a lot of research is done on this type of interaction, but there is evidence that shows multicultural interaction offers international students’ companionship with those who share similar struggles.37

Sociodemographic variables, which includes age, gender, ethnicity, length of residency, etc., can also affect acculturation. It is debatable whether age, gender or length of residency have significant effects, but evidence shows that familiarity with the US culture is a strong factor.38 Similarly, students who have prior knowledge of the US culture have easier transitions into the culture.

A recent study focuses on the acculturation strategies of a group of Chinese students in Belgium.39 The results show that the most common strategy is integration, followed by separation. Both strategies have high identification with the home culture. One explanation is that international students usually go back to their home country after graduation, so that they want to keep the connection with their home cultures. A close conational relationship also helps the students to build a community of home culture. The study argues that many cultural values are formed deeply and cannot be

modified. Maybe that is why many international students choose these two strategies. Another result shows that students who choose integration have closer conational interaction than other groups, and those who had prior experience are more likely to choose assimilation. This is also true with language barriers. International students who are more fluent in English have stronger tendency for intercultural communication and closer identity to US students. One study suggests that students with high proficiency in English have lower conational contact because they want to broaden their multicultural experiences.40

This paper aims to point out the fact that culture barriers are challenging but possible to overcome. A recent study uses effective guided intervention to help Chinese international students with intercultural interaction.41 The results shown that students show more positive experiences when a well-structured guidance that includes shared knowledge and contradictions of both cultures is offered. This finding shows that the role of the mediators is crucial because they have the empathy to build a bridge for students from different cultural backgrounds. And empathy building is necessary for the students to become more aware of other people’s cultural backgrounds. This paper defines “empathy” as taking other person’s perspective, emotions and show an

41 God, Yu & Zhang, Hongzhi, 2019.
understanding of that perspective.\textsuperscript{42} In the next chapter, the paper will discuss how existing games are beneficial for building empathy.

3. Meaningful Games

The behavior, *play*, exists before culture was formed.¹ It is a voluntary action that is universal to humans and animals. It is not a biological or rational need. *Play* is not necessary for our survival, nor is it related to productivity, but humans enjoy playing. It happens outside of the ordinary life. It does not have any real outcomes outside of its boundary. It draws the players in deeply and forms community around the play.² All forms of *plays* are meaningful and are determined by the outcome. A meaningful play in games translates to the relationship between the player’s action and the game outcome.³ When the player’s action leads to a clear outcome, the play is meaningful and discernable. For example, when the player shoots a spaceship and scores a point, the feedback shows the outcome is positive. When the player’s action has a long-term benefit, the play is meaningful and integrated. For example, if the player destroys all the spaceships, the player will level up and receive more gold. It shows that the action of attacking the spaceship benefits the player later in the game. Meaningful play experiences are the building blocks of meaningful games because they define the player’s relationship to the game and to the action of play.

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² Huizinga, J. 2014.
In the book *Reality is Broken*, Jane McGonigal states that “a game has four components: goal, rule, feedback and voluntary participation.” The goal is the desired outcome of the game whether it is to win or to gain. The rule explains the boundaries of the game and how the players can achieve the goal. It offers clear instructions to what actions to take and the consequences of each action. It prevents player from going out of the imagined game world and provides an action plan to reach the goal. The feedback shows the player’s progress in the game. It can motivate the players to use an action or alert the player to stop the action. It also predicts the game ending for the player. The voluntary participation ensures that the players are willing to follow the rules. The player has the right to leave the game without real world consequences. In other words, game is a system with voluntary participants who are guided by the rules to reach a certain goal with the help of feedbacks. Similar to play, games may appear to be unproductive, but they have meaningful outcomes. In fact, many games involve trial and error, labor work, mind bending, and conflict resolution. Games are powerful tools to motivate people into perspective changes, empathy building and bridging barriers. 

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5 McGonigal, J, 2011.
3.1 Games as Agents for Perspective Changes

One of the reasons why people play games is to make imagined contributions to problems that cannot be solved in real life. They can become heroes within the game world. For example, in the game Pandemic, players take on the roles of leading scientists to save the world in pandemic. Every player is valued, and everyone has the power to make a change. Games not only fulfill the desire of being worthy but also awards the player’s hard work. Research shows that when people perform hard work, the positive stress that comes with it is more enjoyable than easy fun. In other words, games that requires hard work are more beneficial to our happiness than watching tv. Some examples of hard work in games including collecting items, solving puzzles, and competition. These tasks take time and skills to achieve. The positive stress comes with the hard work helps the player to be more confident in their capability to face challenges. They also become more engaged to solve problems in stressfully situations. Therefore, games can motivate players to do hard work and make perspective changes.

Games include a clear goal and an action plan. An action plan ensures the goal is reachable. A game with a clear goal but not an action plan becomes an unsolvable problem. Not all games reveal the action plan to the players, but the players know the

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goal is achievable and are motivated to get there. Once the player reaches the goal, an immediate award is presented. Whether the award is an improvement of self-worth or the world around us, the player accomplishes something meaningful in the game. It also helps the players to feel more productive with their daily life. A recent survey shows that 70 percent of the high-level executives play casual games during work to help them feel more productive.\textsuperscript{10} Casual games are the low intensity games that have low impact, low skill requirements and simple tasks. Casual games are not always easy work, but they are games with clear goals and easy action plans. Players often use casual games to destress and regain motivation in real life work. The games also allow them to see the results of their work quickly which is not usually the case in real life. They give players hope that the work they are doing is meaningful.

Although 80 percent of the game play results in failure, it does not stop players from trying.\textsuperscript{11} The term “Art of Failure” is a paradox of failing forward to success.\textsuperscript{12} Even though many players hate losing, they keep trying until they reach victory. Failure is an important part of successful game play. Research shows that positive failure creates a strong will to succeed.\textsuperscript{13} Players don’t easily give up on failure in games because there is room for improvement and the player can reach the goal by practice or better strategy.

\textsuperscript{10} McGonigal, J, 2011.
\textsuperscript{11} McGonigal, J, 2011.
\textsuperscript{13} McGonigal, J, 2011.
Games allow room for trial and error that the reality does not. Players are more likely to experiment with their strategy in games than in real world. They also display a strong sense of optimism in gameplay. When the games give appropriate failure feedback, it motivates the player to keep playing. Players can easily estimate the cost to success and their skill level. It can also help the players to set more realistic goals that are achievable. On the other hand, when the failure is unjust, players are more likely to lose motivation. It takes away their control of the outcome. It also questions the action plan whether it is really executable. The outcome in games usually do not translate into real life success, but games help the players to set realistic goals. It also helps the players to build the right amount of confidence they need to overcome the challenge.
3.1.1 Awkward Moment

Figure 2: Awkward Moment is a game about gender-biases in STEM field.¹⁴

Awkward Moment is a card game created by the Tiltfactor lab at Dartmouth College. The goal of this game to use awkward moments in social situations to reveal gender biases about women in Science, Technology, Engineering and Math (STEM).¹⁵

The awkward situations includes association of women with science, response to bias, and perspective taking. For example, questioning female’s capability in completing a task by using the phrase “like a girl”. The rule of this game is very simple: play the best reaction card to an awkward moment card. The game allows the player to take turns to be the decider for the best reaction. The feedback of this game relies on the decider’s choice. Every decider has a different judging criterion based on personal experience,

biases and preferences. The difference also helps the players to share their understanding and break any barriers of gender biases. The creator of the game uses the Embedded Design methods which “includes the information about the social problem into the game design itself”. It implicitly includes gender-bias related information into the game’s content, design and play. Research shows that showing informative statements does not change the player’s belief, behavior or emotional response. One of the reasons is that sharing information about social problem directly reinforces the viewers to contribute to the problem. For example, showing theft of wood in Arizona’s Petrified Forest National Parks increases the incidence of wood theft. Sharing information about gender-biases towards women directly run the risk of suggesting such behavior to the players. Another reason is the possibility to “trigger psychological defenses”. When players feel any violation of freedom, they are likely to shift their attention in defending the freedom and resist the information. This self-defense happens even when the information is about positive change. For example, using strong words than gentle words to promote flossing leads to more angry responses. Bias blindness is another reason why the psychological defense happens. When an individual is unaware

of the bias, it is less likely for them to accept this information. Awkward Moments uses Embedded Design to prevent defensive responses and promote effective changes that could happen using explicit content.

The Embedded Design is an effective and persuasive method that subtly introduce perspective changes to the players. The design strategy Awkward Moment uses is intermixing: mix “on-topic” cards with “off-topic” cards to create an approachable game environment. The Tiltfactor lab experimented the design strategy by mixing 0%, less than 50%, and 90% gender bias-related situation to other bias-related situations. To measure the success of this game, the players are asked to assign jobs (pilot, soldier, scientist, nursery, secretary, and teacher) to 3 males and 3 females. The players are also asked to react to 5 gender-biases scenarios. The results show that the group with less than 50% gender bias cards show the highest level of perspective taking and lowest level of prejudice towards women than the other two mixes. The group with 90% gender bias-related situation shows lower motivation to take perspective because the situations are too overwhelming to the players. The study shows that the intermixing strategy is effective in using games to promote perspective changes.

3.2 Games as Agents for Empathy Building

Empathy is the ability to understand the emotion and the perspective of others. It is closely associated with the emotion of sympathy, compassion, caring, and allyship. It is also widely used to show the ability of a game to allow the players to take perspective of others. Empathy games are a genre of games that developed to understand other’s emotions. Players not only become more aware of other’s emotions, but they are emotionally involved even after the game ends. These games inspire the players to feel certain emotions and leaves them with a call to action. Empathy games often use different types of affordances to convey the emotions. Affordances are the usability of different tools or actions to reach a certain goal. For example, if the player’s goal is to win a game, they might not seek affordances in the game to develop empathy. Instead, they will seek affordances of the actions that can lead to victory. It is very important to embed empathy building elements in the affordance appropriately.

One way to design affordance is to declare the player’s avatar in the game. The avatar is the player’s direct connection with the game world. The avatar either act as the surrogate body, an identity or a toolkit. A surrogate body gives the player certain abilities in the game. In Pandemic, the player takes on the roles as scientists and experts

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to save the world. Each role has their special skills, such as build research stations, prevent the disease from spreading, etc. The player’s skills are set and not interchangeable. A surrogate body also give the player unique perspectives. In *Keep Talking and Nobody Explode*, one player sees the bomb that is about to explode using VR headset while the other players see an instruction on how to diffuse the bomb. The two parties see and feel differently, and yet they are developing empathy for each other. The players can also view their avatar as identities. The identity stays the same throughout the game and is evolving based on the player’s action. In the video game *Journey*, the player takes on the identity of a lost sojourner who is trying to find his/her past. As the players learn more about the avatar’s story, they behave in a way that fits the avatar’s character. A third type of avatar is a toolkit that has many skills. The player is using the avatar to solve puzzles and reach victory. In the game *Gone Home*, the player becomes Katie who just got home from oversees and discovers that her sister, Sam, is missing. The player uses Katie’s ability to move around the house, pick up objects, and open doors to solve this mystery.

Another approach is to use Extended Reality (XR) in game design. The extended reality games include Virtual Reality (VR) games which put the player completely into a virtual game world and Augmented Reality (AR) games which enhance the interactivity of real world with virtual objects. VR is also called the ultimate “empathy machine”
because it can create an embodied experience in a real or imagined simulation. Many XR simulations hope to give users the opportunity to see through other people’s eye to feel other people’s emotions. The immersive game experience often makes the players feel as if they are part of the story. Instead of reading a 2-dimensional story, players can explore the scene in a 360-degree view. Players can also examine objects closely as if they were right in front of them. XR not just make players feel a certain way, but it also changes the player’s perspective in the game. Many XR games are in first person perspective and it helps the player to take on the identity of the avatar. In Enter the Room, the players view the changes of a child’s playroom in warzone through an AR device. They have to move around the physical space to see the decorations on the wall, the toys on the floor, and the child’s drawing. As the time goes by, the child’s room become less recognizable. The AR experience helps the viewer to better understand the outcome of war. Its ability to add imagined environment to the user’s real environment creates a powerful connection to the user’s emotions.

3.2.1 Sea of Solitude

Figure 3: *Sea of Solitude* is a digital adventure game about the struggle with loneliness.26

*Sea of Solitude* is a narrative adventure game designed by German Studio Jo-Mei Games to share the emotional journey of Kay. Kay, a young woman who is struggling with loneliness, broken relationships, anger and fear, becomes a monster. The goal of this game is to empathize with Kay and set her free from the painful past. The avatar’s outward appearance reflects her inner loneliness. Kay is covered with dark colored feather, has a tiny figure and bright red eyes. It is hard for the player to identify with Kay immediately because she looks very different. At first, the player might use Kay as a surrogate body. But Kay’s monologue helps the player understand her thoughts and doubts about the world. As the story goes on, Kay encounters other monsters in the game who are actually Kay’s friends and family members. The player learns from their

conversation that Kay’s relationship with them is broken. She tries to help her loved ones to overcome hardship by rewriting the past. Eventually, the player takes on Kay’s identity as they follow her emotional guidance.

Kay’s struggle with loneliness comes from her broken relationship with family. The game uses monsters to represent different characters. Kay’s brother is represented by a scared bird monster because he avoids talking about being bullied in school. Kay’s father is represented by a chameleon monster because his personality sways between raging anger and apologetic. There is a scene of two monsters fighting against each other which shows Kay’s parent going through divorce. The design choice of using surreal elements avoids the blunt references to relational problems, but the emotional representation of the problem helps those who have never experienced such pain to empathize with the avatar. In addition to relationships, Kay also struggles with self-worth. Her normal joyful personality is represented by another character, the girl who wears the yellow coat. She teaches Kay how to use her abilities and helps her to navigate the environment in the beginning of the game. But later she changes into a monster when Kay was stuck in an unhealthy relationship. She blames Kay for the breakup and stops Kay from working things out. Fighting the girl helps the player to learn about Kay’s emotional pain of self-doubt.

*Sea of Solitude* uses many other symbols to embed a real problem in an imagined world. Kay is given human-like actions, such as walking, jumping, climbing and rowing
the boat to remind the player that she was a human. But her identity has changed into a monster with unique actions like absorbing corruptive energies, shooting out light beams and throwing flames. Kay’s unique actions are connected to her emotions. When Kay is trying to take care of others, she absorbs the corruptive energy into her orange backpack. The backpack symbolizes Kay’s independence and emotional burden. She always tries to take care of others first and forgets to heal her own pains. When Kay shoots out light beams, she fights the monster and return the scene back to normal. As the player performs this action, they experience Kay’s effort to set things right. Throwing flames helps Kay to open secret passage and connect with the Girl. Another example of using symbols is in the scenery design. The scenes in the game are based on Kay’s real-world experience such as her childhood, school, and subway station. Kay mentions in her monologue that she recognizes these places and they remind of her of the past. The color of the scene also changes based on Kay’s emotion. When Kay meets a mental block, like arguments, regrets, or lies, the color black takes over the scene. When Kay solves a problem or fights off a monster, the color returns to vibrant.

### 3.3 Games as Agents for Bridging Barriers

Games can bridge many barriers including age, gender, race, social status and culture difference. They create an imaginary world that is apart from the real world. They also gave the players a new goal and a new identity. The players enter the game by following the rules of the game. This boundary that separates the players and the others
is call the “magic circle”. The boundary is not always a set space. For example, in football games, the football field is a physical boundary that separates the players and the audiences. In a game of tag, the physical boundary changes from game to game. The player’s former identity is temporally forgotten. In “the magic circle”, new identity and new mission is given to each player. In some games, the players are given plastic figures, and other times, the players become the mastermind behind the strategies. The magic happens when the players interact with game object by performing game related actions. These behaviors might seem odd for those who are outside of the circle, but they have definitely meaningful in the game. In the game Speak Out, the players have to wear a mouthpiece that widens their mouth when they read game cards. It is an absurd thing to do in the real world, but in the game, it breaks down the barrier of discomfort between players. In Charades, players have to act out a certain word or phrase by using body movements. It breaks down the barriers of verbal communication and allows the players to share their understanding of the words.

Games also connect players from different backgrounds. The in-person games allow face to face interaction, while the online games connect players from far away. The connectivity of games breaks down many barriers of social interaction. For example, online games allow players to play games at different time. A player can pick up a turn

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on *Words with Friends* anytime anywhere even when the opponent is not available at the moment. It also allows the players to connect with new people. Online games can introduce players to each other and match them with someone at similar skill level. They help bridging the barriers of time and space that many in-person games face. Games not only expand the player’s social circle but also create community for those who share the same interests. The players become a part of something together. Even when the game ends, the players are able to carry on the experience in their communities. Cooperative gaming is another example of connectivity in games. Players are on the same mission to win the game. It levels the play field so that more experienced player can help those with less experience. Players are encouraged to use their individual talents in the game. This approach embraces diversity and accepts differences in backgrounds. It also fosters an environment of collaboration and team building.

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3.3.1 Barnga

Figure 4: *Barnga* is a tournament style card game about intercultural communication.\(^{29}\)

*Barnga* is a simulation card game created by Sivasailam “Thiagi” Thiagarajan to raise awareness of culture differences. Thiagi created this game based on his personal experience of playing *Euchre* with his Liberian colleagues. Because the players came from different cultural backgrounds, they each had a version of *Euchre*. In addition, the group had problem with language barriers and communication errors. After 3 hours of trial and error, the group finally settled on a new version of *Euchre*. Thiagi realized that the cultural differences made communication very difficult for the players. In non-game settings, people might misunderstand each other because of these differences. *Barnga* was created to simulate the difficulties in intercultural communication and the culture barriers. The game is suggested to be played as part of the first-year seminar in college.

When new students first arrive at the university, they might feel challenged by the new culture. By playing the game, students learn about different communication styles in the new college environment. They also form discussions about how to overcome this challenge with effective communications.

*Barnga* is best played among 20 students who are divided into 5 tables. There are facilitators at the game to help reinforce the rules and give out instructions. At each table, players are given the rule sheets of the card game, *Five Tricks*, individually. The players are told to read the rules. Once the players understand the rules, the rules are taken away, and they play 1 round of *Five Tricks*. The winner of each round moves to a new table. The tournament goes on for a few rounds until the facilitators end the game.

One challenge in the game is that the players cannot speak or write any words during the games. The only way to communicate is by hand gesture or drawings. The other challenge is that the rules at each table is slightly different, and the players are not aware of it. During the game, the players might show signs of silent arguments, confusion, and frustration.

The second part of the game is a three-part guided debrief session. In part one, the facilitators guide the players to discuss about their feelings about the games. The players are encouraged to speak about their emotional changes throughout the game. In part two, the players are asked to discuss the major issues of this game: different rules, communication types, understandings of things. Players are also asked to relate the
game experience with real life situations. In part three, the players are asked to write down one major take away from this game on a card. The cards are collected and randomly distributed to the players to help player reflect on the game. Although the game encourages the players to win as many rounds of *Five Tricks* as possible, it is not fair to use it as the measure of success for breaking cultural barriers. Instead, the game surveys players’ ability to cope with culture difference, maintain a positive relationship and improve on the game skills. Research found that the players go through these stages in the game: experiencing, interpreting, reflecting and experimenting. The first experience of the game helps the player realize that not everyone is following the same rules. In this stage, the player might feel confused or frustrated. Players move to stage two to interpret the meaning of other players actions by communicating with drawing and body movements. In stage three, the player reflects on other player’s responses. Finally, the player forms a new understanding of the game and experiment with new strategies. The game *Barnga* successfully raise the player’s awareness of cultural barriers. It also be used to train players to develop effective communication.

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4. Cultivated, a Digital Card Game

*Cultivated* is a digital card game that invites the players to experience culture shock and intercultural barriers. It is inspired by the simulation game *Barnga* to create a turn-based card game. The major difference is that this game explicitly uses different types of communication to represent the struggles of culture shock. The game shares information about culture shock and encourages players to discuss about culture differences. Similar to *Awkward Moment*, this game uses Embedded Design to include implicit content about culture shock. The game does not explicitly mention the word “culture shock”, but it uses the communication rules to help the players take the perspective of international students. Another design strategy is adopted from *Sea of Solitude*. The drawings on the game cards give visual representations of the interaction between international students and local students. These drawings help the player build empathy with international students.

*Cultivated* can be played by 4 college students who are attending a virtual diversity workshop. The digital game allows the players to participate remotely using video chat to communicate. If the player is able to meet in person, they can also play the paper version with slightly different rules. The game is designed to be played digitally so that it can include students remotely. In early 2020, a pandemic spread throughout the world which forces many higher educations to move to remote learning. To cooperate with the transition of online learning, *Cultivated* uses online resources to create
a fun, educational digital game for students who are unable to attend in person workshops. It aims to provide an aspiring experience for university students in intercultural learning regardless of their physical situations.

4.1 Game Overview

The setting of the game is a newly discovered island. The island has never had any civilization or cultural development. The 4 players are the first group to set foot on this island. Before the game starts, they meet cultural expert Dr. YoungBerry, the game coordinator, who is the played by a facilitator. Dr. YoungBerry’s role is to observes the gameplay, which should take about 50 minutes, and lead a 20-minute debrief session at the end of the game. Dr. YoungBerry explains to the players that it is their responsibilities to collect the 5 cultural elements and create a new culture for the island. The 5 cultural elements including: language, norm, value, symbol and ritual. There is a limited amount of resources in the game, so players must communicate with each other and share the resources. The challenge of this digital card game lies in the communication rules, which change throughout the game. For example, some rules only allow the players to communicate verbally and others requires the players to only use the “chat” function in video chat. The reason behind this design element is to simulate the difficulty of communication when experiencing culture shock and language barrier. Once a cultural element is collected, an element related question is prompted to all players. The players must take turns to answer this question in order to proceed the
game. For example, a language related question is “what is a slang term in your culture that is often misunderstood”? The goal of the questions is to help players relate to their daily life. It also allows the players to share their personal experience. It might even break any misunderstanding between the players about certain cultures. Once all 5 cultural elements are collected and all the questions are answered, the game ends. Dr. YoungBerry guides the players through a debriefing period. The players are asked to share their experience with the game before and after the goal of the game is explained to them. The players are also asked to think of scenarios that can help them apply what they learned.
4.2 Game Design Process

Figure 5: Paper prototype: the players build new cultures in an imaginary island.

The game design process went through many iterations. The first version of the game was a paper prototype. In this version, different types of element related question were tested, such as “what languages do you speak”, “how does your culture celebrate birthdays”, and “how you ever traveled abroad”. The player test showed that these questions were insufficient in intercultural communication. Many test players had similar cultural background, so it wasn’t able to build empathy related to culture differences. Another interesting design was the physical representation of the island and
the communication rules. Every time a new communication rule is added, it becomes the
mountain shaped cards that is added around the island. The play test showed that
adding physical representation did not help with the game play. The communication
rules were hard to read because they were folded in such way. But the overall idea of an
island was helpful to separate the players from the real world. In this version,
communication rules were also tested. One of the rules was “players must hold hands
when communicating.” The rule was controversial because it introduces a high level of
discomfort but also causes other barriers in gameplay. One test player said the rule was
very different from the US social norm, and players may not follow this rule because it
was uncomfortable. Therefore, this rule was taken out of the game.

Figure 6: Digital card game in Unity.

The second iteration improved from version one and transformed it into a digital
card game in Unity. It was an offline game that is played on 1 player’s computer (Figure
6). The upper half of the image showed the game progress: number of new cultures,
elements collected, and the card played. The lower half of the image showed the current player’s cards. The image showed that player “a” had “1 culture card, 2 language cards, 5 norm cards and 3 symbol cards”. Player “a” just performed action to collect the element “value”, and an element related question was prompted to ask the players to “rank the following terms based on your family value and your own value: family, friends, work, religion”. When player “a” finished a turn, the next player performed actions. This version was test played with video chat where 1 player controlled the application and shared screen with others. The other players told that player verbally what to do on their turn. Version one was designed to play closed handed where players do not share their cards with others. In this version, all players could see each other’s cards. The technical constraint changed the game play and player’s interaction. The other challenge was that the island could have multiple communication rules. The players must be able to follow all the communication rules regardless what type they are. The idea was to create an overwhelming feeling of learning cultures. Figure 6 shows the multiple communication rules on the upper left of the screen. What I learned from this version is that the chaos of multiple communication rules distracted player from understanding culture shock as the main point of the experience. There was also inconsistency in understanding rules amongst the players.

The third iteration of the game focused on A/B testing to improve communication rules. This version only had 1 communication rule on the island at a
time. It also went through a rigorous game testing to find the length of the gameplay. The participants were divided into test A and test B. In test A, players drew a new communication rule in the beginning of every round (a round is when everyone at the table takes 1 turn). In test B, the communication rules were mixed with the drawing cards. When a player drew a communication rule, it replaced the old rule and became the new rule. The result showed that test A’s method to have 1 communication rule per round is preferred because it avoided drawing too many communication rules in a row. See Appendix for more detail.

The final version of the digital game has only 1 communication rule per round. At the beginning of the round, a new communication rule is shown to the players. The players must follow this rule when communicating. Each player has 1 action per turn to draw an element card, give an element card to another player or collect an element. Once all the players have taken their turn, the round ends and a new communication rule is shown. The user interface is very similar to version two with the upper screen showing game progress and the lower screen showing player’s cards. In the following sections, I will explain the design for communication rules, element cards and player actions.
4.3 Communication Rules

![Communication Rules Image]

**Figure 7**: The communication rules are divided into verbal and typing communication.

The communication rules are designed to replicate some of the culture shock challenges international students face. They are by no means mocking or devaluing culture shock but helping the players to experience it in a game form. At the beginning of every round, a new communication rule is displayed on all the players’ screens. It will show the type of communication: speaking or typing. Because the players are using video chat, it will be technically challenging to include body language or written language, which is why these two options were chosen. The rule also includes a limitation such as “people keep the camera off for this round”. Players can only use the type of communication that is given during the round. The following paragraphs will explain the design thinking behind each card.

In Chapter 2, we looked at different aspects of culture shock, language barriers and identity crises. The game uses communication rules to show the difficulty in culture
shock through communication. The rule “people speak with 3 words per sentence” is a representation of barriers of vocabulary limitation. International students who usually do not speak the same native language or understand the same slang as the local students. The limitation of vocabulary is a big factor of miscommunication. International students might use very simple sentence structures and common words in conversation. This is easily associated with devaluation of the student’s intelligent level. Many international students appear to be more reserved in group discussions. Part of the reason could be their culture background prefers poised over expressive behavior, but the other reason could be they are struggling with language barriers. As indicated in the earlier chapter, research shows that language barriers do not necessarily mean low English proficiency. However, the international students often lack confidence in their English level and are hesitant to speak. The game is designed to help them break through this limitation in a fun and structured setting.

Similarly, “people cannot use the word ‘language, value, norm, symbol or ritual’ in speaking” is forcing the players to describe the word. Many international students understand the meaning of a word but have a hard time finding the right word to describe in English. The translation between English and another language are not always accurate. For example in Chinese, the word “鲜美”(xian mei) is often used to describe a dish that has lots of flavor, full of aroma and very pleasant. It is often used on well-cooked seafood or bamboo shoot. Unfortunately, English does not contain a word
that has the same meaning. Therefore, students have to describe the word for others to understand. Following the rule, players have to describe or replace the words for successful card exchange.

The rule “people talk in sentence structure ‘Object-Subject-Verb’ (e.g. Card, I want.)” is also designed to simulate language barrier. This sentence structure is inspired by Yoda, a character from the movie Star Wars series which is a huge hit in the US. He is famous for his Jedi arts and his way of speaking. Unlike English which has the sentence structure “subject-verb-object”, Yoda speaks with “object-subject-verb”. This is designed to make him more alien-like, but this design could also be applied in the game. There are some real languages like Japanese that follows different sentence structure than English. Players will have to form a sentence in their mind and change the sentence structure to fit the rule. For international students who are less familiar with English, they might have to go through the struggle with grammar and syntax; this game creates that experience for everyone together.

Another rule “people type with pig Latin (e.g. language -> anguagelay)” is designed for the same reason. Pig Latin is a kid’s game that moves the first letter in the word that is not a vowel to the end and add “ay” after it. This rule highlights the challenge of spelling and English language. It also shows the barriers of slangs and idioms. Pig Latin is unique to the US English, and international students who are unfamiliar with US culture probably will not understand this reference.
Culture shock also relates to the difference in norms and values, and there are some communication rules in the game that reflects this challenge. The rule “people say yes/no, ma’am/sir instead of yes/no” is adopted from the southern culture in the US. Some international students have similar cultural background that they speaking to the elderly or authority in a certain way. Others who have not experienced such culture might find it uncomfortable. This rule is not to cast a judgement on either culture but to show the influence of culture on communication.

Another rule to show culture shock in norms is “people keep their camera off”. It is designed to create barriers in face to face communication. International students are likely to have different norms in conversation than the local students. Some are more reserved and indirect while others are more assertive and informative. Their comfort level and language barrier can also influence their interaction with local students. When the players turn off their camera, a lot of the facial expressions and social cues are missing. This simulates absence of effective body language and the players must rely on words and tones to communication.

The rule “people say ‘how are you’ every time they speak” is design for similar reason. In the US, people usually greet with “how are you” and this might be misunderstood by international students. The meaning of the phrase changes based on the conversation. With strangers, it is likely used as a greeting, but with close friends, it probably means the “how are you actually doing”.

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On the other hand, the rule “people only type with emojis” is an exaggeration of slang. Both emojis and slang are closely related to the symbols of a culture, and they can be misinterpreted easily. They are also strongly affected by the internet culture. International students might use different emojis to express the same feeling from the local students. For example, the smiley face emoji could simply mean happiness in one culture but sarcasm in another culture. Depending on the context, the emojis and slang could have different meanings. It is important for the students to keep an open mind that the others might have misunderstood them.

The rule “people applaud when someone finishes speaking” is a reflection of how social norms could affect communication. In the US culture, people are expressive about feeling and emotions. It is common to applaud after a speech or presentation. But in some cultures, being in the spotlight could be very discomforting or even humiliating. The goal of this rule is recreating the experience. For some players, it might feel funny to clap, but for others, it could be very discomforting. It becomes a challenge for the players who want to speak but are uncomfortable with the rule. It even raises the question of whether to conform to a culture even when you dislike it, which could become a topic of discussion amongst the players later.

Lastly, the rule “people only send direct messages to one player” represents the lack of conational friendship in college students. It is up to the players who to send the message to. Once they selected a player, they can only communicate which that player
for the rest of the round. This rule also symbolizes the issue with culture barrier that people are less motivated to socialize with the out-group. Even if the players are from the same culture and ethnicity background, biases can still exist based on age, gender, social status, geographic location, etc. The players who were not contacted might feel neglected or excluded from others. It could create assumptions and misunderstandings within the group.

4.3 Element Cards

Figure 8: Element Card including the definition of an element.

The element cards represent the 5 nonmaterial cultural elements that make up a culture: language, norm, symbol, value, ritual. In Chapter 2, we have discussed what each element means. In this section, we will dive into the functions of these cards. The element cards are also called the drawing cards. They are the keys to use communication rules and to collect cultural elements. Players collect and share element cards because
there are limited number of cards. This forces the players to apply communication rules. The element cards also allow the players to collect correlated cultural elements. For example, use “language element cards” to collect the “language element”.

The idea of a cultural element is very abstract for the players to understand in a short game, so the cards all include element related drawings.

![Image of two students having a conversation]

**Figure 9: Language Card drawing shows two students having a conversation.**

On the language cards, a drawing of two students having a conversation. One student uses a slang and the other student is confused of what it means. This drawing is to help the players understand that language barrier is a big part of miscommunication. It also gives a definition of the element “language” to help them answer element related question later in the game. The language related question is “what is a slang from your culture that is often misunderstood?” The goal of this question is to help students realize that even words or phrases that sounds common in their culture could cause misinterpretation for someone from another culture.
Figure 10: Norm Card drawing shows two students at a formal event.

On a norm card, a student wears a traditional Chinese dress to a formal event. The other student a western style evening gown. This card is to show that different culture has different social norm. For one student, the Chinese dress is a formal attire in her culture and the other student is following her own culture norm. We should respect different social norms from different cultures even if they behave or dress differently. It is appropriate to wear something that fits the occasion and represents the cultural background. The norm related question is “what is a norm that is unique to your culture?” This question helps the students to see that some norms are unique to specific cultures. Students may discover that a behave that is normal in one culture is less popular in another culture.
Figure 11: Value Card drawing shows different value in lifestyle.

The value element in this game refers to the culture value of what is more desirable, like family or personal interest. The value card shows a drawing of a student who is studying at the library past midnight and two students who are hanging out. This scenario shows the value difference of prioritizing studying or socializing. Both values are important to live a healthy lifestyle. The goal of this card is to show different culture have different value on work-life balance. The value related question is “Rank the following terms based on your own value and your culture value: Social, Work, Religion, Family.” Students may discover their own value is different from their culture background. They may also learn to take the perspectives of other students.
The symbol card shows two students holding two different flags. Symbols can have physical or abstract representations. In this scenario, the flags show different symbols. Sometimes different cultures use the same symbol for different meanings and that can cause miscommunication. Symbols can also be used in specific culture environments that are hard to understand unless you are raised in the culture. The symbol related question is “What is a symbol that others use to represent your culture? What symbol would you use to represent your culture?” This question helps the student to compare their own understanding and other people’s understanding of their culture. Symbols can also be hurtful to people from certain cultures. For example, association of culture with stereotypes is disrespectful to people from that culture.
Figure 13: Ritual Card drawing shows two kinds of celebration.

Rituals are often related to holiday celebration and religion. Rituals are the ways people from a culture celebrate important events. The ritual card shows an image of two holidays: one is celebrating Christmas and the other is celebrating lunar new year. These scenarios are to help the students understand what the word “ritual” mean in the culture setting. The ritual related question is “What is your culture tradition to celebrate coming of age?” Different cultures have different age range for adulthood. It helps students to learn about other culture celebrations.
4.4 Players Interactions

![Action Reminder Card](image)

Figure 14: Action Reminder shows the 3 actions a player can take.

*Cultivated* is not a competitive game but rather the goal of the game is to form collaborations. Players are called to work together as a team to share resources. The element cards have limited numbers. At some point of the game, the players must realize that the only way to win is to work as a team. It is a good strategy to give cards to the players who are closer to collecting elements. For example, if player A has 3 language element card, and player B has 1 language element card, player A and B may both want to share this information with the team. If player A decide not to share, none of the other players will be able to collect “language”. It is also important to remind the players that each element can only be collected once. This rule helps the team to know their process and the limits to their resources.
On each turn, players can choose from three actions: draw a card, give a card or collect an element. Draw a card allows the player to gain new element card. This action symbolizes the dynamic nature of culture that it can be accumulated. US Culture in the 21st century is drastically different from the culture in the 20th century. War, location, technology, globalization and the internet all played a big part in crossing culture. International students who are from another country might speak a different language or celebrate different holidays, but they can still find lots of commonalities with the local students. For example, sports are a popular topic globally and this interest can be shared regardless of where you are from.

The action to give a card allows the player to give an element card to another player. This is a crucial part of the game because the players have to communicate with each other following the rules. One player has to express the need of a card and the others have to decide to offer help. It is a practice of teamwork and sharing of knowledge. When international students are struggling with culture shock, they might ask for help from local students. A lot of times, international students do not share this struggle with locals because they do not think it would be understood. The more they keep to themselves, the less likely will either group build empathy for one another. In the game, players are reacting the scenario of an international student asking for help with the culture and another student shares the culture.
The last action a player can take is to collect an element. In order to collect, one of players must play 4 of a kind of an element card. For example, to collect the “language” element, the player must play 4 language element cards. The team will then answer an element related question, such as “what is a popular slang in your culture that can be misunderstood”. The goal of this exercise is to allow players to share their culture background. It is likely that most of the players in the diversity workshop are US students with similar culture background, so the questions are designed to have deeper conversations with their own culture. The questions are also relevant to the culture element. For the element symbol, the question is “what is a symbol that represent your culture.” This question helps the player to think of their hometown, their identity, and their interests. Even if the students are all local, they might have very different backgrounds. The point is to give students a chance to talk about themselves and raise culture awareness. It might also help them to break any stereotypes they have on each other. Once the players all share their answer, the cultural element is collected.
4.5 Programming Process

The project is created using Unity and C# scripts. The main components in the programming process include the data structure, multiplayer networking and user interface. *Cultivated* started off as a local card game that stores all the player information in one local machine. Each player’s information including player name, cards, and active status are all stored in a “ScriptableObject” called “Player”. The “ScriptableObject” is a Unity object that stores data. When players join the game, they are asked to type their names, and a “ScriptableObject” is created automatically for each player and saved into
the local game. When the player draws or plays a new card, this information is updated in the player’s “Player” object. To keep track of all the “Player” objects in a game, a “GameManager” object is created. It is also used to track the player’s turn, drawing cards data, elements data, game progress and feedbacks. When a player performs an action, like collect an element, the “GameManager” checks whether the player has enough cards. If so, the “GameManager” checks if the elements have not been collected. If so, it will prompt all the players to answer element related questions. If the player breaks the rule, the “GameManager” will use feedback to help the players. All the data
in this game, such as Player, Card, Element, is created with “ScriptableObject” and then stored in a “List” Object.

The online version of the game Cultivated uses Mirror package to enable multiplayer networking. The Mirror package allows the project to create a game shared among players. They do not have to use the same network. A “NetworkManager” function is created to control the connection between the player and the server. Everything that is a part of the game, like user interface, data, and feedback, are sent from the server, so it is synchronized between players. For example, if an element is collected by player A, this information is shared with all the other players. The player (the client) can use actions, like draw a card or give a card, to communicate with the server. The server will judge the player’s action with help from “GameManager” and give appropriate feedback to the player. If the player’s action is valid, it will update the data in the server.

The user interface component is achieved with the help from UI package and TMPro package in Unity. The game board uses UI components like Canvas, Button, Input field, and Image to create a user-friendly interface. The TMPro package also helps to create unique font type for the game. To connect data structure and multiplayer networking, a “HUDManager” is implemented in the game as the bridge connects front end and back end development. For each data structure, a UI game object is created to represent it. For example, a game card is represented by a rectangular game object with
a card image. Each UI object is connected to the data by object ID. In the game, the upper part of the user interface includes the progress of the game: the current communication rule, the collected elements and the active player. The lower part of the user interface includes the player’s cards. During the game, only the active player’s lower UI is interactable. The active player can use button to draw a card or give a card by dragging it to the upper UI. The other players cannot see what the active player is doing unless they follow the rule to communicate. For example, if player A gives player B a card, the UI object for the card is destroyed on player A’s screen and the data is removed from player A. Player B will see a UI object for the card on the screen and the data is added to the player B. When the game is won, the “GameManager” will notify the “HUDManager” to show the scene for victory. It will block all the other player input and show a line of words congratulating the player.

4.6 UX and Graphic Design

The user experience design of the game includes game logic testing and digital wireframing. Paper prototypes are first used in this project to test the game logic. The game components are printed along with game instruction. The players test played the game with printed cards. Usability tests were conducted both in person and online to test the playability and meaning of the game. This process helped in correcting the form of communication rules. It also helped study the player’s engagement in the game. The digital wireframing process is created using Figma, a digital tool that helps with UI
design, prototyping and information architecture. This process uses simple shapes and color to represent the overall structure of the game. The main color scheme is black, white and grey. Button and images are represented with rectangles and circles. Both low and high-fidelity prototypes are created in wireframing. The low fidelity version tests the major functionalities of the game: enter the game, draw/give/collect actions, game progress and winning. The high-fidelity prototype includes detailed for each functionality and the transition between them. These designs form the basic design foundation for the digital component. They are low cost and modifiable. The information architecture is created with Google Sheets. All the data of cards and elements are stored and organized in the csv files. They are loaded into the Unity Engine and given to each data structure. The multiplayer networking also helps separating the data for the server and the player (the client).

**Figure 17:** Mockup created in Figma. This figure shows the view of a player.
Another piece of UX design is the debriefing period of the game. At the end of the game, the players are invited to have a 20 minutes guided conversation about their experience. The facilitator of the game will give guiding questions like “How did you feel about communication rules?”, “What did you learn about other people’s culture?”, and “How can you apply what you learned in your everyday life?” These questions are designed to help players to reflect on their game play. It also helps the players to realize that culture shock is impactful and sometimes difficult for some students. The hopeful outcome is that the students will be more mindful when they see other cultures. They will choose to respect and learn about other cultures. This process also helps the facilitators to take notes on the game progress. In a way, the debriefing period helps to test the playability and meaningfulness of the game.

The graphic design contains two parts: mockup and artistical design. The mockup is created by the author to determine the information on each card. On the communication card, it shows the communication rule in the format of “People only speak in the culture and they say 3 words at a time”. All the cards specify the type of communication (speaking, writing, typing, drawing or body language) and the rule
Figure 18: The design of the information on communication rule cards.

(limitation of the communication). To distinguish the different types of communication, each type has a logo and distinct color. It saves the player’s mental capacity and helps the players to follow the rules. The element cards have a drawing of element, the name of the element, and a hint that reminds the player to collect 4 of a kind for an element. The drawings on the cards are designed specifically to represent the elements. For “language”, the drawing shows a dialogue between two students. One says, “what’s up”, and the other student acts confused. This design shows that language barrier is not only English proficiency level but also related to culture. On the “norm” card, a drawing shows that at a formal event, one student wears suits and one student wears a traditional Chinese dress. It shows diversity and inclusion in norm. The “value” card shows one student studying late at night and one student hanging out with friends. The goal is to show differences in value. Some students value studying over social life, vice versa. The “ritual” card shows at graduation, one student celebrates Christmas and
one student celebrates lunar new year. Ritual represents the differences in holidays and celebration for events. The “Symbol” card shows a drawing of 2 students holding flags that represent different symbols. The point of the drawings is to help students understand the meaning of each cultural element. It also helps them to find daily activities during college that is influenced by culture differences. All the students on the drawings have different background, hair color, culture, and race. It is designed to represent the diversity of students in college.

The artistical design is created with the help of Robin Yeh, and her role is to create the color theme, drawings, typography, icons and art style for the game. Robin used her artistic skills to turn the ideas of mockup into colorful graphics. She created the color theme of the game to be vibrant: green, orange and brown. Her drawing style is also casual, simple and authentic. More details can be found in Appendix.
5. Conclusion

_Cultivated_, the digital card game, address the challenges international students experience with culture shock. It is a game about discovery, collaboration and empathy building. It allows those who are not familiar with culture shock to learn about it in a casual setting. It also helps those who are impacted by culture shock to share their experience. Although the game is light-hearted, the negative impact of culture shock should be taken seriously. The game uses Embedded Design to address language barriers as well as identity crises. In the game, the players follow the communication rules and face the discomfort of miscommunication. They also learn about the five cultural elements: language, norm, value, symbol and ritual. The drawings on the cards are designed to clarify the meaning of each elements. It helps the player to understand culture shock is relevance to their daily life. During discussion, the players share their personal experience related to the five cultural elements. Players might discover new perspectives on culture and form an understand of diversity.

The digital game also breaks the barriers of time and space. Players from different location can join remotely. In addition, it allows more players to play the game at the same time. The game can be distributed through online resources. It increases accessibility that the players with visual or audio impairment can join this game with appropriate modification to communication rules. For example, instead of having a visual user interface, it could be modified to audio user interface or even touch user
interface. The game is very flexible in its form. In a future step of development, the game could use Extended Reality (XR) to enhance the design on the game cards. The drawing of each cultural elements could be represented in 3D models and animation. The players could interact with the avatars in the game to learn about each element. XR could also help the players to represent their own culture with images and avatars. The players would not be limited to their verbal description but have the ability to show the culture.

Another challenge is finding the balance of discomfort and fun. The current version of the game has a low discomfort level because it is designed for diversity workshops at college. It is a delightful learning experience, but it lacks in exposure of the negative effects of culture shock. There are a lot of dangerous consequences to culture shock, as chapter 2 explained, such as depression and anxiety. The game is designed to fit into a 50 mins long workshop that also relies on additional communication about these issues, so it eliminated many potential discomforts in favor of a more lighthearted tone. In a future version, the project could also focus on including game elements that have stronger impact on the player in a limited time frame.

Future development for the project might also focus on play testing the game with a guided debriefing session. The testers would focus on the communication rules specifically designed for video chats. The tester would observe the player’s interaction with each other, the accuracy of using the rules and the usability of the user interface. The tester would also follow the debrief guideline and take notes on how well the
players responded to learning about culture shock, what were the takeaways and how the guidelines could be improved.

Another area to explore could be using different game mechanic to address these issues. This project experimented with a collaborative digital card game, but it could include other types of game mechanics, like competition and randomness. Including other mechanics would require additional usability testing and prototyping. The project has had limited time and resources for the current version. The current version is designed to be understood and played only once, so it was necessary to create a simple game. But in the future, the game could add expansion packs to increase the playability and complexity for those who want to explore more experiences of culture shock and its effects.

This project aims to raise culture awareness among local students and local communities. Whether the educational process is taking place online or in person, the race to increase intercultural communication and bridging barriers between local students and international students must keep going. I hope that this project will help build global community even as we struggle through a worldwide pandemic.
Appendix

Cultivated Game Rules

Dear future residents of the new island,

Welcome to the game Cultivated! First, let me congratulate you on joining this adventure to restore the culture of the lost island. As top researchers and explorers of the world, you will work together as a TEAM to collect all five culture elements: language, norm, symbol, ritual, and value. Remember, the key to your success is COMMUNICATION. Now, follow closely to the instructions below. Good Luck!

Dr. A.K. YoungBerry

Cards:

Communication cards: have symbols like , , for verbal, body and written communication. Players must only use the type of communication that is on the card (e.g. “People only say 3 words per sentence” and only verbal communication is used).

The drawing cards are labelled with elements: language, norm, value, symbol and ritual and should remain closed handed to each player.
**Instruction:**

Use the *Game Sheet* to keep track of game progress. Fill in the “Island Data”.

1. Each player has 1 action per turn: draw, give, or collect.

2. A player can only give 1 card to another player per action.

3. To collect a culture element, a player must display 4 cards of an element, and all players must take turns to answer element related questions on the *Game Sheet*, and then the element is collected.

4. The game ends when the team collects all 5 culture elements, and each element can only be collected once.

5. In the beginning of every round, player 1 discards the old communication card and draws a new one. This is visible to all players and becomes the new communication rule for the table. Then player 1 takes a turn followed by the player to the left.

6. **Finger pointing is absolutely forbidden at all times!**

7. Make sure everyone has an action reminder, a pen and paper.

8. Each player can only see their own drawing cards.

9. Remember, you are a team! Good luck!
**Visual Table Set Up**

*The gray colored cards should be shuffled and face down

**Game Sheet**

Island Data:

Name the island: ________________________________

Player 1: ____________________

Player 2: ____________________

Player 3: ____________________

Player 4: ____________________

Cultural Elements (communication rules do not apply here):

Language: What is a slang in your language that is often misunderstood?
Norm: What is a norm that is unique to your culture?

Symbol: What is a symbol that represents your culture?

Ritual: What is your culture to celebrate new year?

Value: Rank the following terms based on your family value and your own value:
family, friends, work/school, religion

Game is won when all five elements are collected!

**Game Playthrough**

Below is an example of the digital card game played by four players: Anni, Sarah, Alex and Yuki. The players will open Zoom or any video chat program of their choice. The current version is a local game meaning one of the players is the host who will open the game and share the screen with the rest of the players.
Once the players all enter their name, the game starts. At the beginning of the round, a new communication rule is displayed which says, “people cannot use the word ‘language, norm, value, symbol or ritual’”.

All the players must follow this rule when they communicate in the game.
It is Anni’s turn, so she decides to draw a card and it is language. Sarah, Alex
and Yuki all took turns to draw cards. A few rounds of drawing cards, Anni found that
she has a norm card that Sarah needs to collect 4 elements. So Anni decided to give her
card to Sarah on her turn.

She gives the card to Sarah by dragging it over Sarah’s name and the turn ends.
A few more rounds later, Yuki found that she now has 4 of a kind for the language element, so she decides to collect it by dragging it over the “CULTIVATED” area.
A prompt shows up with the language related question: what is a slang in your language that is often misunderstood? All the players take turns to answer the question. Once all the players have finished answering, the host player clicks “All Answered”.

The game continues as a new communication rule is draw which says, “people type in pig Latin (e.g., language -> anguagelay)”. All players must only use the type function to communicate in this round.

The game ends when all five culture elements are collected.
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