Journal of Education and Learning; Vol. 12, No. 1; 2023
ISSN 1927-5250 E-ISSN 1927-5269
Published by Canadian Center of Science and Education

What Abilities Does Business Simulation Cultivate College Students

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Received: September 5, 2022 Accepted: November 12, 2022 Online Published: November 23, 2022

doi:10.5539/jel.v12n1p29 URL: https://doi.org/10.5539/jel.v12n1p29

Abstract

With the popularity of business simulation in universities, there is a crucial question of what abilities the students can get from the business simulation. In this study, using qualitative research methods, we studied 71 students who had engaged in a business simulation called Global Challenge. Through three-level coding analysis of students' course reports, we induced and refined five abilities that students would get from business simulation, which are strategic decision-making, competition and cooperation, analysis and judgment, communication and team spirit, and learning by doing. Further, we in detail explained these abilities based on behaviors and performances of the students in simulating. The main contributions are the following: First, it provides insight into the abilities and matching behaviors and enriches research on the learning effectiveness of business simulation from the perspective of ability. Second, the study combines the advantages of qualitative research methods and quasi-experimental design. The results not only extend and deepen our understanding of abilities trained by business simulation but also have value in guiding the practice of business simulation.

Keywords: business simulation, decision-making, ability, college student

1. Introduction

In 1956, the first business simulation system-Top Management Decision Simulation-was designed by the American Management Association and used in management seminars (Hodgetts, 1970). The simulation was adopted by the strategic management course at the University of Washington in the following year. Since then, business simulation games have developed quickly. Different types of games developed by corporations, industry associations, educational institutions, or government agencies have continuously appeared (Greenlaw et al., 1962). In 2004, an email survey of 1085 professors at North America University Business School showed that 30.6% of professors were adopting business simulation teaching and 17.1% of professors ever had experiences of using business simulations (Faria & Wellington, 2004). As a promising teaching tool, business simulation has had remarkable improvement and outcomes that business simulation has changed from a supporting role to a leading one in many universities.

With the popularity of business simulation, a priority task is how to take advantage of the effectiveness of the simulation. Therefore, what effective results students can get from simulating becomes the most concerned topic of business simulation for practitioners and researchers (Hallinger & Wang, 2020). Business simulations have many effective results of learning. It helps students understand the basic knowledge in business subjects; it can improve abilities, including human skills, basic analysis, critical thinking, problem-solving and decision-making, etc (Anderson & Lawton, 1997; Clarke & Clarke, 2009). Meanwhile, Anderson and Lawton (1997) revealed the instructor regarded the simulation as the auxiliary part of the course rather than the main course. Therefore, why we contributed the learning effectiveness to business simulation, not the other part of the course? Second, the behaviors and skills we regarded as the results of business simulation might be broad, so why do we attribute them to business simulation? Gosen and Washbush (2004) reviewed relevant research on the effectiveness of the experimental approach including both computer-based and human-based forms of simulation. They found that many empirical research results had validity, but the research with such results mainly reflected a long-term tendency. They both further argued the relevant conclusions of the effectiveness of simulation teaching are just temporary. Kriz and Auchter (2016) provided a logic model to evaluate the effectiveness of the startup simulation game used in university courses. According to questionnaires of 12521 participants in the years 2007–2012, they found an increase of entrepreneurial competencies through the simulation game.

It is late time for Chinese universities to adopt Business simulation teaching. In recent years, all kinds of business simulation courses have been taught in universities. Especially, more and more foreign systems of business simulation are introduced into Chinese universities. However, we find the research on the effectiveness of business simulation is also scarce in China. Although simulation-based learning studies have been authored in 94 different countries, the literature is concentrated in Anglo-American-European societies (Hallinger & Wang, 2020). It is indeed hard to search relevant outcomes from the Chinese periodical database with key words of business simulation, experimental teaching, simulation games, effectiveness, etc on. Therefore, if we could carry out more localized studies on the related topics in China, it would contribute to improving international research of business simulation.

Based on the literature reviewed, our research needs to improve the following points. First, in theory, our understanding of the learning effectiveness of business simulation is complex and ambiguous. According to the literature, the meaning of learning effectiveness is broad and mixed, including consciousness, motivation, ability, competency, attitude, behavior, knowledge, skills, performance， and so on. A feasible research plan would be to further focus on the core concept, such as the ability, and then design high-quality research to deepen our understanding. Second, although our study should reach an objective and general rule, to some extent, the learning effectiveness of business simulation depends on the learning situation, such as the courses of different majors, the specific pattern of simulation training, and the diverse cultural backgrounds. Therefore, we should first understand the learning effectiveness based on these different situations before drawing objective and general conclusions. It is better to adopt more diversified research methods, especially qualitative methods, which can help us have insight into the learning effectiveness of business simulation.

This paper will focus on the conception of ability and explore an essential theoretical question: What abilities do business simulation cultivate college students? Based on the qualitative method and college student sample, the study will in detail analyze and summarize the dimensions of abilities trained by business simulation. Therefore, we have three parts for the following paper. At first, we have a brief introduction to the research methods. The second part focuses on explaining the main findings and viewpoints. The last part is to present the conclusion and future research.

2. Method

2.1 Simulated Experiment

This course uses business simulation software online named Global Challenge. In the business simulation course, we divided all students into several teams to separately run a global mobile phone corporation and compete with each other. The priority goal of the simulation game is to create more value for corporate shareholders in a competitive market. In the simulating, students try their best to maximize profit with effective business decisions by synthetically applying the management knowledge and flexibly responding to market changes. Students have to make all kinds of decisions of market demand, production, investment, marketing, R&D, logistics, inventory, and finance, etc.

The course schedule had 14 weeks and one lesson had ninety minutes a week. In the first week, we divided students into various groups and described the basic rules of simulation games for students. In the final week, we comprehensively made a course conclusion. The other twelve weeks were for formal business simulating.

2.2 Samples

The course had two classes in which all students are seniors at Shanghai University of International Business and Economics. 30 students of Class A majoring in business management were averagely divided into 6 groups and every group had 5 members. 41 students of Class B majoring in marketing were divided into 8 groups and seven groups were an average of 5 members while the eighth group had 6 members.

After the simulation course, we required every student to finish and submit a report. We suggested students focus on the questions related to simulating. For example, “Please share your understanding of the entire simulation decision and summarize the advantages and disadvantages.”, “What abilities and knowledge have you applied in the simulating?”, “What experiences have you gained through the simulating?” etc. Meanwhile, each group must write a report to discuss financial performance, management decisions, group decisions and efficiency, competitors, etc. All students in 2 classes eventually handed over 85 documents (As shown in Table 1). We numbered the samples with letters and numbers in sequence. The letters represent the class to which samples belong. The first number represents the group and the second number represents the team member. For example, A3-4 shows he/she is in class A, the third group, the fourth team member, A3-0 means the group report of the third group of class A.

Table 1. Raw material for analysis

Class	Name of material	amount
A	Individual report	30
	Group report	6
B	Individual report	41
	Group report	8
Total		85

2.3 Analysis Methods

2.3.1 Software for Analysis

To analyze data effectively, we used qualitative analysis software called Nvivo 11. The software is also helpful for mixed research to effectively combine qualitative and quantitative studies.

2.3.2 Coding Analysis

The research applied three-level coding for all data. First, the first-level coding analysis mainly sorted the content of each paragraph of the reports to a specific ability. We got more than 300 encoded items. Second, the research applied second-level coding analysis for these items to get different abilities. We finally selected five abilities with the highest coding frequency. Finally, we further did the third-level coding analyses to distinguish sub-abilities of the five abilities.

3. The Essential Abilities Trained by Simulating

Based on coding analyses, we finally selected the five abilities, as shown in Table 2, including strategic decision-making, competition & cooperation, analysis & judgment, communication & teamwork, learning by doing. The following part will explain the sub-abilities and connotations of above abilities in detail.

Table 2. The frequency distribution of the abilities

abilities	Frequency	Sources of coding
strategic decision-making	87	55
communication & teamwork	82	55
competition & cooperation	61	47
analysis & judgment	60	35
learning by doing	43	32

3.1 Strategic Planning

The primary ability cultivated in simulating was strategic decision-making. The students' reports revealed that all groups, more or less, expanded their breadth and depth of comprehensive strategic planning. Even if some groups made some strategic mistakes leading to terrible performance, they impressively argued the experience from these mistakes that were the most valuable. Most groups regarded strategic planning as the primary ability to impact business performance. We found the ability to make a strategic plan had a strong positive impact on financial of groups. The sub-abilities of strategic planning are the following:

3.1.1 Ability to Make a Long-Term Plan

It is a great challenge for students, who are lack practical experience in business management, to make a long-term plan of three years, five years, or even longer-term. Some groups bravely tried their best to make a long-term plan and impressively got experience and skills of strategic deciding in simulating. For example, "B1 group's victory tells us that a successful leader or company shall have a strategic vision and work out a long-term plan to master opportunities in the future. If you can persistently go forward to your goals in the right direction, you will surely get fruitful results." [B3-4]

3.1.2 Ability to Balance Between Durability and Flexibility of Strategy

It is usually a long way to perform a long-term plan, but we sometimes have to revise it with the changing environment. It is not easy for decision-makers to balance between durability and flexibility for a strategy. Some groups had a better understanding of this balance after simulating. "To adapt to changing environment, you need to judge and adjust the strategy during the implementation. Business strategy is not static and needs to change with the transforming market." [B1-3] "It also brings me a new idea for business strategy. While timely carving

our strategy for the unstable environment, we shall be stable of the basic decision logic." [B2-5]

3.1.3 Ability to Focus on the Strategic Product and Market

The business strategy should ask the primary question of what to do. It is critical for a leader to make the right decision when facing different products in different markets. Some groups got deep experience and lessons through simulating. For example, "we want to be champion in every product market in the early stage of the game, whereas we face fierce competition in the Asian market. We fell overwhelmed due to severe insufficiency of production capacity. Although you would like to cover everything, in reality, the result usually attends to one and loses another. A valuable lesson we got is that retreat strategy is not a passive escape but wisdom." [A1-10]

3.1.4 Ability to Seize the Opportunities in the Environment.

A strategic decision is to take advantage of opportunities from the environment, so a leader must have vision, wisdom, and courage. For example, "it is critical to seize market opportunities. Here is a perfect example. B4 group surpasses the opponent by taking full advantage of the robust growth of technology three in Asian and European markets during the early stages. However, it is not easy to grasp these chances and never give up. After all, not all groups would achieve it just depending on two kinds of products in three markets." [B6-1]

3.1.5 Efficient Allocation of Resource

A potential logical goal of strategic planning is to make optimal allocation of resources for the enterprise. Just like students' reports summarize: "We should make a full use of resource to focus on the profitable markets, because the resources are scarce." [B7-1] "We didn't have a clear direction at the beginning. We have produced all four products with limited resources up to the fourth stage, so we didn't get a satisfactory performance. While our resources were scarce, the inefficient distribution of resources is the main reason why our business can't grow better." [B7-6]

Besides the points above, students comprehensively promote their abilities in strategic decision-making. Some students gradually realize many factors to impact the right decision. These cause include more information, better communication and argument, dialectical combination between conservatism and adventurism; reasonable expansion and contraction in business; proper analytical tools, etc. They got some valuable experiences and skills for the business simulation

3.2 Competition and Cooperation

Competing or cooperating with rivals in the market is an ability to fulfill business strategy.

3.2.1 Competitive Thinking and Skills

First, groups with good performance have an awareness to compete with rivals. Some groups, which even lack competitive awareness at the beginning of the game, remarkably feel the cruelty of competition in the later stage. "For competition, I believe that no permanent friends or enemies, only permanent interests. During all simulating decisions, I have committed to studying the thinking models of my competitors. We sometimes deliberately cut down prices, preferring not to earn money ourselves rather than our competitors. Sometimes we need to cooperate with them to make the market bigger." [A1-1] Second, students can apply a diversity of competitive strategies in business simulation. Most groups can apply Porter's ideas of competitive strategy to a strategic decision in different ways, especially the strategy of low-cost leading. Meanwhile, students also have other tactics, such as psychological tactics, strategic alliances, and commercial fraud. They all bring students an unforgettable experience. "Competitors preemptively and aggressively seize the market. Sometimes they intentionally release false information and deceptive message to confuse the rivals with psychological tactics. Various competitive tactics are emerging one after one. Facing fierce competition, as a leader of the company, I strongly felt hardship and depression." Said the student of [A4-0] third, students have an insight into the market competition. Competition knowledge is static, but competition in reality is dynamic. A group report wrote "the competitive strategy needs to respond to the changes of competitors. The decision makers shall know the competitors. What will competitors do in the future? How do their decisions impact our business? What advantages do we own over our competitors? We have to cultivate the core competencies and have a differentiation strategy." [A4-2] Fourth, students further realized that how to compete with rivals are the comprehensive abilities in a company, which needs systematic thinking. Some students said that we thought that marketing is the key to business success, and low prices could suppress rivals and seize the market share. In fact if a company lacks strong production capacity, any ambitious plan will fail in the first step. For a manufacturer enterprise, the production system and supply chain are foundation to guarantee business. [A4-4]

3.2.2 The Awareness and Skill of Cooperation

Compared with competitive thinking, groups would have a different experience and understanding about consociation. First, the successful consociation brings a positive experience for two partners. “In several stages, only another group and our group entered the market of technology three in European. Then our two groups made friendly consultation to together raise the sale price. Finally, we both made more profit though the consultation.” [B1-4] “If the A1 group sells this batch of goods at a low price in Asia or Europe, our group will be under great pressure. After thoughtful consideration, we decide to negotiate with the A1 group. Finally, we successfully persuade them to sell in the United States and achieve a win-win strategy.” [B6-3] Second, the failure of cooperation allows students to reflect on the precondition of consociation needed. A student of [B7-5] wrote that both groups had an agreement to promise not to reduce the price, but the results show the other group privately lessened the price. The failure of cooperation is a lesson that you cannot easily trust partners without trust if no economic interests between us. I remember the A3 group and the A4 group had similar experiences. I admit, to some degree, this simulation makes me deeply realize the cruelty of society. Third, reflecting the disadvantages of cooperation. When the successful consociation of competitors brings economic losses to their own companies, some groups even criticize this consociation emotionally. Such as “I want to condemn the unethical behavior of market collusion… Because such behavior will disrupt the normal and fair order of the market, I think it is undesirable. But this is also the charm of this business simulation to resemble the real market. So I think that I learned many experience from this course.” [A2-2] Some students hold a negative attitude in the face of such cooperation or alliance behavior. A student of [A3-2] discovered that A1 group felt A6 group was no longer of value for them. Then A1 group betrayed their agreement and tried to build a new alliance with new group, but they were refused. On the whole, some students still tend to have more opportunities for cooperation because cooperation exist in the competition world. “The design of cooperation may make the simulation more complex, but it is also more similar to real life. With cooperative opportunities, competitors can cooperate and share the sources.” some students said.

3.3 Analysis and Judgment

Compared with traditional lectures, business simulation can make students feel that “in the past, our learning was always superficial and attached to knowledge in the textbook. Therefore, it is unavoidable that what we discuss and analyze are usually based the ideas set in the textbook. However, this simulation allows us to calculate data, test theories, and apply knowledge into practice, which helps us verify what we have already learned in the classes. It is a great temptation of simulation.” [B4-1] Students think this simulation is comprehensive and complex. We need to analyze the financial reports, market data, production condition, cost composition, and other data. It is tedious and complicated to select the most key data and figure out our position, advantages, and challenges we face. Without excellent data analysis ability, it is easy to confuse us and feel clueless. “After ten rounds of simulating, I have not only fully practiced my abilities to analysis, but also improved them.” [A1-3] By analyzing the students’ reports, the analytical judgment ability mainly has the following sub-abilities:

3.3.1 To Screen out Crucial Data for Decision

According to student [A3-1], “final reports of each round are plenty of materials of data and diagram, including financial reports, market reports, production reports, and cost reports. How to analyze them is critical for making the next decision. Further, for detailed data of three sub-markets, so it is impossible to analyze and understand all the data. It will take huge time and effort. Therefore, we should learn to gain, extract, and analyze the key information we need from massive amounts of data that is valuable for deciding.”

3.3.2 To analyze data.

Some students realize that “in a decision, data analysis is essential for us to accurately predict and properly handle the coming changes of environment in the future.” [A1-5] So,” the first is statistical skills. As marketing manager, I need to calculate the rough amount of business growth and study and predict the trends of competitors.” [A1-2] Of course, “making full use of the analytical model will get twice the result with half the effort. The model will improve our efficiency of calculation and analysis and lead to scientific decision-making rapidly.” [A3-5]

3.3.3 To Predict Demand and Analysis of Competitors

First, “the ability to predict the market demands impacts group’s following decisions of matching resource to uncontrollable market condition. To some degree, the ability of demand prediction could fully mark a group’s strategic thinking and comprehensive coordination. It is the art of the commercial war for a leader.” [B5-2] Second, it is indispensable to analyze and predict the tactics of competitors.” Analyzing competitors is the key

part of business decision because whether our decisions are correct is up to predicting competitors. With more accurate predictions, we can make better market strategies and more profits." said the student of [A2-1]. "As a leader of the public company, you should judge the market competition. What product is competitive? What product is rare? In condition you have an insight into the market competition you would know how to occupy a distinguished or niche market to dig profit." [A3-1]

3.3.4 To Go Quickly Judge with Data Analysis

A student of [A3-4] said the most valuable ability is to go quickly judge. I become skillful for decisions at the late stages while taking long time to make decision at the earlier stages. We can predict more accurately and decide better based on the previous results." Students believe that "critical thinking is the best way for analyzing problems with a different perspective. Because the new issues will come out at each stage and no ready solution for them, each company needs to grasp the core nature of the problem and find the law of business. You cannot guess answers to the issues at random. It is better to assume with purpose at first, then test them step by step through practice." [A5-5] Besides, some students also highlighted the logical reasons for the decision-making. "We should decide with evidence each time and can't change the decision too often. Because each one in a group has their ideas, winning them over, you shall convince them with enough evidence. It makes me more logical and figures out the reasons I decide. It also helps me far away from stupid decisions when being impulsive." [B3-3]

3.3.5 Systemic Thinking

Some students are gradually aware that every decision looked simple needs consider many points. "We shall think about all related parts in a systemic view rather than isolated bits of data. You shall figure out the relation of detailed data and final business goals." said the student of [B4-2] Therefore, "For decisive logic, we should focus on the systemic connections of including many interconnected parts of the business. All the decisions are systematically interrelated." [B1-5]

In conclusion, how to analyze and solve problems is an impressive ability in simulation. Some students summarized, "I think the simulation is essential in helping us build thinking patterns rather than practicing our professional knowledge. The most valuable experience is to discover, think, and solve problems." [A4-3]

3.4 Communication and Team Spirit

Simulation decisions are carried out in groups, usually among five people or six people. Reaching a consensus in a collective decision is not easy. Many problems result from the argument and controversy among teammates. Some students found that communication and collaboration impact the quality of a decision. "Too many issues to handle in business simulating and nobody can solely take care of all issues, so division and collaboration are critical. We can reduce many mistakes by reminding each other, checking for omissions, and making up for abilities." said the student of [A5-4]. "During the decision-making, we need much communication and discussion. When facing different ideas, we have learned the skills of coordination. We are constantly negotiating and trying to make progress." [A3-2] The student of [B4-3] thinks the most valuable experiences are from the discussion, competition, dispute, and Sharing in the group or among the groups. Based on analyzing behaviors of communication and cooperation among students, we found the following points are the results of business simulation.

3.4.1 Ability to Improve Students' Understanding of Communication and Team Spirit

First, it helps to recognize the importance of teamwork. "Every person has different thinking models or habits, so it is hard for anyone to get a comprehensive decision or a perfect solution to the problem. In the teamwork, everybody could draw on collective wisdom to help handle problems with more perspectives and get better decisions." said the student of [A3-3]. "As the saying goes, two heads are better than one, so we cannot attribute the success of a company to an individual, but the wisdom of a team." [B1-2] Second, students realize the importance of communication for teamwork. "Communication is the core of team building. An efficient team must break through the limits of connection and strive for effective communication. Any communication for decision is to solve the problem. Discussion without solving the problem is not the real communication, just chatting after work." [A5-5]

3.4.2 Ability to Understand the Heterogeneity and Complementarity of Teammates

The simulation course suggests that every student could join a team whose members are familiar with each other. Nevertheless, in simulating, disagreement and dispute often happen even if members in a group are close friends because every student has personal knowledge and ideas. For example, "in the business simulation, it is important to find teammates with various abilities to build a team." said the student of [B6-1]. "It is normal

teammates have different opinions. To have teammates with various abilities is undoubtedly a precondition to carry out the tasks in a company." said the student of [A2-4]. The student of [A4-0] explained that "group decision can own more knowledge and more information, contributing to more feasible plans. If the teammates are familiar with various theories, knowledge, and skills, it is easy to complement and support each other and then dig out more satisfying plans."

3.4.3 Able to Train Skills of Communication and Persuasion

Once disagreements in the decision-making have happened, you have to try your best to persuade partners to accept your ideas. The student of [A2-5] said that "it is easy to have disagreements and arguments in deciding, but hard to convince teammates. It will help us improve communicative skills better, express ideas more clarity, and grasp the essential points of the problem more accurately. It is an ability to communicate." So students feel that "the most impressive learning in simulating is how to decide, how to persuade peers, and how to form the thinking. A decision is not right or wrong, just a suitable one. "To some degree, persuading your partner is more important than analyzing the problem when facing different opinions." said the student of [A2-3]. Some students also learn how to compromise before contradiction. For example, "our teammates, holding different views, often argue and disagree with one another. While we put ourselves in others' shoes, we will find different solutions." [A5-5]

3.4.4 Ability to Handle Disagreements and Contradictions in the Group

Of course, it is not easy to remove all contradictions. Some contradictions even exist along the course. So, how to handle these disagreements and contradictions properly is important for a good decision. Many students have a matching experience in the simulation. "I have learned that disagreements or even quarrels are normal because of different opinions of business decisions. If viewing it another way, you will find that we just have the same goal and work hard for business development." [A2-2]. Some students further think the culture of harmony is not always good for a group decision. "Although disagreements are unavoidable, quarrels finally improve the quality of a decision. Sometimes we try to respect one another and accept ideas of teammates without argument to avoid conflicts, finally resulting in mistakes in the decision." [A4-4]. The manners of acting to the result of the arguments also matter. "While winners are not arrogant, losers are not discouraged. Teammates can peacefully move ahead without superiority or frustration. In my eyes, we all have good wishes for business benefit. No matter which decision is the final plan, we will accept it if it can develop business." said the student of [A2-2]. Meanwhile, some students learn to properly compromise and take the interests of the whole into account. The student of [A2-3] said that "I finally give up, but it does not mean I lack confidence for my arguments. I want our team to move ahead". "In the decision-making, the art of collaboration is to decide when to hold on to your own opinions and when to make proper compromises". [A2-1]

3.4.5 Ability to Reasonably Divide the Work and Coordinate Teamwork

An effective team as a whole shall have reasonable division. As the students of [A5-1] said: "in a group, anyone, as an individual, has his or her strengths or weakness, so teamwork is necessary." "A team as a whole, provided every member takes full advantage and performs the duty, will create advantage." said the student of [A2-4]. How to be a whole? The coordinator often plays an important role. Some students have a good experience, "at first, I'm not a group leader, but I can, in decision-making, often put forward helpful suggestions and point out shortage of other teammates. I find that my teammates would like to accept my ideas. Besides, when meeting disagreements, I will compare two or more plans to find a better solution and resolve the contradictions among the teammates." [A2-2]

3.4.6 Ability to Solve Problems in Group Decision-Mmaking

Group decision-making has both advantages and disadvantages. How to overcome these disadvantages is also helpful for improving the ability to communicate and decide. For example, "a great disadvantage of group decision-making is the lack of efficiency. Because of diverse opinions from teammates, meetings or discussions are indispensable for making a final decision. If we lack a thoughtful and serious schedule, a meeting easily becomes a chatting, wasting time or delaying decisions. Therefore, before a meeting or discussion, we will filtrate the major problems to solve and carefully schedule the meeting to focus on the main topic, in case our discussion strays from the topic." said the student of [A4-0]. Democracy of decision-making is also a problem to handle. "With minority control in group decision-making, one or two people sometimes dominated discussions, gradually leading to dictatorship. We deliberately arrange a different teammate to write a meeting record for each round, to avoid fixing one or two people to decide and take responsibility for the group." [A4-0]

3.4.7 Ability to Gain Motivation and Growth Through Collaboration

We can find these are happening in both an individual and a team. First, the success of collaborating can have a positive experience for students and change their previous awareness and behavior of collaboration. Take an example," I like to be a freeman and act alone. I have two reasons to avoid communicating with others too much. First, it is inefficient if spending too much time on the debate. Second, some people are too stubborn to change their mindset once they stick to their guns. However, this time I have fully realized the benefits of teamwork. While some problems are better to be handled by an individual, some are better for a team. It makes sense to carefully distinguish what issues should be for an individual or a team. If the team is better, I will take advantage of the team." The student of [B3-3] got a new understanding of teamwork. Second, students find that not only does an individual grow through collaboration, but also does a team. The team of [A5-0] summarized a team also needs the continuous motivation to encourage teammates to win and carry out their works better. "In the process of running-in, we learn to set out from our abilities and interest, find our respective position, and carry out our work." Said the student of [B5-4].

3.5 Learning by Doing

Different from traditional lectures, the main goal of the business simulation is not to deliver knowledge. If the simulation needs new knowledge, students shall actively consult the teacher to guide them to study. Therefore, in the simulation class, the teacher mainly acts as a guider. As a proverb goes: "The master leads the way, but the practice is personal." The business simulation cannot improve their learning ability unless students actively engage in the simulation. We can induce the following sub-abilities of learning by doing.

3.5.1 Ability to Understand the System of Simulation

According to students' feedback, this simulation is the most complex system they have ever practiced. So, the first step for the simulation is to understand the basic rules of the game. The students or groups would have good performance in decision-making when they could delve into studying the simulation. The students of [B1-5] believed that the most crucial part of decision-making was to keep learning new things, like studying the business simulation system and figuring out the law of simulation business. "More insight into the whole system, better performance we get." Said the student of [A1-4]. To achieve better performance through studying simulation systems, just like an insight into the development law of the industry, impact the success of a business.

3.5.2 Ability to Learn Through Cooperation and Sharing

We constantly stress the necessity and importance of learning from teammates and promote learning for each other with measures. The course requires group decisions must have detailed discussions and related records. "Some groups encourage the teammates to form small groups to discuss. The teammates also supervise each other and encourage them to join in the decision, contributing to business development. The diverse learning can effectively improve performance of the simulation course." Said the student of [A3-4]. We require every team to share the experience of decision-making after each round. Most of the students enjoy this learning pattern. For example, "what I prefer in the simulation is to share ideas. We know about many contents of the software and related problems during sharing. Learning and sharing make us happy. Interacting and engagement make learning interesting and knowledge impressive. On the contrary, studying alone lacks happiness and is easy to forget". [B3-3]

3.5.3 Ability to Learn from the Competitors

This simulation is an intense competition. "It is the best way to learn from competitors because different companies have different perspectives for business strategy. I can open my mind with their different perspectives sharing." Said the student of [B1-2]. The student of [A5-4] found the best value is listening to what other groups analyzed and summarized in each round. They can not only have an insight into the strategies of other teams but also learn from their mistakes. For example, "in the sharing of classmates, I found that I could predict the pricing tactic of competitors more reliable through the production and cost report of results. In the business deciding, we are not running a company alone, but competing with other companies in the same market, so we need to learn from the successful experience of others. It helps our business development." Said the student of [A5-2]. Besides, students also take the initiative to seek advice from competitors. "Through learning from other groups, we know how to improve profits by using transfer pricing to reasonably avoid taxes." Said the student of [A4-4]. In conclusion, many students have the same experience above. The student of [B2-4] found that it was necessary to listen to the suggestions of other companies and hard to find out the problems of our own companies alone.

3.5.4 Ability to Learn in Simulation Practice

Compared to traditional lectures, the most different character of simulation is to learn by practicing and get experiential knowledge through learning by doing. “We learn much decision knowledge from practices, not getting in the decision guidebook which is just a foundation, but exploring through our practices.” Said the student of [B2-4]. Students soon found that” it is easy to read two guidebooks of simulation, but hard to have thorough understanding without practices. Although after reading the simulation materials and trying the first round, we still have many questions to appear in the later rounds. However, we will suddenly feel enlightened when going back to read the materials after practicing.” [A3-1]. “We consistently have new problems and no ready or perfect solutions each round. We have to have insight into the problems to induce the law of the business game. The better way is to get a reasonable hypothesis based on theories and practices, then prove it in practice step by step. Don’t try to guess at will.” Said the student of [A5-5]. It will require students to invest time. “Keep learning and exploring, and be willing to invest time and energy…We may not thoroughly understand the decision in theory, but trying to figure out how they affect final profits and adjust decisions. It will help us make the right decisions.” Said the student of [B1-3].

3.5.5 Ability to Learn from Failure

As the Chinese saying goes, “Everyone will experience failure before success.” You can fully experience this saying in this simulation because, as a beginner, lacking experience for decision-making inevitably leads to mistakes. “But from mistakes, we understand reasons of failure and know how to improve our shortages with purpose. It is the best benefit of the simulation.” Said the student of [B3-1]. A team of finally winning the simulation can still learn from failures. “We need to continue summarizing what we did right and what we did suck in the last round, and then learn from it. For incomprehension, we need to search for materials and look for theories supported.” Said the student of [A1-3]. For the teams with dissatisfied performance, the failure also brings them more helpful experiences. “Although we cannot overtake the top team finally, our team has been trying to narrow the gap with the top. More failures lead to more experiences. Sometimes our group might learn experiences that top-ranked teams never have. No losses, no gains.” [B4-4]

3.5.6 Ability to Learn by Oneself.

As the Chinese saying goes, “Better teach a man to fish than to give him a fish.” The most valuable part for students is the ability to independent learning. Compared with traditional lectures, students found that learning by oneself is the most different character for simulation. In traditional courses, the teacher will highlight the points of the textbook and strengthen them with homework after class, which is easy to master. “However, solving problems in simulating needs a wide range of knowledge and experience of practice; no one can directly know why a company makes or loses money. In this case, we should analyze the possible causes of the problem and solve it through data collection and analysis. Therefore, independent learning ability seems critical.” Said the student of [A5-5]. Many students reported that “in the decision-making of simulation, they also met professional knowledge, never studying before, like some financial ratios. They had to understand the impact of these ratios on business performance by searching the interpretation of financial ratios online. This active learning is the most valuable for the course.” Said the student of [A3-0]. More importantly, students realized that independent learning is a critical ability in the future. “The simulation helps me find plenty of shortages. Top-ranked is critical for the course performance, but to discover and improve our shortages are more helpful because it is a long way to go for our learning.” Said the student of [B6-1].

4. Conclusions and Future Research

4.1 Main Conclusions and Innovations

4.1.1 *Main Conclusions*

First, business simulation can train students for multiple abilities. The study shows that business simulation can bring students diverse abilities. According to the students, we refined five abilities with the highest frequency, shown in Table 3. They are strategic decision-making ability, competition and cooperation ability, analysis and judgment ability, communication and team spirit, and learning by doing. The conclusions further show the abilities above have related sub-abilities and rich connotations. Our study is a theoretical complementary to the research literature and a practicable reference for business simulation teaching.

Table 3. Abilities trained by business simulation

	Abilities	Sub-abilities
1	Ability to Strategic Planning	· To make long-term plan · The trade-offs between persistence and flexibility of the strategy · To focus on the strategic product and market · To seize the opportunities in the environment · Efficient allocation of resources
2	Ability to Compete and Cooperate	· Competitive thinking and skills · strong awareness to compete with rivals · diversity of competitive strategies in simulation · competition is changing · competition is the comprehensive ability · The awareness and skill of cooperation · take part in cooperation positively · understand the condition of cooperation · reflect disadvantage of cooperation
3	Ability of Analysis and Judgment	· To screen out crucial data for decision · To analyze data effectively · Prediction of demand and analysis of competitors · To correctly judge from data analysis · Systematic thinking
4	Ability of Communication and teamwork	· To improve students' understanding of communication and team spirit · To understand the diversity and complementarity of teammates · To train skills of communication and persuasion · To handle disagreements and contradictions in the group · Reasonable division of labor and cooperation · To solve problems in group decision-making · To gain motivation and growth through collaboration
5	Learning by doing	· To study simulation · To learn through cooperation and sharing · To learn from the competition · To learn in simulation practice · To learn from failure · To improve the ability of learning by oneself

Second, the abilities trained in simulation vary from person to person. We also must declare that any ability above does not have the equal or similarly convincing evidences from all student samples. On the contrary, different students might have opposite evidences for the same abilities occasionally. For example, whereas some students have a positive attitude toward cooperative behaviors in competition, some students have passive attitudes, supposing it a collusive behavior against the fair competition of market. Even though facing contradictory opinions of the ability sometimes, we still regard both of them as an evidence of this ability because they belong to the same category of ability from simulating.

4.1.2 Innovations and Contributions

First, although we have studied the learning effectiveness of business simulations for over 30 years, our opinions are still superficial and muddled. This study summarizes and refines five abilities improved by business simulation and details their sub-abilities and matching behaviors based on the learning background of business simulation in Chinese universities. The study not only enriches the research on the learning effectiveness of business simulation from the perspective of ability but also provides a theoretical basis or reference for relevant empirical research in the future.

Second, the research method helps us understand the learning effectiveness of business simulation. Most studies on the learning effectiveness of business simulation usually prefer experimental research design and questionnaire survey, which we call a rigorous approach. Even so, we have inadequate knowledge of how business simulation training promotes learning effectiveness. Based on grounded theory and coding analysis, this study tries to encode the original materials of assessment reflecting the actual effectivenesses of simulation learning. To a certain extent, the method combines the advantages of the case study method and quasi-experimental design. Our research not only extends and deepens our understanding of abilities trained by business simulation but also has value in guiding the practice of business simulation.

4.2 Limitations and Future Research

4.2.1 Limitations.

The paper has two main drawbacks. First, the sample size is not large enough. This paper abandons some abilities with less frequency, including risk ability, innovation ability, and leadership ability, so on. We did not interpret these abilities in conclusion just because of the low frequency, but it does not mean they are not critical abilities. If the samples are more, they may have a higher frequency and become important. Second, the data category only covered reports. This study only collects the data based on summary reports of students. We suggest diversifying methods and tools to study abilities. The final shortage is the questions of the report paper. To consider the requirements of the report length, we only have three questions for students with only one question directly related to ability, thus limiting the depth of students' analysis.

4.2.2 Future Research.

First, we can further improve our study based on the limitations above. For example, we might take more samples and more diverse participants with various majors and different grades. It is better to collect data with complementary methods, including observation, course notes, interviews, focus group surveys, and composite tools. Meanwhile, we should diversify questions, combining the structured and the semi-structured questions. Further, we can design quantitative research to test the validity of the abilities resulting from our qualitative research. In conclusion, research on abilities cultivated by business simulation is a promising field.

Acknowledgments

The paper is supported by both Shanghai Higher Education Association and Shanghai Municipal Education Commission.

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