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RESEARCH ARTICLE

Enhancing Problem-Solving Skills through Simulated Problem-Based Learning in International Business Education

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ABSTRACT

The 21st century has witnessed profound transformations in higher education and career landscapes, driven by the evolving demands of industries. Graduates are now expected to possess a diverse range of knowledge, skills, and capabilities to meet industry expectations. This shift is attributed in part to the rapid advancements in robotic technology, artificial intelligence, and cyber-technology, which have resulted in the disappearance of certain jobs and significant shifts in employment trends, required skills, and recruitment practices across various industries and regions. To effectively tackle these emerging challenges, the future workforce must align its skillsets with the evolving demands of industries. Universities play a pivotal role in shaping this workforce through their curriculum development. It is imperative for university curricula to integrate components that can produce well-rounded graduates equipped to thrive in this dynamic landscape. Among the critical skills required in the industrial revolution, problem-solving skills emerge as one of the most vital. In response to these evolving demands, the international business course has introduced an innovative approach known as simulated problem-based learning (SPBL). This pedagogical method fuses elements of simulation and problem-based learning. In the simulation component, participants assume specific roles that necessitate overcoming obstacles and achieving predefined goals, often through immersive role-playing scenarios. Within the context of the Bachelor of International Business Management program, students acquire a deep understanding of international business concepts and learn how to apply this contextual knowledge to devise solutions for complex international business challenges. Nevertheless, there exists an opportunity for enhancement in the analytical, synthesis, and evaluation skills of students. These competencies are indispensable for fortifying their problem-solving abilities and ensuring their capacity to adeptly address intricate international business issues.

INTRODUCTION

The development of higher education and careers in the 21st century is discussed based on knowledge, skills and ability of graduates to meet industries expectations. The changes in revolution of industry may have massive effect on the education of people especially in higher learning institutions (Broo, Kaynak, & Sait, 2022). The linkage between university and industry should be strengthened to achieve the vision of Industry Revolution (IR 4.0) which is the emergence of "smart

factories". The skills and qualifications of the workforce will become the key to success of a highly innovative industry. The curriculum that is designed by a university should have the elements that can produce holistic graduates. Problem-solving skill is one of the top skills needed in the Fourth Industrial Revolution. According to Vrontis et al. (2022), the advancement of robotic technology, artificial intelligence and cyber-technology, some jobs will disappear and substantial shifts in employment, skills and recruitment across industries and geographies. To keep the pace of these new challenges, certainly the future workforce needs to align its skillsets (Brunello & Wruuck, 2021).

Therefore, in Bachelor of International Business Management (BIBM), School of International Studies (SOIS) from Universiti Utara Malaysia intend to produce graduates with leadership qualities, capable of applying critical thinking/ problem-solving and communicating their thought of world issues related to global business dimensions and international trade operations. One of the core component subjects of BIBM program is GFMA 2023 International Business. This subject concentrates on the process and strategy of international business from multiple perspectives for instance, International Trade Theories, Firms' Internationalisation, International Business Strategies, International Operation and Political Economy of International Trade. Equipped with the International Business perspectives, students will be expected to understand the implications of International Business challenges for their future organization's strategy, structure and functions, in particular with rapid pace change of globalisation era. It covers important theories related to international business operations and the scholars associated with these theories. The objective of the course is to explain strategies available for companies in order to compete in the global business, differentiate business operations for companies engaged in international business and describe complex international business issues from multiple perspectives. Thus, the outcome of the course, the BIBM student is able to comprehend and apply the contextual knowledge of international business and ultimately, student of BIBM able to produce solutions (problem-solving) to matters concerning complex international business issues accordingly.

The GFMA 2023 International Business introduces simulated problem-based learning (SPBL) in order to improve students' problem-solving skill. It combines simulation and problem-based learning. Simulation involves placing participants "in roles which require them to overcome obstacles in pursuit goals" or role-playing. Meanwhile, problem-based learning (PBL) can be defined as learning resulting from the processes involved when working towards the understanding or resolution of a problem (Barrow & Tamblyn, 1980)(Wijnia, Loyens, & Rikers, 2019).

Issues in Teaching International Business

The GFMA 2023 International Business is a mandatory core subject in the Bachelor of International Business Management (BIBM) program. This subject demands a high level of thinking and problem-solving skills from students. They are not only expected to grasp international theories and concepts but also to analyze complex international business operations and issues in order to formulate effective strategies for internationalization. However, students often struggle to apply these concepts and strategies to comprehend and address real-world business problems. The existing case studies, as highlighted in Table 1, have problem to adequately assess problem-solving skills, as students encounter difficulties in interpreting multifaceted international business issues from diverse perspectives and genuine international business scenarios

Table 1 **Mapping Table**

CLO	TOPIC	ASSESSMENT METHOD	PLO	MQF	MQF ATTRIBUTES	MARKS	WEIGH TAGE
CLO 1	Chapter 1-5	Quiz 1	PLO1	MQF 1	Knowledge	15%	5%

CLO 1	Chapter 6-10	Quiz 2	PLO1	MQF 1	Knowledge	15%	5%
CLO1 & 2	Chapter 1-6	Mid Semester Examination	PLO1	MQF 1	Knowledge	20%	20%
CLO 3	Chapter 1-12	Group Assignment	PLO5	MQF 5	Written Communication	20%	20%
CLO 4	Chapter 1-12	Case Study (Problem Solving)	PLO6	MQF 6	Problem Solving	10%	10%
CLO 1&2	Chapter 7-12	Final Examination	PLO1	MQF 1	Knowledge	100%	40%

Source: GFMA 2023 Syllabus

The current lectures fall short in conveying knowledge of international business and fostering advanced critical thinking and problem-solving abilities. Conventional teaching methods have faced criticism for their limited effectiveness in helping students acquire these higher-order thinking skills (Hamzah, Hamzah, & Zulkifli, 2022; Huang, Silitonga, & Wu, 2022). Case studies have proven ineffective in providing students with a comprehensive understanding of real-world issues. Graduates of the Bachelor of International Business Management (BIBM) program not only need to possess a solid foundation in international business (IB) knowledge but also the capability to apply these concepts and strategies to resolve genuine IB challenges.

As a result, Simulated Problem-Based Learning (SPBL) proves beneficial in enhancing students' problem-solving skills. SPBL activities typically involve tackling problems or completing tasks, encouraging students to engage in discussions about potential solutions to complex questions or physically addressing issues through practical problem-solving. These skills are highly valuable, as most professions require effective problem-solving abilities to efficiently accomplish tasks.

Transitioning from traditional teaching methods to SPBL represents an innovative approach to enhancing students' learning experiences with international business concepts and strategies. SPBL combines elements of simulation and problem-based learning, wherein students assume specific roles and address authentic problems within the context of international business decision-making and resolution. *Figure 1* provides an example of an SPBL session conducted in GFMA 2023.

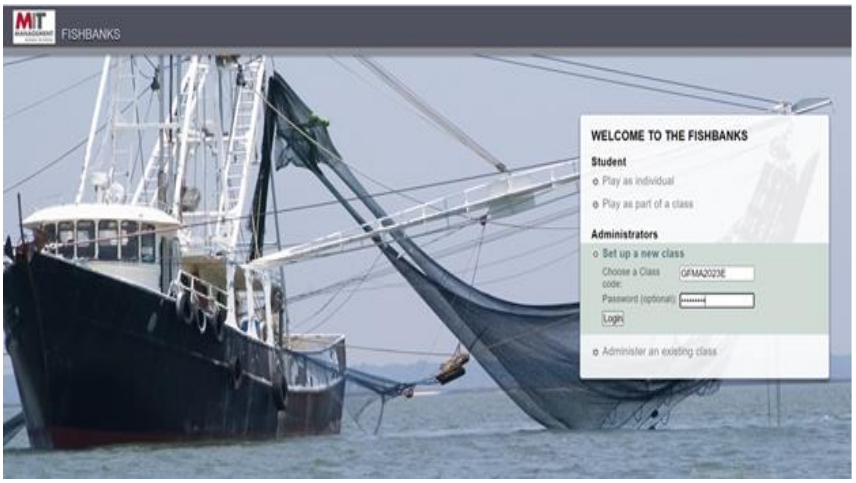

Figure 1: SPBL – Fishbank

Hence, the SPBL is a practical ground for GFMA 2023 students to comprehend the process of formulating international business strategies and the resolutions by taking part as manager in international business department in strategies formulation and implementation. Despite that, it improves their high order thinking skills vis-à-vis problem-solving skills.

Research Questions

- Does SPBL is effective to improve students problem-solving skills?
- What are BIBM students' perception about the SPBL implementation in International Business classroom?

Research Objective

- To assess the effectiveness of SPBL to improve students' problem-solving skills.
- To analyse BIBM students' perception towards the implementation of SPBL in International Business classroom.

LITERATURE REVIEW

Problem-solving is an essential skill applicable to any job role and industry. Although problem-solving tasks are a common part of workplace responsibilities, not all employees excel at it. Enhancing students' understanding of the key elements involved in problem-solving can help them refine their skill set and demonstrate their proficiency to potential employers (Symons & Pierce, 2018). Individuals who are adept at solving problems are highly sought after in any team. Often categorized as a soft skill (a personal attribute rather than one acquired through formal education or training), the ability to creatively and effectively address challenges is, nonetheless, one of the most highly prized qualities that employers look for in job applicants (Bardach & Patashnik, 2019).

Problem-Based Learning

According to Connell (2021), Problem-Based Learning (PBL) is an educational approach that employs intricate real-world issues to facilitate students' understanding of concepts and principles, rather than relying solely on the direct presentation of facts and ideas. In PBL, students are tasked with identifying solutions to these problems and presenting them in a clear and effective manner to determine the most feasible and likely-to-succeed approach (Fitriani, Zubaidah, Susilo, & Al Muhdhar, 2020). Beyond the course content, PBL has the potential to foster the development of critical thinking, problem-solving, and communication skills. It also offers opportunities for collaborative group work, the evaluation of research materials, and a commitment to lifelong learning. Tarling (2023) assert that virtually any subject area can be adapted to PBL with a touch of creativity. Similar to most active learning methods, PBL is grounded in the belief that learning is more effective when it is contextualized. In PBL, the context is presented through a real-world problem. In its purest form, students are confronted with an authentic problem before they have acquired the necessary knowledge to solve it. This problem typically has multiple potential solutions, and students construct the knowledge they need to identify what they consider the most appropriate solution (Schmidt, Rotgans, & Yew, 2011). The teacher or tutor assumes the role of a "guide on the side" and employs questions to guide students toward suitable resources or tools that can aid in resolving the dilemma (Ngoasong, 2022). The use of a simulation to structure PBL results in a systematic approach to problem-solving, with students and teachers working through the PBL simulation step by step. While PBL implementation may vary, a generic model can be outlined as follows:

1. A problem scenario, which serves as the basis for study, is introduced before any prior preparation or study.
2. The problem scenario is presented to students in a manner that replicates real-world conditions. Often, students encounter the problem-solving scenario within a small group

guided by a tutor.
3. Students engage with the problem in a manner that challenges their abilities. The tutor facilitates learning by asking questions and monitoring the learning process.
4. Students consistently identify areas of learning that are needed, prompting and guiding individualized study.
5. Students apply the knowledge and skills acquired in Steps 3 and 4 to address the problem, assess the effectiveness of their learning, and reinforce and contextualize their newfound knowledge.
6. The learning gained during this process is integrated into the student's existing knowledge base.

PBL assists students in framing the simulation within a self-directed learning environment and enhances their problem-solving skills as they tackle a realistic issue with multiple potential solutions. However, the realism inherent in PBL can sometimes lead students to pursue interests outside the scope of the curriculum. In cases where students lack motivation to engage with the curriculum content, teachers may face challenges related to classroom management or insufficient content knowledge (Haatainen & Aksela, 2021). Additionally, materials may not align sufficiently with curriculum goals, diverting learning away from the intended curriculum (Pak, Polikoff, Desimone, & Saldívar García, 2020). To address these potential issues, a simulation can provide structure and boundaries to the problem, guiding both students and teachers through the complexity that can accompany a more purist PBL approach (Souto-Gómez, Talavera-Valverde, Márquez-Álvarez, & García-de-la-Torre, 2023).

Moreover, problem-solving often demands industry-specific or job-specific technical skills. These skills help students identify the source of a problem and devise effective solutions (Borah, Malik, & Massini, 2019). While problem-solving is often considered a distinct skill, it is closely related to other abilities such as active listening, analysis, research, creativity, communication, decision-making, and team building (Fraser, Duignan, Stewart, & Rodrigues, 2019). Therefore, practice and role-playing can be valuable tools for developing students' problem-solving skills (Soh, 2023).

RESEARCH METHODOLOGY

Qualitative research is adopted in this action research to assess the effectiveness of SPBL to improve students' problem-solving skills in International Business classroom. This is to ensure that the students of BIBM not only able to demonstrate understanding of the subject but able to apply in practical context matters concerning international issues with critical thinking and high level or problem-solving skill. Qualitative research involves in-depth research and analysis with different people. The different perceptions, needs and experiences from these people provide new insight to the field of study (Guba & Lincoln, 1994). Knowles and Cole (2008) stated that qualitative research is more concerned about uncovering knowledge about how people feel and think in the circumstances in which they find themselves, instead of making judgements about whether those thoughts feelings are valid. Students from GFMA 2023 International Business in Universiti Utara Malaysia are the targeted sampling. In general, these respondents are considered appropriate as the sampling of the study area because all are from BIBM backgrounds and they are needed to comprehend and apply the contextual knowledge and strategies of International Business. The research has also analysed BIBM students' perception towards the implementation of SPBL in International Business classroom.

Even though qualitative research method involves many types like survey questionnaire, observation or interview; however, this research requires observation as a primary source of data collection. Qualitative researchers interview or observe interviewees that are able to provide their experience or expertise. researchers are able to study on the different point of view from interviewees and this

provide new insights in the field of research (Bryman & Bell, 2007; Denzin & Lincoln, 2011; Weaver & Olson, 2006).

Assessment Plan

To study the problem-solving skills, a written report is assessed by a rubric provided by the Ministry of Higher Education in rubric assessment guidelines (2017). There are 5 attributes of problem-solving skills are evaluated:

Table 2: Rubric of Problem-Solving Skills

Sub-Attributes	Operational Definition
Problem Identification	The process of recognizing and identifying an issue that may cause a problem or conflict.
Analysis	The process of separating or detailed examination of gathered, measured or data collected, into smaller elements for decision-making or interpretation.
Application	The action of putting ideas or solutions into operation to solve problems.
Synthesis and Evaluation	The combination or composition of small parts to form a whole idea, a new solution.
Decision-making	The thought process of selecting a solution from several alternatives.

The evaluation of the attributes of problem-solving skills is according to the below scale.

Table 3: Scale for Problem Solving Skills

	Marks
High	16-25
Moderate	10-15
Low	0-10

Data Collection

This section outlines the key design aspects of the SPBL approach. The SPBL method is derived from the fusion of simulation and problem-based learning strategies, which are well-established as effective teaching and learning methods. These strategies encourage active engagement and learning through experiential approaches across various academic disciplines, including International Business. In this section, we aim to provide an overview of the design parameters, steps, procedures, and roles that were implemented in the International Business classroom over a three-week period.

Preparation for Simulation

The participation in the simulation can vary in terms of the number of students involved, ranging from small groups to larger groups, with as few as ten students or potentially reaching hundreds. To facilitate teaching and Problem-Based Learning (PBL) in this class, the simulation is organized into groups of seven students, each assuming the role of strategic decision-makers representing a specific company. In these groups, students engage in discussions on current issues and collaboratively plan annual operational strategies for their respective companies.

The instructor plays a pivotal role in designing the learning objectives, guiding discussions, selecting topics, assigning roles, and managing the time effectively. The simulation spans a duration of three weeks and incorporates the in-class PBL technique. A crucial aspect of developing the SPBL project

lies in defining the desired learning outcomes. These outcomes are aligned with the program's and course syllabus's learning objectives and encompass the transferable skills essential for GFMA 2023 International Business.

Discussing Key Strategies in International Business

Furthermore, aside from offering theoretical explanations of various decision-making strategies, it is essential for students to possess some foundational knowledge about the important strategies in international business within a specific context or region. When implementing this simulation within the International Business course, all groups will be presented with a specific scenario, such as one related to international business strategy. Each student will assume an individual management role, making it imperative for them to possess a working understanding of all the key stakeholders that will be involved in the simulation. Balancing these roles can be both challenging and highly beneficial. It provides an opportunity to investigate how to effectively collaborate as part of a team, assist undergraduate students in achieving the course's learning objectives, and navigate their current responsibilities while simultaneously preparing for and exploring potential future career opportunities.

Presenting the Issues

In addition to the references pertaining to international business strategy, students will require supplementary readings and discussions regarding the specific entry strategy matter employed in the simulation. Ideally, at least one class session should be allocated to delve into this entry strategy issue extensively, ensuring students are well-prepared to address it effectively during the simulation. To acquaint students with the current scenario, they have been provided with some materials and academic journal articles. Further, comprehensive information will be provided later on entry strategies in international business, encompassing topics such as exporting, licensing, franchising, turnkey projects, wholly-owned subsidiaries, strategic alliances, and joint ventures in oversea businesses.

Conducting the Simulation

After students have been assigned their respective decision-making roles and groups have been formed, the introduction to the simulation takes place. In the initial week of the simulation, each group convenes to deliberate on their approach to the operational issue at hand. Maintaining comprehensive records of all simulation events is crucial, so the group's President should establish a note-taking strategy, either by designating someone or establishing a schedule for note-taking duties. These notes should be distributed to all group members upon the conclusion of the simulation, prior to composing their final simulation paper.

In the second week, the simulation kicks off as students begin to implement the entry strategy discussed during the first week. Executing this strategy necessitates interaction with both domestic and international community members. In this same week, students are presented with a crisis scenario related to the international business entry strategy issue central to the simulation. This crisis can be triggered by a singular event or develop gradually through a series of smaller incidents. For instance, if the crisis pertains to cash flow and the yield from various fishing sites, an international pirate attack on a vessel could act as the catalyst for the crisis that students must address. This simulation is designed to span approximately three class days, culminating in the final day when students enact their roles and make decisions within the simulation. The objective on this

concluding day is to encourage each group to arrive at a solution for the current crisis or, at the very least, make significant progress in addressing it.

During the final week, the simulation is considered concluded. During this period, students have the opportunity to compare the outcomes of their simulations across different groups and assess which actions appeared to be more effective than others. By comparing their own actions with those of other groups, they can observe how distinct actions may yield different results, even when starting from similar initial circumstances. This serves as a valuable means of illustrating both the positive and negative consequences associated with various potential entry mode strategies.

ANALYSIS AND DISCUSSION

This section analysed the problem-solving skills of International Business students after the completion of simulation and role-play exercise. The data was based on written reports and reflection.

Problem-Solving skills

The data was collected based on written reports, consist of the opening statement, positioning explanation and analytical statement of individual student. The analysis of data was assessed according to rubric scale of marks provided by the Ministry of Higher Education in iCGPA rubric assessment guidelines (2017). The result of the analysis provided in below table.

Table 4 Problem-Solving Assessment

Category	Individuals	Percentage
High	35	70%
Moderate	13	26%
Low	2	4%

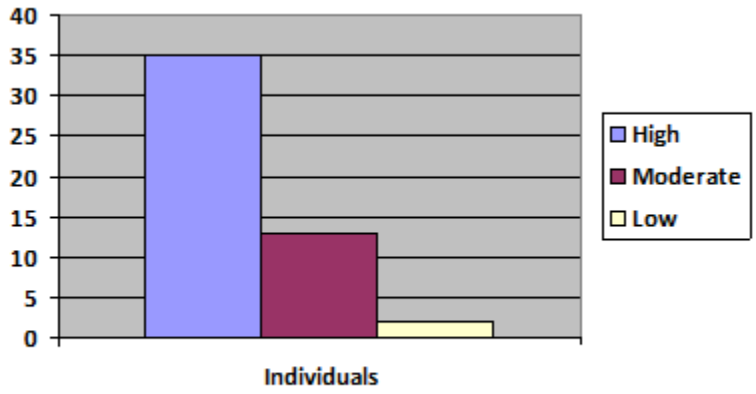

Figure 2: Chart - Problem-Solving Assessment

Table 5: Problem-Solving Assessment According to Sub-Attributes

	High	Moderate	Low
Problem Identification	16 (32%)	23 (46%)	11 (22%)

Analysis	17 (34%)	19 (38%)	14 (28%)
Application	46 (92%)	3 (6%)	1 (2%)
Synthesis and Evaluation	14 (28%)	6 (12%)	30 (60%)
Decision-Making	2 (4%)	46 (92%)	2 (4%)

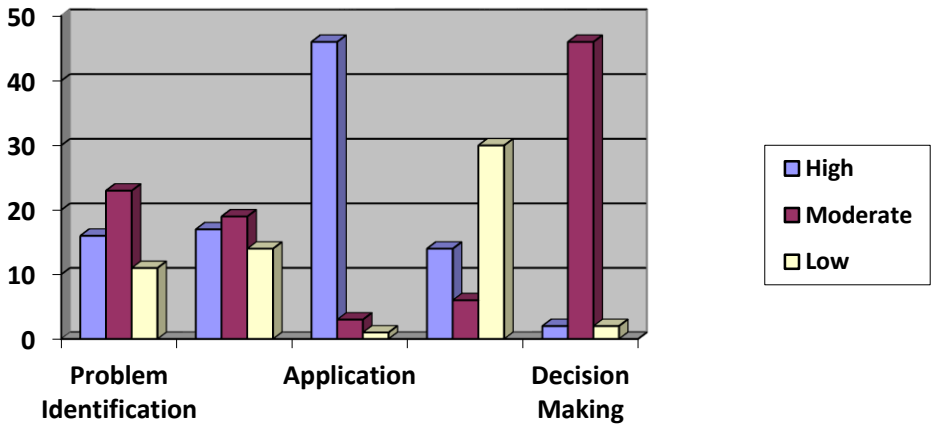

Figure 3: Chart - Problem-Solving Assessment According to Sub-Attributes

Student's Reflection on Problem-Solving skills

47 students gave their respond that SPBL helped to improve their problem-solving skills. Below are some reflections written by the students after the completion of the simulation exercise in the classroom.

Student 1:

"The simulation does help me a lot to improve my problem-solving skills. As a leader, I have to act professionally and optimistic in order to gain trust from other people. In solving any problems, firstly I was taught to identify the conflict and issue arised and must understand everyone's (other countries') national interest too. Secondly, I must come out with as many possible solutions as I can and evaluate either the option is feasible or not. And lastly I need to choose the best solution that will bring benefits to every country. I learnt not to be selfish in making a decision".

Student 2:

"Yes. It made me think critically and outside of the box. It has tremendously helps me to improve my ability in solving problems. This problem is very complex but in the same time reaching to an agreement and resolution should not be impossible as it is a real-life situation. And that drives me to find resolutions and agreement on this issue thus making me read more and study more thus enhancing my critical analysis skills".

Student 3:

"The simulation does help me to improve my ability in solving problems. Through the simulation, I learned to think in different ways instead of the ways that I always think of".

Instructor's Reflection on the Conduct of Simulations

Week 1:

Students initially found the concept of simulation and role-play in the classroom somewhat confusing. Their initial impression was that the upcoming simulation would involve duplicating what had been done previously. To address this, the instructor needed to clarify that this simulation was a novel assessment method and provide a comprehensive explanation of how it would be conducted, along with the important requirements.

Students also made efforts to familiarize themselves with the concept of simulation and role-play within the classroom. Upon receiving the scenario for their respective groups, they promptly conducted research to gather information to be shared and presented to their peers. They engaged in discussions to determine the most suitable approaches for clarifying their operational decision-making.

The process of enhancing their problem-solving abilities expanded during this problem-solving phase. The instructor also offered guidance and insights on selecting the appropriate fishing strategies based on their specific scenario. Overall, students are in the process of adapting to the environment, where they are expected to independently make decisions and immerse themselves in the roles of operational decision-makers.

Week 2:

Students displayed increased confidence after being granted ample time to conduct research on the annual fishing decision-making process. They exhibited greater involvement within their groups, collaborating to determine suitable fishing sites—Harbor, Coast, and Deep—and the number of fishing boats to acquire or divest. They devised strategic fishing plans tailored to each fishing site, aligning with the specifics of their respective scenario. As they presented the issues and crises related to their assigned scenario, students appeared more at ease and relished the simulation experience.

Students readily exchanged ideas and viewpoints with their fellow group members and with others from different groups. However, a minority of students still lacked confidence and were hesitant to actively participate during the simulation. These students tended to assume a passive role, primarily listening rather than contributing their own ideas. The instructor observed this and made efforts to engage with these students, encouraging them to become more actively involved in the simulation.

In summary, students significantly enhanced their problem-solving abilities by formulating their own ideas and opinions during the simulation. They also developed increased confidence and improved communication skills throughout the simulation activities.

Week 3:

This marks the final week of our simulation and role-play exercise. This week includes a debriefing session, which serves as the concluding aspect of the simulation. During these debriefs, team members take the opportunity to reflect on their recent experiences, discuss what went well, and identify areas for improvement. The debriefing session holds significant importance in the simulation process, as it allows students to engage in open discussions about both individual and group experiences. It also provides instructors with the chance to connect the simulation with the topics covered in the international business curriculum. During the debriefing, students are encouraged to share their insights regarding the following aspects:

1. **Learning:** They reflect on what they have learned through the simulation.
2. **Challenges:** Students discuss the challenges they faced during the simulations and elaborate on how they successfully tackled them.
3. **Engagement:** The debriefing also explores the extent of their engagement in the simulation activities.
4. **Strategies:** Students provide their opinions on the strategies they employed to address various issues encountered during the simulation.

5. **Problem-Solving Skills:** They share their perceptions of their problem-solving abilities, highlighting any improvements or areas for growth.
6. **Future Plans:** Students discuss their plans and strategies for addressing similar challenges in the future, drawing from their simulation experiences.
7. **Practicality:** The debriefing session examines the practicality of integrating this simulation within the international business course.
8. **Suggestions:** Lastly, students offer their suggestions for enhancing future simulations, providing valuable feedback for course improvement.

CONCLUSION

The outcome of this project should generate a high level of interest and relevance within the BIBM program and other management-related teaching subjects. It aims to evaluate the effectiveness of teaching and understanding within the context of Simulated Problem-Based Learning (SPBL). The research outcome holds particular relevance to the field of International Business (IB) as it assesses the efficacy of simulated SPBL in cultivating and evaluating students' problem-solving skills in complex international business scenarios. The goal is to equip BIBM students with the ability to not only grasp but also apply contextual knowledge in international business, ultimately enabling them to generate solutions for intricate international business challenges.

However, there is room for improvement in students' analytical, synthetic, and evaluative skills. In the simulation process, students need enhancement in breaking down and meticulously examining collected data into smaller components for decision-making and interpretation. Subsequently, this approach will facilitate the consolidation of these smaller parts into comprehensive ideas and innovative solutions during the synthesis and evaluation phases. To address these skill gaps, a proposal is made to introduce decision-making and critical thinking as sub-topics within the international business strategies chapter.

While simulation exercises have the potential to serve as problem-solving catalysts in a Problem-Based Learning (PBL) course, several factors need consideration when implementing this approach. These factors include the scope of the simulation, the students' level of preparedness at the start of the course, and the instructor's objectives in utilizing the simulation. Researchers have identified various possible objectives for employing simulations, with the belief that achieving these objectives will strengthen students' analytical and applicative efforts, motivating them to move beyond mere knowledge acquisition and comprehension of course materials (Chernikova et al., 2020). Essentially, when students recognize the connection between applying concepts and performance outcomes, they are more likely to appreciate the value these concepts bring to real-world business activities (Jorre de St Jorre & Oliver, 2018).

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