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Essence of Partnership Management in Project-based Learning: Insights from a University's Global Project Programme

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Abstract

Universities today are embracing teaching pedagogy of project-based learning (PBL) through collaboration with industry. PBL allows students to learn theory in the classroom, then apply what they have learned in the field, solving a wide array of business or societal challenges facing organizations, while at the same time, solidifying their own knowledge. While there are many benefits of such academic-industry partnership, there are also challenges that if not addressed, may have serious consequences. This study aims to develop a framework that highlights the essence of partnership management in a PBL setting and validate the framework by conducting a focus group study on a university in Singapore's PBL programmes called UNIS-X and UNIS-XO. Our results suggest that the key features of partnership management include *value proposition, depth of collaboration, knowledge creation and exchange, and continuous feedback*. Our findings offer useful insights to managing effective partnership when engaging industry partners in a PBL programme. With this knowledge, educators can devise useful actions to ensure these features of partnership are established and maintained throughout a PBL course. Implications for research and education relating to PBL with an industry focus are highlighted.

Keywords: Project-based Learning; Partnership Management; Global Project Programme

Introduction

The scale and complexity of challenges facing the world today call for integrated solutions across a wide range of disciplines. Universities need to produce students who can adapt and deal with complex problems nimbly and creatively. This calls for a radical transformation of education in order to equip graduates with relevant future work skills. The Future Work Skills 2020 report (Institute for the Future, 2011) identified transdisciplinarity, novel and adaptive thinking, as well as cross-cultural competency as skills important to future workforce. Transdisciplinarity draws from various disciplines to redefine problems outside normal boundaries and develop solutions based on a new understanding of complex situations. Novel and adaptive thinking refers to the ability to solve problem, think outside the box and come up with tailored solutions. Cross-cultural competency refers to the ability to operate in different cultural settings. This demands specific content, not just linguistic skills, but also adaptability to changing circumstances and an ability to sense and respond to new contexts. The report also identified useful skills such as 'real world work exposure' and 'managing collaboration with industry partners'. It notes that defined learning outcomes and structured activities must be established to support the learning outcomes in collaboration with industry partners. It also implies a curriculum that integrates industry experience with learning in classroom.

To inculcate learning of skills for the future so that students are future-ready, universities today are embracing teaching pedagogy of 'learning through doing' or project-based learning (PBL), which allows students to learn theory in the classroom, then apply what they have learned in the field, solving a wide array of business or societal challenges facing organizations, while at the same time, solidifying their own knowledge (Faridah et al., 2011). To embrace this learning philosophy, teaching pedagogy may have to evolve from content teaching, to engaging students

in active learning, hence focusing on applying and reflecting knowledge (Lee et al., 2014). Teaching is no longer just about knowledge transfer. It is also about creating learning environment and process that motivate and inspire students to stay actively engaged (Blumenfeld et al., 2011).

Mastery of these skills through PBL may require partnership among relevant stakeholders in devising effective solutions to address complex problems (Heaviside et al., 2018). Universities may partner industry to create platforms to incubate new management ideas, or to analyse big data across firms to better understand and customize talent development needs (AACSB, 2019). Problem-solving platforms, where businesses and other organizations share challenges in the hopes that teams of experts will compete to find a solution, are gaining traction (Kapitzke and Hay, 2011). To deepen collaboration and partnerships to build an enabling and sustainable industry ecosystem, one approach is to drive collaboration and knowledge exchange between the academic community and companies. Universities possess the capabilities to help companies transform. It is mutually beneficial as students can be involved in the process such that they apply what they have learned in the classrooms and also gain practical experience, while companies can tap on new ideas and views. Such collaboration may even lead to more co-creation and innovation. Some of these partnerships may also go beyond local shores to include industry partners in different geographical locations. By integrating industry experience with knowledge in classroom, universities are able to partner businesses and adapt their curricula to meet the rapidly evolving needs of the industry (Pollard, 2012; Ekaterina et al., 2020; Heather et al., 2015).

While it is clear that there are many benefits of academic-industry partnership through PBL, however, there are challenges in establishing such partnership that if not addressed, may result in either failure of such collaboration or an unpleasant experience for parties involved. This study aims to develop a framework that highlights the essence of partnership management in a PBL setting and validate the framework by conducting a focus group study on a university in Singapore (UNIS)'s PBL programmes called UNIS-X and UNIS-XO.

The following section provides a background to PBL, which is followed by a summary of our research approach and a description of our case study. Following the case description, we present our proposed framework coupled with analysis and findings. The paper ends with conclusion, and implications for research and education.

Literature Review

Project-Based Learning

PBL is a form of situated learning based on constructivist finding that students develop a deeper understanding of content material when they actively construct meaning by working with and using ideas (Tal et al., 2006). Markham et al. (2003) alternatively describe PBL as “a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured among complex, authentic questions and carefully designed projects and task” (p. 4). Typically, PBL involves assignment that requires students to apply previously acquired knowledge to produce some forms of output, such as a process or product design, a computer code or simulation, or the design of an experiment and the analysis and interpretation of data. The final product, which is the central focus of the assignment, would normally be a written or oral report summarizing what was done and what the outcome was (Prince and Felder, 2007).

Bell (2010) aptly describes PBL as “the basis of the curriculum” and not just a “supplementary activity to support learning” (p.39). According to Tal et al (2006), a PBL environment would usually possess five key features: (1) It begins with a driving question or a problem to be solved; (2) Students initiate and participate in authentic situated inquiry in order to explore the driving question, learn and apply important ideas in relevant disciplines; (3) Students, teachers and members of the community engage in collaborative activities to derive solutions for the driving question; (4) Scaffolding takes place with the help of learning technologies that engage students in the process of inquiry; and finally, (5) Students create tangible outputs that address the driving question.

Prior research has shown that PBL provides a number of positive learning outcomes for students. Gultekin (2005) suggests students are turned into better researchers, problem solvers and high-order thinkers through PBL. Studies that have compared PBL to conventional teaching approach by Thomas (2000), Mergendoller et al. (2006), as well as Parker et al. (2011), show that the former yielded significant positive effects on problem solving skills, conceptual understanding, attitudes to learning, and “comparable or better student performance on tests of content knowledge” (Prince and Felder, 2007, p.16). Similarly, Williams and Linn (2003) have also demonstrated that students engaged in PBL achieved higher scores than their counterparts at the receiving end of traditional classroom instruction.

Partnership Management in PBL

Partnerships have been established between universities and industry to enhance innovation and improve social and educational outcomes for learners and employer groups (Angela et al., 2018). Existing PBL literature has suggested knowledge creation and exchange are important for a successful collaboration between two partners (Philbin, 2010). The increased understanding of the differences, constraints and boundaries that exist between industry partners assisted teachers to co-produce industry-based curricula, contextualise curriculum with industry examples and share sector specific knowledge and skills that help to enhance students to work transitions (Watters et al., 2016; Lou et al., 2010).

According to Flynn and Pillay (2013), partners from industry play an important role in influencing subject content to better align with industry knowledge, skills and practices. In this way industry partners are able to enculturate school students to professions and trade areas, through prolonged contact (e.g., industry projects) and thereby enable more efficient cultural transitions from school to work. Such partnership between university and industry partner could serve as a platform for the recruitment of future employees. A secondary benefit to industry partner is the opportunity to influence school curriculum with the aim of better aligning future employees with the skill needs of the industry.

Universities require long-term partnerships with industry and the capacity to review and revise in response to internal and external disruptions (e.g., staffing challenges, economic fluctuations). Industry also needs to understand the governance procedures and responsibilities of universities, particularly in relation to their operational procedures and be open to feedback and monitoring of the partnership arrangements (Watters et al., 2013). For PBL to be effective, it is critical for partners to provide positive and constructive feedback during the project (Whatley, 2012).

In order to achieve an effective partnership, Watters et al. (2016) suggest the university and the industry partner should agree on the following: a shared partnership objective; necessary resources, capacities, knowledge and skill mix to achieve the objectives; individual partners' contributions and intellectual property issues; role and responsibilities based on individual partners' strengths; and model for governance, management, monitoring and reporting on outcomes. Pillay et al. (2013) also argue that there is a need to have clarity on how the different benefits attached by the partners are aligned to the respective partners' resource allocations. Kapitzke and Hay (2011) highlight the importance of devising a mechanism for conducting periodic reviews on the effectiveness of partnership between universities and industry partners. Douma et al. (2000) proposed a framework that includes six drivers for strategic fit in collaboration: (1) that cooperation is only advisable when partners have a shared vision of future development within the industry in which an alliance will be formed, and of the impact that these developments will have on their individual positions; (2) that precondition for strategic fit is compatibility of strategies; (3) that the alliance partners will only be prepared to make concessions when the alliance is of strategic importance to them; (4) a successful alliance requires mutual dependency; (5) any alliance should have added value for the partners and/or their customers; and (6) partners must carefully consider whether the market will accept that alliance.

A good example to illustrate a partnership between university and industry partners is a real project in collaboration with an industry partner in a PBL setting. The development and management of the project is complex involving students, faculty and the industry partner, but generates tangible advantages for all three parties. The key has always been to present students with problems and projects that are as open-ended and realistic as possible, creating situations that closely resemble those encountered in industrial settings, such as: project requirements that are not well structured, changes to project scope and timelines, and the need to address a customer's changing needs or expectations (Jacques et al., 2016). Such PBL courses allow multifaceted real-world problems to be resolved with solutions addressing technical, business, and social issues. These require a lot more engagement with the industry partners, from project definition to evaluation of students' skills. Further, additional efforts in communication have to be made for project using this teaching approach. One of the successful implementation strategies for PBL is to let students know the purpose for what they are learning. PBL makes that "why" obvious by connecting academic concepts to real world context (Boss and Larmer, 2018).

While many would agree with the importance of an effective partnership between universities and industry, there is however, almost no empirical study that explored and validated the essence of partnership management in a PBL setting (Pan et al., 2017; Shpeizer, 2019). Accordingly, our study aims to address this knowledge gap in the PBL literature so as to better promote effective partnership management in PBL courses offered by universities.

Research Methodology

We adopted a qualitative research approach with focus group design. Our strategy was to interview relevant stakeholders to develop a framework that describes the essence of partnership management in a PBL setting. The qualitative research approach is particularly appropriate for an exploratory study since its strength also lies in its ability to explain the phenomenon based on the interpretation of data (Eisenhardt, 1989). Overall, our goal was to expand and generalize theories, and not statistical generalization (Yin, 2003).

Focus group discussions¹ (FGD) were conducted with undergraduate students who took a UNIS-X course either in January-May or August-December 2018. Emails were sent to these students to solicit their willingness to participate in the FGD. In total, 24 students were recruited. Altogether there were 8 students who were enrolled in the Bachelor of Accountancy, 12 students were enrolled in the Bachelor of Business Management, 2 students were enrolled in the Bachelor of Science in Information Systems and 2 students were enrolled in the Bachelor of Social Sciences.

These 24 students were split across 2 different Focus Groups with 2 groups of 12 students. Each FGD lasted between one-hour and one-and-a-half hour, and was tape recorded and then transcribed. Participants of the FGD were asked to discuss their experiences in two UNIS-XO courses respectively, mainly on what they took away from the course experience in terms of the learning outcomes and skills, their personal evaluations of the effectiveness of UNIS-XO courses and the interaction with the industry partners. Besides the students, we also conducted FGD with one faculty who taught in one of the two UNIS-XO courses, asking specifically his perception of the PBL's course design, delivery and its impact on overall student experience, and his partner management experience.

These focus group interviews were taped-recorded with interviewees' permission and transcribed immediately after the meetings. Focus group interviews were the main source of our data because the researcher could grasp the interviewees' interpretations of their own project experience, as well as their beliefs in the projects (Gilflores and Alonso, 1995). Secondary data such as student reports were also gathered to supplement the information collected through these focus group interviews.

These questions are open-ended and exploratory to allow opinions to be expressed. They allowed the researcher to interpret the interviewees' interpretation of events, as well as their beliefs. Triangulation of data was carried out for the findings wherever possible by searching for convergence among multiple and different sources of information to form themes or categories in our investigation (Creswell, 2000). This was achieved through secondary data such as project documentations.

In terms of data analysis, we recursively iterated between the empirical data and the PBL literature. The iteration helped to shape our findings. We continued with the iterative process until it is possible to comprehensively explain the findings of the phenomenon we study, and no additional data were needed to be collected to improve the interpretation of the findings. Our analysis included reading all transcripts and documents, highlighting the descriptions and developing a list of relevant themes.

To establish the reliability of the coding, each coder was asked to quote a particular segment of the relevant texts. Coding was conducted independently and without consultation and guidance. We examined the portions of the codings where both coders agreed and measured the inter-coder reliability using Cohen's Kappa coefficient. Our coefficient score of 0.77 suggests substantial agreement between the two coders, and the result also demonstrates that

¹ Prior approval for the focus group discussions was obtained from our university's Institutional Review Board. Informed consent were obtained from the participants who participated voluntarily in this study. Participants were assured of data privacy and understood clearly that their responses would not be reported in such a manner that their identity could be identified. Participants were also assured of data confidentiality. The research data were kept securely and could be accessed only by research team.

the categories were clearly defined and could be located in the text with little ambiguity. As the reliability coefficient was high, each coder was subsequently asked to code separate portions of the texts. We sorted relevant interview comments and secondary reports according to the various categories and developed a list of themes within each category (Harris, 2001). The list contained the location of each comment on the transcript, the transcript number, the interview date, any links to other comments and reports. In order to reduce researcher bias, a senior colleague was asked to take part in early analysis of some of the data. The colleague was uninvolved in the fieldwork and was, therefore, unfamiliar with the case. The role of this colleague was to bring a different and possibly more objective eye to the evidence and detect any bias in data analysis.

Project-based Learning Pedagogy at UNIS

Recognizing the need to prepare its students with twenty-first century competencies so as to tackle increasingly complex real-world problems, UNIS launched undergraduate courses that adopt PBL pedagogy called UNIS-X programme. The UNIS-X Initiative is a paradigm shift which focuses on experiential learning as opposed to teaching as well as a mind-set shift to get the university to collaborate both internally and with our external stakeholders more. The PBL pedagogy at UNIS-X comprises four principles: 1) project-based learning tackling real-world problems and issues; 2) inter-disciplinary learning; 3) active mentoring by faculty and industry partner and; 4) a deeper relationship between faculty, student and industry partner. By applying the four principles in a project that is integrated into the curricula, students are expected to learn competencies such as critical and inventive thinking, communication, collaboration and adaptability. Thus UNIS-X offers students an authentic platform to learn and share knowledge.

As at December 2017, there were 38 PBL courses at UNIS-X. The enrolment for these PBL courses reached 4466 places between 2015 and 2017. To date, 3385 undergraduate students have studied at least 1 PBL course with 811 students studied 2 or more PBL courses. These PBL courses had collaborated with more than 259 organizations that provided projects, and students taking such PBL courses had delivered more than 700 implementable solutions to these organizations.

Types of PBL projects at UNIS-X include accounting, branding, business improvement, data analytics, design thinking, innovation, policy implementation, smart technologies, strategic management and web/mobile application development. Out of the 259 partners, 70% were private companies, 14% were public companies and 16% were non-profit organization. Among the private companies, 32% were multi-national companies, 7% were large local companies and 61% were small-medium enterprises. Top 3 industries were Information and Communication, Health and Social Sciences, and Wholesale and Retail Trade.

UNIS-XO

In 2018, UNIS expanded its UNIS-X course offerings beyond Singapore's shores with the introduction of UNIS-X Overseas programme (UNIS-XO). UNIS-XO offers students a unique, hands-on opportunity to tackle real-world challenges that overseas organisations face. Working in a variety of industries through projects, students collaborate with their hosts to dig deeper into their organisations' unique challenges. The world becomes the classroom where students learn to be critical thinkers, problem solvers, team players and global citizens who are attuned to real-world challenges and issues. To prepare students to be future-ready in this fast-changing world, UNIS-XO aims to inculcate the following knowledge and skills in students' learning

process: (1) Ability to see connections and differences across disciplines and to integrate knowledge to explore an issue or meet a challenge; (2) Adaptability to new or unfamiliar environments and to exercise leadership; (3) Be creative and apply critical thinking when solving problems; (4) Ability to make sound decisions while managing complex situations; (5) Ability to work collaboratively and productively as a team; and finally, (6) Be culturally sensitive global citizens. As UNIS students may also lack overseas industry experience, it is hence the university's intention to enable students to gain relevant experience and global exposure with various overseas industries which will enhance their career planning and development through UNIS-XO courses.

Central to the UNIS-XO programme is project-based learning. UNIS-XO projects focus on real challenges outside Singapore. The project sponsors will work with project teams virtually until the students travel overseas for a two-week in-country immersion experience as a team, led by the faculty advisor. The travel experience is usually towards the end of the UNIS-XO course and is in conjunction with the final presentation to the project sponsor. While overseas, students will work closely with the organization to conduct fieldwork and finalise their recommendations under the mentorship of the faculty and project sponsor. The project sponsor serves as a context mentor; is dedicated to the success of the project and readily available to the team weekly.

Students who are mentored by the faculty (content mentor) and the project sponsor (context mentor), work as student consultants to provide innovative perspectives to the challenge. Real-world projects are challenging and multi-faceted. Students need to quickly learn to embrace ambiguity and work with uncertainties. Working in diverse teams, students leverage on one another's strengths and knowledge to provide practical and implementable solutions to the challenge. Students develop attitudes of empathy, and respect for differences and diversity as they work with hosts (project sponsors/students) of a different culture.

UNIS-XO integrates real-world overseas projects into existing curriculum to make learning more relevant and authentic as students are able to apply what they learned in class to the real-world. Students who take UNIS-XO courses are not restricted to a particular discipline. This not only adds to the diversity of student team composition, it also lends an interdisciplinary approach to problem solving. There is enhanced learner autonomy by having students as project managers who co-define project goals and benchmarks, instead of faculty as the primary knowledge source.

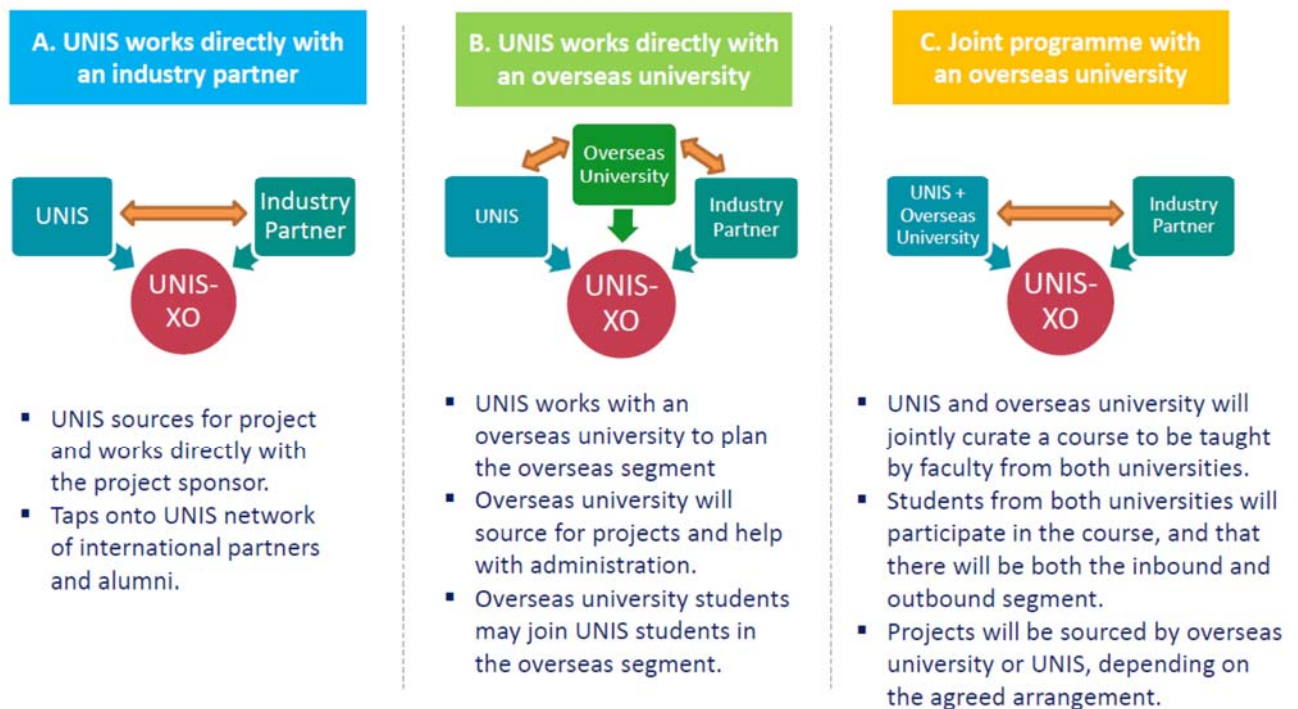
Working with project sponsors from the private, people and public sectors, students gain industry experience and networking with organization leaders and practitioners. As faculty become more connected with industry, they also get to understand the current issues of the industry and thereby embark on relevant research that will have meaningful impact. UNIS-XO also contributes to the global exposure efforts of the university by exposing students to business opportunities in Asia (but not limited to). Apart from providing an industry-related and cultural learning experience, UNIS-XO also helps profile UNIS internationally by working with overseas organizations and students (in courses where overseas partner universities are invited to join).

A pilot of two UNIS-XO courses with 51 students took place in 2018. A year later, UNIS-XO grew to 10 courses with 260 students. To date, the programme includes 12 UNIS-XO courses to 11 cities around the world, benefiting 311 students. The high demand (about 3 times over-subscribed) of students signing up for UNIS-XO courses indicates a strong interest. Students who have read UNIS-XO courses were asked to provide assessment on the following learning

outcomes – problem solving, ability to bridge theory to real-world challenge, communication skills, dealing with ambiguity, openness, building networks, and cross-cultural learning. 100% of the students rated that the UNIS-XO courses have helped them improved those learning outcomes and more. Students mentioned that UNIS-XO courses were challenging, given the fact that they had real clients to manage and expectations to fulfil. Despite the intensity, overall feedback has been positive. Students appreciated the richer learning experience and were motivated by the applicability of their work. While students were stressed by uncertainty presented in real-world projects, demands from the project sponsors and time pressures to deliver the outputs, they valued the unique learning experience which prepares them for the future workplace. Figure 1 below illustrates three UNIS-X Overseas Working Models embraced by UNIS-XO programme. So far, the university has already implemented working models A and B and is planning to launch model C in future.

Figure 1: UNIS-X Overseas Working Models

UNIS-X Overseas Working Models



An Illustrative Example of Working directly with an Overseas Industry Partner (UNIS-XO Working Model A): An Accounting Study Mission to Laos

The country of focus in this accounting study mission course is Laos. The project sponsor is Company A. The project term started in August 2018 and ended in November 2018. Altogether, three projects were completed involving 29 UNIS undergraduate students across five teams. Students attended six seminars in Singapore and visited five organizations in Laos.

Apart from understanding various accounting principles and concepts to shape better business decisions, students participating in this UNIS-XO course were expected to gain a deeper appreciation of the social, economic, cultural and political setting of Laos. The aim of the course was to allow students to translate classroom knowledge and theory into practical

solutions for overseas organizations through a consultancy project whereby they would present their research findings and recommendations to the management of the organizations during the trip. Through the project, students would learn how to solve business problems with guidance from the faculty and overseas project sponsor mentors, from problem definition to final project presentation – while simultaneously testing their skills in the real-world settings. Students would also have the opportunity to visit companies and speak with local representatives and industry practitioners, providing them with the cross-cultural learning experience.

Given that this is an accounting course, the project was designed to focus on evaluating problems faced by the accounting/finance and other functions of one company in Laos, and recommending/applying solutions to these problems. At the end of this UNIS-XO course, students were expected to achieve the following objectives: (1) Develop a better understanding of the country's economy and its economic policies, key industries, foreign direct investments, financial and banking sectors, capital market and regulatory and tax regime; (2) Gain an insight into business and investment opportunities in the country; (3) Solve real-world business problem through a student consultancy project; (4) Learn how to handle uncertainty in project groups; and (5) Develop networking and other life skills by interacting with business leaders.

Three different projects were identified by Company A for students:

- Company A uses five different key performance indexes (KPIs) for its two sub-units, which distribute branded tires and branded motorcycles respectively in Laos. Company A is keen to consider other KPIs for a better assessment of the businesses' performance. Two teams were tasked to develop balanced scorecards as well as a dashboard for the two sub-units. The student teams took accounting data provided by Company A and developed dynamic balanced scorecards and dashboards for the two sub-units. The balanced scorecards described performance in numerical terms and improved managers' ability to benchmark and measure performance across various business dimensions. It also aligned the company's strategic objectives with employee evaluation. The dashboards created complemented the balance scorecards by allowing managers to visualize KPIs and also allows managers to easily identify areas for improvement.
- While the business units operate independently, their finance operations are managed by a central finance unit, with the entire distribution business being presented as a single entity in the annual filing. To ascertain the market value of the branded tires and branded motorcycle sub-units, another two student teams were tasked to research and develop a range of valuations based on different models. The student teams took accounting data provided by Company A and built a variety of valuation models using different modelling techniques. This information was valuable to Company A, as it provides them with greater insights into both sub-units.
- As it was, Company A owns four units under its distribution business (including Fast Moving Consumer Goods, Agriculture, Automotive and Content Management System). Students were asked to research on the jurisdictions of regional countries, to aid the owner in evaluating the pros and cons, and the feasibility of setting up a holding company in the region. The student team provided insights and recommendations for how Company A could set up a holding company. The proposal also included a

comparison of the pros and cons of setting up a holding company in Singapore and Hong Kong.

Overall, Company A was pleased with the quality of the proposals and expressed keen interest in implementing relevant student recommendations:

- **Balanced scorecard and dashboard:** While Company A currently measures business performance across its various sub-units, the performance measures used across these sub-units are not standardized. This makes it difficult for Company A to accurately compare and track business performance across sub-units. Company A is hence seeking to improve the tools that they use for comparing and tracking of business performance. The balanced scorecards created by students provide Company A with a variety of performance tracking measures that can be used across sub-units. Dashboards created complement these performance tracking measures by allowing Company A to effectively monitor and track business performance.
- **Valuation:** Company A is in the early stages of exploring the sale or listing of the branded tires and branded motorcycles business sub-units. However, one stumbling block has been the lack of reliable valuations of these sub-units. The valuation models provide relevant insights to Company A's continuing discussions on a possible sale or listing of its various businesses by providing a reliable estimate - based on accounting information - of their value.
- **Setting up of holding company:** Company A is a family-run business, with a large number of family members holding varying stakes in the company. Corporate governance has been a perennial problem for the company, and the recommendations provided by students provided relevant insights to Company A's continuing discussions on a possible restructuring of its business to improve corporate oversight.

The President of Company A observed, "We have learnt immensely from the UNIS faculty and students as they presented to us their proposed solutions to the business hindrances that we have been facing. Personally, I am impressed by the level of professionalism, the quality of work and the concerted efforts your students have shown. We hope to partner UNIS again in the near future."

The faculty teaching the course commented, "The UNIS-XO course provided me with a unique opportunity to work with senior executives of one of the most prominent family-run companies in Laos. I gained a first-hand perspective into the unique challenges of doing business in a developing Southeast Asian economy like Laos. Teaching this course also allowed me to gain insights into how academia and industry can work together to bring about unique benefits to various stakeholders."

A student who studied in this course also shared, "This UNIS-XO course that I read was truly impactful to my education journey at UNIS – it allowed me to apply what I learned in classroom into the real-world context through cross-cultural engagements with projects faced by organizations, bolstered by mentoring from faculty and industry practitioners. This eye-opening experience has given me a greater understanding of the complexities organizations have to deal with, equipping me with the knowledge and skillsets to be better prepared for the global working world."

Another student also highlighted the usefulness of the regular feedback provided by the mentor from Company A during the project, “By always providing us with adequate guidance and feedback, we had a good understanding of Company A’s way of working and its expectation from the project. This allowed us to better shape our ideas and options we could go about approaching our project. Also by knowing we had a mentor who was supportive and someone we could always check with, it made us more independent and confident in carrying out the tasks in our project.”

A student also commented the important role played by feedback from peers in the project, “Since this was a group project, we decided to distribute roles, but still helped and supported one another in information searching and brainstorming of solutions. Even though each member was in-charged of various parts of the project, he or she would still evaluate his or her classmate’s work and offered constructive feedback to one another. Such regular feedback from peers helped students to become more aware of their weaknesses which were timely eradicated.”

An Illustrative Example of Working directly with an Overseas University (UNIS-XO Working Model B): A Business Study Mission to Thailand

The country of focus in this business study mission course was Thailand. The Thai partner in this course was M University. With M University’s introduction, students in this course completed 5 projects from different organisations in Thailand – Hospital, Sports Company (one of the largest sports garment and equipment manufacturers and sales company), Telecommunication Company (one of the three largest telcos in Thailand), a Children’s Foundation and a Packaging Company. Altogether 25 UNIS students participated in this course. These students had to attend 8 seminar sessions in Singapore to cover various aspects of South-east Asian topologies including history, arts and culture, socio-political economics, economics of industries and product markets, key industries and industrial developments in Thailand, and some data analytics preparations before heading to Bangkok for a 14-day immersion (13 May to 26 May 2018). While the students were in Bangkok, some students from M University also joined in the projects to provide their local insights and perspectives.

At the end of this UNIS-X Overseas course, students were expected to achieve the following objectives: (1) Understand Thailand's economy, its culture, history, and political system, as well as its way of doing business; (2) Learn from business practitioners (first hand) about business practices; (3) Identify and evaluate business opportunities presented by Thailand's emerging economic sectors; (4) Gain insights into entrepreneurship and entrepreneurial culture; and (5) Establish business and education networks with contacts to solicit student internship, exchange and career opportunity.

Together with the 5 project sponsors, the faculty from UNIS and M University scoped the following projects for the students:

- Hospital: develop a business model and revenue creation proposal for the hospital.
- Sports Company: develop a branding proposal for the sports apparel and equipment company to venture into Southeast Asia.
- Telecommunication Company: conduct market analyses of the demand for SIM card among tourists and provide recommendations to increase SIM card sales capture for this telecommunications company.

- Children's Foundation: develop a proposal to improve child learning and tracking of performance based on a passive Montessori method that Children's Foundation is adopting in its homes.
- Packaging Company: conduct a market study on how Forest Stewardship Council (FSC) certification can have positive impact on the company's paper products and businesses via environmentally friendly production processes.

Overall, the project sponsors were pleased with the quality of the recommendations and expressed keen interest in implementing students' respective solutions:

- In the Telco project, the students were able to perform a street survey on a targeted Korean visitor segment. They used analyses starting from website purchases to journey mappings to prescribe the pain points as well as the key score points to land sale and expansion of the SIM card segment. They were able to recommend concrete platforms to stage advertisement and sale capture. One recommendation is to increase sales efforts at airports as the students realized and can connect with one of my lecture point about tourism being a large 5% of Thailand's GDP.
- In the Sports Company, the students convincingly persuade the company's management that branding should be different and international to appeal to the new Gen Z, and successfully identified a weak point in the developmental path of the Company that has been very traditional and faces slow growth on an uphill incline. The group recommends a new brand-line marketing approach and strategy and even scope a campaign model with designed new logo for the new design to push to SEA with spearhead to Singapore.
- In the Packaging Company's group, visiting forestry-company in Kanchanaburi and doing research on the agricultural landscape in Thai provincial backdrops allowed the team to provide a convincing analytical framework to compute the cost and benefit of going FSC or going alternative environmental certification. It provides a simpler way to analyze how local farmers dealing with decisions of certification could choose one or the other. The visit to the Packaging Company for the six students in that group however was cancelled when they were there because of a factory accident the previous day and the company decided not to engage visiting students that day.
- In the Hospital group, the students identified curing fever as a potential epidemic to be a major theme breaker than the traditional theme of treating dengue and malaria – which is seen as archaic and non-issue in a large sector in downtown Bangkok. They also recommended building on the TropMed advanced care brand and extending to the other services and products of the hospital in order to build clients, customers, and businesses. They suggested IT solution improvements, better patientcare services, and enhancing visibility of the hospital.
- In the Foundation for Children's project, the students were able to observe keenly the children's learning process using the design thinking approach of being able to empathize with their learning processes. It was found that their implementation of Montessori method was not complete as it lacks tracking the students' learning and their choices of learning activities. The group then studied the curriculum carefully and came up with a holistic and robust method of revised Montessori in order for the children to reap the best benefits in their formative and growing years.

The project sponsor companies of Telco, Sports Company, and Hospital received very well the project presentations by students and in all projects, our students received praises for their hard work, speed and detailed analyses. They were treated to lunches by their respective hosts. The group also held a mid-trip work progress review followed by dinner. There was an end-of-project combined dinner with some of the participating Thai students. The Thai students help with some language translations as well as sharing of knowledge and cultural exchange.

For the project at the Hospital, the presentation by the student team was impressive and they were arranged to meet separately the Dean of the Faculty of Medicine as well as a Professor from M University, to share their findings. They also presented their findings to the entire hospital management team on the final day of their project.

Working with selected Thai students from their international college also gave our students an experience of collaborative learning not just amongst UNIS students but also across the cultural divide. This was a very rewarding experience for our students as they form friendships and networking and caught more insights into Thai culture from sharing by their Thai peers.

A student who participated in the course commented, “Based on my major as well as area of interest, I decided to select Telecommunication Company, one of the top 3 telecommunications companies in Thailand. The case study is one with a marketing perspective, requiring us to assist the company’s sim card tourist division in expanding its market share among tourists. Working on this project not only allowed me to apply what I learned in classrooms into the real-world context, but also have a taste of what marketing consultancy is like, allowing me to explore my future career options. In addition, I also had the opportunity to work with a team of Thai students and a professor from M University, making this course an even more meaningful and interesting one. Working in a foreign environment also helped me to step out of my comfort zone of working with Singaporeans and hone my teamwork and interpersonal skills. I thoroughly enjoyed my interactions with the Thai students, which was a unique learning experience that I may never experience if not for this programme. We received tremendous hospitality from the local students, who would spend their free time to bring us around Bangkok. Apart from the learning experience gained, the friendships forged with the locals were undoubtedly one of the best takeaways of this study mission. The cultural exchange element of this trip also surprised me as I did not expect to be able to work this closely with students from another background.”

Another student commented, “The UNIS-XO trip was an experience I never expected and yet one that I feel was very impactful to my education in UNIS. The cross-cultural learning gave me a better understanding of the culture and practices of other ASEAN nation and I can definitely say that I've learnt more about Thailand through experiencing it. My experiences working on the Hospital Project were nothing short of realistic and eye-opening. I learned how healthcare institutions operate in foreign countries and I learned how to apply the knowledge acquired in UNIS to real life situations. We tackled real world issues and navigated around real world challenges to get to a solution that was applicable to the real world. Something that you cannot learn in class.”

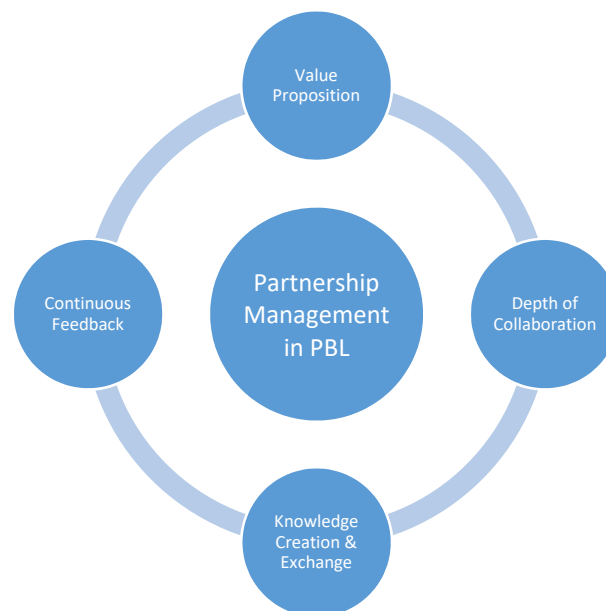
A student felt the regular feedback from the industry partner and the teacher made a significant difference in the project success, “The industry mentor and our professor provided us with lots of feedback throughout our project. This has helped to significantly improve our solution. I liked the fact the professor has set up a safe learning environment right from the start. He kept

encouraging us to ask questions and take risk to explore new ideas. He also sought the commitment of the industry mentor to address our questions as soon as questions were raised. The partnership between the industry mentor, our professor and us have really worked very well. This had greatly contributed to the success of our project.”

Results and Discussion

This study views partnership between the University and industry as a way to enhance innovation and improve social and educational outcomes for students, employers and teachers. Managing partnership is complex but should generate tangible advantages for all three parties (Rybnicek and Konigsgruber, 2019). Having adapted from Watters et al.’s (2016) and Douma et al.’s (2000) strategic partnership frameworks, we proposed a framework for partnership management in PBL (refer to Figure 2) that includes four key features: *value proposition*, *depth of collaboration*, *knowledge Creation & Exchange* and *Continuous Feedback*.

Figure 2: A Proposed Framework for Partnership Management in PBL



In this section, we used content analysis to examine the key features of partnership management in a PBL setting. By applying the key features of partnership in our proposed framework onto our case data, each of these features is identified in the case and discussed below with relevant literature also enfolded in the discussion where applicable. Table 1 shows an examination of the key features of partnership management in two UNIS-XO courses.

Table 1: An Examination of Key Features (Value Proposition, Depth of Collaboration, Knowledge Creation & Exchange and Continuous Feedback) of Partnership Management in Two UNIS-XO Courses

| UNIS-X Working Model/Course | Value Proposition | Depth of Collaboration | Knowledge Creation & Exchange | Continuous Feedback |
|-----------------------------|-------------------|------------------------|-------------------------------|---------------------|
|-----------------------------|-------------------|------------------------|-------------------------------|---------------------|

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| <p>UNIS works directly with an industry partner/ Accounting Study Mission to Laos</p> | <ul style="list-style-type: none"> • Develop a better understanding of the country's economy and its economic policies, key industries, foreign direct investments, financial and banking sectors, capital market and regulatory and tax regime. • Solve real-world business problems through a student consultancy project. • Develop networking and other life skills by interacting with business leaders. | <ul style="list-style-type: none"> • Altogether five seasoned managers/assistant managers were assigned to five student project teams to guide students to prepare their project work | <ul style="list-style-type: none"> • Developed a balanced scorecard and dashboard for measuring and monitoring business performance across sub-units. • Valuation of sub-units for future sale or listing. The valuation models offered a reliable estimate. • Corporate governance has been a perennial problem for the company, and the recommendations provided by students provided relevant insights to Company A's continuing discussions on a possible restructuring of its business to improve corporate oversight. | <ul style="list-style-type: none"> • Offered feedback on Company A's way of working and its expectation from the project. This allowed students to better shape their ideas and options they could go about approaching their project. • Constructive feedback offered by peers have helped students to become more aware of their weaknesses which were timely eradicated. |
| <p>UNIS works directly with an Overseas University/ Business Study Mission to Thailand</p> | <ul style="list-style-type: none"> • Understand Thailand's economy, its culture, history, and political system, as well as its way of doing business. | <ul style="list-style-type: none"> • Together with the five project sponsors, the faculty from UNIS and M University scoped the projects for the students in the course. | <ul style="list-style-type: none"> • In the Telco project, the students were able to perform a street survey on a targeted Korean visitor segment. They used analyses starting from website purchases to | <ul style="list-style-type: none"> • The industry mentor and the professor provided students with feedback throughout their project. |

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| | <ul style="list-style-type: none"> • Learn from business practitioners (first hand) about business practices. • Establish business and education networks for future internship, exchange, career, and business opportunities. | <ul style="list-style-type: none"> • While the students were in Bangkok, some M University students also joined in the projects to provide their local insights and perspectives. • Joint student work between students from both universities. The course was led by a UNIS instructor and with Thai corporate contacts developed by the M University faculty. • Working with selected Thai students from their international college also gave our students an experience of collaborative learning not just amongst UNIS students but also across the cultural divide and was a very rewarding experience for our students as they form friendships and networking and caught more insights into Thai culture from sharing by their Thai student-friends. | <p>journey mappings to prescribe the pain points as well as the key score points to land sale and expansion of the SIM card segment. They were able to recommend concrete platforms to stage advertisement and sale capture.</p> <ul style="list-style-type: none"> • In the Sports group, the students persuaded the Sports Company's management that branding should be different and international to appeal to the new Gen Z, and successfully identified a weak point in the developmental path of the Company that has been very traditional and faces slow growth on an uphill incline. The group recommends a new brand-line marketing approach and strategy and even scope a campaign model with designed new logo for the | <p>This has helped to significantly improve their solution.</p> |
|--|--|---|--|---|

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| | | | <p>new design to push to South East Asia.</p> <ul style="list-style-type: none"> • In the FSC group, it visited forestry-company in Kanchanaburi and conducted research on the agricultural landscape in Thai provincial backdrops. This allowed the team to provide a convincing analytical framework to compute the cost and benefit of going FSC or going alternative environmental certification. • In the Hospital group, the students identified curing fever as a potential epidemic to be a major theme breaker than the traditional old theme of treating dengue and malaria – which is seen as archaic and non-issue in a large sector in downtown Bangkok. They also recommended building on the TropMed advanced care brand and extending to the | |
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| | | | <p>other services and products of the hospital in order to serve clients, customers, and businesses.</p> <ul style="list-style-type: none"> • In the Foundation for Children’s project, the students were able to observe keenly the children’s learning process using the design thinking approach of being able to carefully empathize with their learning processes. The group then studied the curriculum carefully and developed a holistic and robust method of revised Montessori in order for the children to reap the best benefits in their formative and growing years. | |
|--|--|--|---|--|

Value proposition: For any partnership to work effectively, value propositions have to be established clearly and agreed by all partners. In our case, UNIS and its industry partners in Laos and Thailand had established clear value propositions (Rybnicek and Konigsgruber, 2019) for them to enter into a partnership. For UNIS, an application of the PBL pedagogy could help to create a meaningful hands-on learning experience for its students. For the various industry partners, they saw value in working with students in a project setting as such interaction allowed them to learn alternative perspective on solving issues and problems the organizations were facing, from a group of millennial students and faculty from Singapore. For instance, the President of Company A mentioned the company had learned immensely from the UNIS faculty and the students as they presented to the company a set of proposed solutions to the business hindrances that they were facing. The President also highlighted he was

impressed by the level of professionalism, the quality of work and the concerted efforts shown by UNIS students. The UNIS-XO projects had resulted in positive and purposeful dialogue to improve educational opportunities and break down the barrier between UNIS and industry. When universities and industry work together to create meaningful project-based learning experience, students, educators and businesses would all benefit (Pan et al., 2019). When businesses are part of creating and implementing meaningful project work, they become part of the learning process, and businesses have a vested interest in making sure students produce good quality work so that they would be able to deploy implementable student-developed solutions. Also, when students work on problems and issues that matter, students take more ownership in their work and provide higher quality results.

Depth of collaboration: is the extent which two or more parties working together, agreeing on decisions cooperatively, so as to achieve success. Depth of collaboration may be influenced by issues ranging from the provision of resources, to the accuracy of planning and the commitment of partners (Schofield, 2013). In our case, the depth of collaboration was demonstrated by the number of mentors assigned by the industry partners to guide and advise the student teams. Along with faculty (the content mentor), each student team was assigned an industry mentor who served as context advisor. As the course involved partners from corporate, non-profit or government-sector organisations, it was built into the course that the partners and faculty would actively mentor so that students would benefit most out of the deep relationship. Here, a key feature of close engagement with an industry partner was for them to provide authentic feedback on student projects. Once the students could better see the applicability of the course to their future careers with client-based projects, they would be more committed to obtain a deeper understanding of what it means to apply theory learned outside the classroom. To establish deep collaboration, universities must show industry the value of partnership and create opportunities for businesses to “have skin in the game” and work with educators in developing worthwhile and meaningful project work (Seow et al., 2019). Commitment is key to making a partnership work (Canhoto et al., 2016). Commitment refers to the questions of how much a person identifies with the collaboration and its goals, how loyal this person is to this collaboration and whether they are willing to put sufficient effort into it (Collier et al., 2011). The existence of a mutual commitment supports industry–university partnerships (Attia, 2015), and the commitment of the top management in particular is a crucial factor in that regard (Ankrah and AL-Tabbaa, 2015) because partners (and their leaders) would not share resources when they are not committed to a collaboration.

Knowledge creation and exchange: Existing PBL literature has suggested knowledge creation and exchange are important for a successful collaboration between two partners (Philbin, 2010; Tal et al., 2006; Gultekin, 2005). This holds true particularly for knowledge-intensive organizations such as university (Fernandes and Ferreira, 2013; Angela et al., 2018). In our case, the students, the industry partners and even the faculty teaching the courses admitted they had learned a lot from the project experience and social interaction. For instance, the faculty commented the UNIS-XO course had provided him with a unique opportunity to work with senior executives of one of the most prominent family-run companies in Laos. He had gained a first-hand perspective into the unique challenges of doing business in a developing Southeast Asian economy like Laos. Another student who went on the UNIS-XO trip to Thailand commented it was an experience she never expected and she felt it was impactful to her education in UNIS. In particular, the cross- cultural learning gave her a good understanding of the Thai culture and local business practices. The interaction with the Thai students from M University also gave her a wider perspective on education and culture. Whether knowledge created can be effectively transferred, hinges on the capability and the willingness for

knowledge transfer in instructors, industries and students. The nature of knowledge created and exchanged in the projects were also consistent with observations in the existing PBL literature (Lou et al., 2010): (1) Factual, conceptual and process knowledge are the major types of knowledge and the sources of knowledge transfer include students, instructors and industries; and (2) Students' knowledge transfer include highly experienced tacit knowledge and more concrete explicit knowledge.

Continuous feedback: For PBL to be effective, it is critical for partners to provide positive and constructive feedback during the project (Whatley, 2012). In our case, one of the student participants commented that with frequent guidance and feedback from the industry partner, the student team had a good understanding of the business practice and the company's expectation for the project. This allowed the student team to better shape their ideas and options they could go about approaching their project. By knowing they had a mentor who was supportive and someone they could always check with, it made them more independent and confident in completing their project. Another student also raised the point that the regular feedback from the industry partner and the faculty made a significant difference in their project success. In particular, the guidance and feedback had helped to significantly improve their solution. Such feedback had resulted in positive and purposeful dialogue to improve educational opportunities and breaks down the barrier between UNIS and the industry, and in this case, in another country. However, in order for feedback to be effective, students must be given time to revise their original thinking and apply their new understanding or idea (Cook et al., 2019). The feedback loop is completed when a student critically reflects on the feedback, improves his or her work, and as a result allows him or her to meet the desired learning outcomes of the project.

Conclusion and Implications

Our study has developed a framework that describes the key features of partnership management in PBL and validated the framework by examining UNIS's experience in its PBL programmes, UNIS-X and UNIS-XO. While it is clear that there are many benefits of academic-industry partnership through PBL, however, there are also challenges in establishing such partnership that if not addressed, may result in either failure of such collaboration or an unpleasant experience for parties involved.

For researchers, this paper contributes to the PBL literature by identifying and validating the key features of effective partnership in PBL. This serves as one of the first exploratory and validation studies in examining key features of partnership in the PBL literature. For educators, this study offers useful insights to understanding effective partnership management when engaging industry partners in a PBL course. With the knowledge, educators can devise useful actions to ensure these features of partnership are established and maintained throughout the project. For effective partnership to be sustainable, the collaboration requires concrete goals and strong value proposition to be established. Otherwise, the partnership may fall into the category of failure quickly. There must also be equitable benefits to all partners for any deep relationship to develop.

In addition, for any partnership to work, understanding each other's role is important. For Universities, this could mean that the pedagogy has to change with times to suit the needs of businesses in the present and the future. Tertiary education could also play a role in nurturing and developing the enterprising mindset within students. Faculty, too, learn the constraints of the industry to better inform their theory as well as gained rich data and research ideas. Faculty

may also build stronger relationships with industry partners as they may collaborate over curriculum development.

For students, this could mean that learning is no longer textbook-based, nor is it about just receiving information and knowledge. Education has to equip them with the aptitude and the right kind of skills to be ready for the work place of tomorrow as well as to prepare them to become life-long learners. An enterprising mindset should be cultivated from young, to remove the stigma and fear of failure. Students enjoyed these courses as they were doing projects that had real world impact and could see how their solutions could be applied in the real world setting. Such project experience may enhance students' problem-solving, analytical, reasoning and communication skills. The course has demonstrated a curriculum design that integrates industry experience with learning in classroom.

For industry partners, this is a way to bridge the gap between academia and industry. The industry partners may find it interesting to look at their businesses from fresh perspectives. They often feel that it takes time for students to adjust to the working environment coming from the university but PBL acts like a guided internship and allows students to work on substantial projects under the direct supervision of company staff and faculty. In this way, companies may also get to know potential hires better and vice versa. This enhances the cultural fit for both the student and the company. Also, as students work on real business issues, develop solutions that are practical, workable, which may help to address business problems.

It is clear that the industry has to play an active role in modernizing university curricula. This means bridging the gap between academia and practice, and preparing students to the challenges of the future economy. The collaboration between universities and industry through PBL may nurture students into developing the following skillsets: (1) Ability to see connections and differences across disciplines and to integrate knowledge to explore an issue or meet a challenge; (2) Adaptability to new or unfamiliar environments and to exercise leadership; (3) Creativity and critical thinking when solving problems; (4) Sound decision making while managing complex situations and (5) Ability to work collaboratively and productively as a team. Such experiential learning may strengthen the nexus between skills acquisition and utilisation, and hence, equipping students with an enterprising mindset to innovate in the digital age.

The limitation of this study concerns the generalizability of a single case study that involves a Singapore university working with industry partners based in other countries. While this study represents an important step toward understanding partnership management in PBL setting, longitudinal field studies that involve multiple case studies are clearly called for, to reflect the diversity of learning dynamics and also the varied nature of partners in different countries. In particular, future studies may explore new features of partnership management or conduct a study to compare industry partners from the same country versus industry partners based in another country, so as to see if features of partnership management remain the same.

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