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Collaborative Online International Learning Classes to Enhance Co-Creation in Canada and Japan

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Abstract

The coronavirus disease (COVID-19) globally accelerated distance learning. Students who wish to create new businesses pursue collaborative learning in a cross-cultural environment. However, the research on the effect of collaborative learning on such courses is scant. This study investigated the changes in students' entrepreneurial competencies and cross-cultural knowledge, skills, and abilities before and after participating in an online global career course and the differences between students from three Canadian universities and a Japanese university in collaborative online international learning (COIL). Survey data were collected from June to August 2021, before and after the course, from 33 participants. The questionnaire survey was based on the five main categories of knowledge, problem-solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation. The results revealed statistically significant differences in all the categories before and after the course. Considering the effect sizes, all five categories except for confidence and motivation improved following the course, showing that both the individual and the collaborative learning in the course design worked well in the COIL approach. Although most of the students lacked a business background, they could understand the basic frameworks for business planning through self-study in the asynchronous sessions and considered the tasks and solutions in the synchronous collaboration stage. Furthermore, the students from the Canadian universities performed well in all five categories and the students from the Japanese university performed well in four categories. Considering the budget and accessibility, students' learning outcomes in COIL have a positive effect on their understanding of global careers.

Keywords: entrepreneurship education, international education, cross-cultural management, COIL, problem-based learning, collaborative learning, co-creation, career development

1. Introduction

1.1 Collaborative Online International Learning

International education in the 21st century includes various types of education such as transnational, borderless, and cross-border education (Knight, 2003). Globalization and technology have increased the need for students who wish to create new businesses (i.e., entrepreneurs) to pursue collaborative learning in a cross-cultural environment (Yasuoka, Miyata, Inoue, & Kikuchi, 2018), especially in an online setting (Dennen, Darrabi, & Smith, 2007). Two types of technologies, asynchronous and synchronous, have been used for online learning (Bradshaw & Hinton, 2004; Sher, 2009). Moore (2014) found that an asynchronous online learning environment requires students' self-discipline and a virtual community to communicate with peers. Synchronous sessions evoke feelings similar to being in a physical classroom because students and instructors are connected at the same time. Callahan, Umeda, and Matsubara (2021) recommend synchronous sessions to enhance student engagement or supplement asynchronous sessions.

The term collaborative online international learning (COIL) was coined in 2006 for university engagement globally (Rubin, 2017). COIL supports cross-border communication and students' academic and personal engagement with a global network of classmates (Guth, 2013). The coronavirus disease (COVID-19) globally accelerated distance learning formats of virtual classrooms and COIL. Faculty and students faced the challenge of adjusting to online teaching and learning. Faculty were required to ensure the quality of education including meaningful engagement and interactive activities with students and peers (Misha, Gupta, & Shree, 2020; Neuwirth, Jovic, & Mukherji, 2020). Although COIL projects involve cooperation among universities that have different educational mandates, course designs, teaching styles, assessments, academic calendars, and time zones,

it allows students to study abroad without incurring great financial costs or travel time (Rubin, 2017).

A major advantage of collaborative learning, which differs from the traditional one-way knowledge transfer to students (Harasim, 1990), is students' interaction within small groups or project-based teams to improve their problem-solving and communication skills (Yazici, 2005). Maier (1967) found that team members gained knowledge and greater inputs and solutions for solving problems when they received feedback from other member in the team in the process of collaborative learning. Furthermore, team members learned about the decision-making process with a better collective acceptance and suggestions. The benefits of collaboration and team skills have been recognized for both businesses and academics (Napier & Hasler-Waters, 2002). Rooney (2000) found that students in team projects strengthen individual and team commitment, as well as enhance collaborative skills required for becoming a professional even though they might be frustrated due to disharmony and conflict (Joinson, 1999). Ko and Rossen (2001) discussed the importance of self-direction and resistance to projects and team members' project involvement. Napier and Hasler-Waters (2002) further found that receiving support, getting acquainted, trusting, communicating, and organizing a team relates to a team's satisfaction in online team work setting.

Moore (1989) discussed the importance of student-student, student-instructor, and student-content interaction. Both individual and collaborative learning among students and instructors have been found to be necessary (Piccolli, Ahmad, & Ives, 2001). Benbunan-Fich, Hiltz and Harasim (2010) proposed a dynamic model for online interaction learning theory (Figure 1). This model emphasizes the importance of both individual and collaborative learning. The quality of the learning experience relates to the three stages of learning, namely idea generation, idea organization, and intellectual convergence, and it includes group engagements based on the sharing of thoughts. The input factors are technology, students, instructors, and courses (Baron & Kenny, 1986), while output is measured by accessibility, faculty satisfaction, student learning and satisfaction, and cost-effectiveness. To develop COIL, universities should technologically and educationally support professors and students and train the administrative staff and faculty (Rubin, 2017).

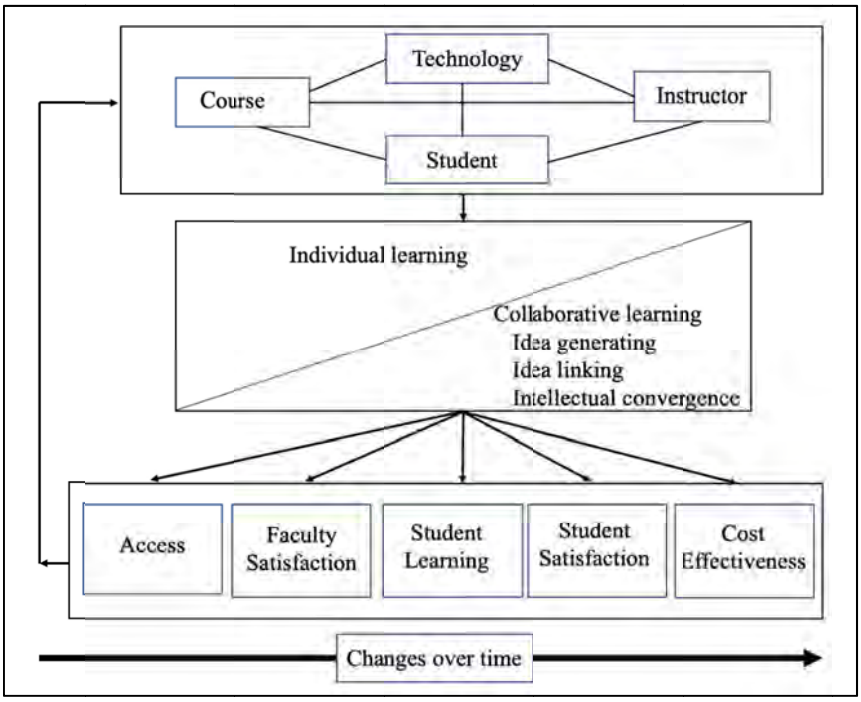

Figure 1. Dynamic model for the online interaction learning theory

Source: Benbunan-Fich, Hiltz, and Harasim, 2010, p. 34.

1.2 Project-Based Learning (PBL) in Entrepreneurship Education in Japan

Students take the initiative to solve problems with others in project-based learning (PBL) (Brassler & Dettmers, 2017). PBL is an effective pedagogy for entrepreneurship education (Colin, 2004; Matsunaga, Ashizawa, & Watanabe, 2020; Okudan & Rzasa, 2006). In particular, PBL courses develop students' creativity, leadership,

communication skills, flexibility, initiative, social skills, productivity, and logical thinking skills (Mohamadi, 2018). They also invoke their interest in corporate management and career awareness (Morishita, 2019), and enhance students' learning attitudes, advanced thinking and problem-solving skills, collaboration and communication, and self-reliance (Miyawaki, Komori, & Maeda, 2015). Further, PBL can improve technology commercialization skills and market and customer understanding (Takata, Matsuhashi, Nakagawa, Kato, & Matsuyuki, 2018).

PBL courses in entrepreneurship education are rapidly expanding globally (Mohamadi, 2018; Ngereja, Hussein, & Andersen, 2020), including in Japan (Matsunaga et al., 2020). Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT, 2021) proposed that entrepreneurship education can help students recognize the diverse values in society and enhance their well-being (Note 1). It encourages collaboration among the university-industry-public sectors to create entrepreneurial ecosystems. Further, in a survey in which 598 private and public universities in Japan participated, MEXT (2021) found that only 27% offered entrepreneurship courses (Note 2). Moreover, most current curriculum designs focus on students acquiring knowledge about management strategy, marketing, idea generation, managing growth, design thinking, and business plan creation. Only 7% of entrepreneurship programs have practical courses. MEXT aims to improve entrepreneurial activities by promoting the development of human resources who have broad perspectives and expertise, can discover and solve problems, and enjoy the challenge of business creation via higher education institutions (Yokoi, 2017). Hence, the role of higher education institutions in developing human resources and industry-academia collaboration is important to improve sustainable entrepreneurial activities (Hsu, Ju, Yen, & Chang, 2007; McKeon, 2013; O'Brien, Cooney, & Blenker, 2019; Van de Ven, 1993).

1.3 Effects of PBL and COIL

The 2021 MEXT survey pointed out that empirical research on the effects of entrepreneurship education was limited. Among this scarce body of literature, Nabi, Linan, Fayolle, Krueger, and Walmsley (2017) showed the benefits of higher education courses on students' entrepreneurial abilities. Inada (2018a) examined the effects of entrepreneurial competencies (knowledge, skills, and attitudes), to reveal statistically significant differences in skills and attitudes before and after an entrepreneurship program, but there was no significant difference in the knowledge gained. Inada (2018b, 2019a, 2019b, 2019c, 2020a, 2020b) also showed an improvement in students' career development in an entrepreneurship collaborative course.

COIL enables student-student interactions to improve positive learning outcomes (McInnerney & Roberts, 2009) and is highly effective (Appiah-Kubi & Annan, 2020; Kayumova & Sadykova, 2016). Fisher and Coleman (2001) found that students enjoy enhanced autonomy in COIL courses. Collaboration leads to the production of diverse ideas from different perspectives, despite the cultural and language barriers and different time zones (Appiah-Kubi & Annan, 2020). Students also learn about their peers' cultural and educational backgrounds, communication styles, learning strategies, and interactions, and COIL should carefully plan its content, activities, online communication tools, and deadlines (Kayumova & Sadykova, 2016).

Ramírez (2020) found that, in the Mexican and US COIL projects, half of the US-based students stated that such projects positively affected their peers, while the Mexico-based students reported a negative experience due to schedule conflicts, unfamiliar topics, and their expectations of traditional teacher-based learning instead of facilitator interactions. Zhou, Jindal-Snape, Topping, and Todman (2008) found that the US students expect instructors to be facilitators who respect students' autonomy, whereas Chinese students expect instructors to be authoritative figures in a classroom. Gray, Asojo, Lindgren, Nolan, and Nowak (2021) emphasized the importance of pedagogy, technology, and cross-cultural training in the COIL approach.

In addition, since entrepreneurship has a relatively limited academic history and covers multiple disciplines, there is a shortage of educational programs, educators, and researchers in this field in Japan (Harada, 2010; Inada, 2021). Indeed, the need for PBL courses in entrepreneurship education has not generally been accepted by higher education institutions (Yokoi, 2017) and few research findings have been published on the subject (MEXT, 2021). It is obvious that case studies of PBL subjects with industry-academia collaboration in Japan are scarce (Kameda, Nakamura, Komaya, Kaminuma, & Kuroda, 2007; Kimura, Matsuo, Hashizume, Nakaze, & Zhang, 2019; Tomo, 2018). In particular, with respect to the challenges of industry-academia collaborative PBL programs in the COIL approach, some studies indicate that the challenges are class content and teaching methods (Iizuka, 2018), the accuracy of deliverables and evaluation criteria (Tomo, 2018), and teacher training (MEXT, 2021). However, studies that verify the effectiveness of education and implement program development are lacking.

1.4 Research Purpose and Hypotheses

This study investigates changes in students' entrepreneurial competencies and cross-cultural knowledge, skills, and abilities before and after they participated in an online global career course with host companies and organizations and the differences found between students at Japanese and Canadian universities. It proposes two hypotheses:

H1. The global career course improved students' entrepreneurial competencies and cross-cultural knowledge, skills, and abilities.

H2. The improvements in the entrepreneurial competencies and cross-cultural knowledge, skills, and abilities of students at Japanese and Canadian universities were the same.

2. Method

This research was a case study of students attending an online global career course in 2021. The course was a part of a collaborative educational project jointly run by three Canadian universities (King's University College at Western University, Queen's University, and University of Toronto), a Japanese university (Kwansei Gakuin University (KGU)), and international partner companies and organizations (Manulife, Ricoh, and the Canadian Embassy to Japan) (Note 3). The course aimed to enable students to identify and discuss actual issues that companies and organizations face and create business plans to address these problems. By taking this course, students would improve their understanding of global businesses, cross-cultural competencies, analytical skills, and international team-building, including online communication and management skills related to business issues.

The course was divided into two parts: an online individual lecture series and a collaborative series. The first part was offered from June to July 2021. Students gained a basic knowledge of business frameworks through online lectures and created SWOT analyses and business model canvases in groups. Further, the on-demand series introduced modern business frameworks and topics and provided students with an opportunity to analyze and find practical solutions to real-world business issues. In the second part, students synchronously spent 10 days together in August 2021. Students and instructors at the Japanese university had early morning courses, while the Canadian students had evening courses. The students presented SWOT analyses, business model canvases, and business plans to instructors and received feedback from instructors and their peers. Finally, they presented a business plan to the representatives of the host companies and organizations and received feedback. All the discussions were conducted in English.

2.1 Sample

In total, 34 participants attended the course. Consent was obtained from all the participants before the start of the course. One student was excluded due to missing values; hence, 33 participants were included in the final survey (14 from the Canadian universities and 19 from KGU). Almost three-quarters (73%) of the participants were women; 33% were in their sophomore year, 49% in their junior year, and 18% in their senior year. Approximately 30% belonged to business-related disciplines (commerce, economics, and management). The remaining students were from law and politics, international studies, human welfare studies, and policy studies. All the students submitted the application form and a short essay as part of their application. The students from KGU required a certain level of English language proficiency (e.g., IELTS 5.5), as they were to be interviewed by an instructor and required to participate in a group discussion. Hence, the participants had an English language proficiency above the upper-intermediate level.

2.2 Data Processing

To measure the impact of entrepreneurship education, Jack and Anderson (1998) recommended comparing the differences in the pre- and post-course measurements. In this study, the participants' responses to a survey questionnaire based on five categories of entrepreneurial and cross-cultural management competencies served as the pre- and post-course measures. There were 28 items related to the 5 main categories of knowledge: problem-solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation. Table 1 presents the key entrepreneurial and cross-cultural management competencies included in the survey. The participants used a five-point Likert scale to indicate the extent to which they agreed or disagreed. The response values ranged from 1 (strongly disagree) to 5 (strongly agree). After the course, they commented on the five categories included in the survey. An instructor explained the purpose of the survey in the first and last sessions, while informing the participants that participation was voluntary, personal information was confidential, and grades would not be affected by responses. Data were collected from June to August 2021, before and after attending the global career course. SPSS (version 27) was used for the data analysis.

Table 1. Students' entrepreneurial competencies and cross-cultural knowledge, skills, and attitudes in self-evaluation sheet

Main theme		Question
Knowledge	a	I have general knowledge of Japanese culture and Japanese social habits.
	b	I have general knowledge of Japanese business culture.
	c	I have general knowledge of Canadian culture and Canadian social habits.
	d	I have general knowledge of Canadian business culture.
	e	I have general knowledge of international business.
	f	I have knowledge of the host company.
	g	I have knowledge of the industry/business sector to which this company belongs.
	h	I understand the assigned task given by my host company.
Problem solving skills	a	I can conceive and discuss several ideas (including methodologies) in order to solve a problem.
	b	I can critically analyze my ideas (including methodologies) and make improvements.
	c	I can incorporate comments and procedures suggested by peers and supervisors.
	d	I can make a proper decision even if I face unexpected problems.
Communication skills	a	I try to set up a friendly atmosphere and listen to others with a positive attitude so that the other person can easily express their opinion.
	b	I can grasp the other person's point so as to ask proper questions and make proper comments.
	c	I can select the proper way of speaking (speaking speed, vocabulary, and honorific expressions, etc.) in consideration of other persons' feelings and language competence.
	d	I can clarify and explain my opinion to others in a logical way.
	e	I can proactively express my idea to someone who has different viewpoints.
Cross-cultural understanding and teamwork skill	a	I am aware of positions/roles of people from different social backgrounds and able to establish friendly relationships.
	b	I can deal with the stress of adjusting to a culture new to me.
	c	I use appropriate verbal (e.g., accent, tone) and non-verbal behavior (gesture) when a cross-cultural interaction requires it.
	d	I can suggest new ideas to my team members and am actively involved in the assigned project.
	e	I can support my team members and jointly manage any issues as they emerge.
	f	I can respect social rules and group decisions.
Confidence and motivation	a	I am confident of producing adequate results even in a global project.
	b	I am confident of producing adequate results even in a totally new project.
	c	I can set specific personal goals and make efforts to accomplish the goals.
	d	I make steady efforts even if I encounter difficulties.
	e	The more challenging a goal is, the more I am eager to achieve the goal.

Source: Arranged from JASSO.

2.3 Internal Consistency

Table 2 shows the Cronbach's alpha values for knowledge (eight items), problem-solving skills (four items), communication (five items), cross-cultural understanding and teamwork skills (six items), and confidence and motivation (five items) before and after the global career course. Murase, Takada, and Hirose (2007) preferred 0.8 or more as the threshold value to indicate a measure for practical use; however, in social sciences and individual survey data, a threshold value of 0.7 or more is considered to indicate good internal consistency. In this study, Cronbach's alpha values ranged from 0.7 to 0.9 (i.e., they were acceptable) except for problem-solving skills at KGU which ranged from 0.6 to 0.9.

Table 2. Cronbach's alpha in knowledge, problem solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation

Total

Cronbach's alpha	Pre	Post
Knowledge	0.7	0.9
Problem solving skills	0.9	0.8
Communication skills	0.9	0.8
Cross-cultural understanding and teamwork skills	0.9	0.8
Confidence and motivation	0.9	0.9

Canadian universities

Cronbach's alpha	Pre	Post
Knowledge	0.7	0.9
Problem solving skills	0.9	0.9
Communication skills	0.8	0.8
Cross-cultural understanding and teamwork skills	0.8	0.8
Confidence and motivation	0.9	0.9

KGU

Cronbach's alpha	Pre	Post
Knowledge	0.8	0.9
Problem solving skills	0.9	0.6
Communication skills	0.9	0.7
Cross-cultural understanding and teamwork skills	0.9	0.8
Confidence and motivation	0.9	0.9

Source: Author.

3. Results

To test the hypotheses, t-tests were used to compare the mean values of the measures of the five categories before and after the global career course. Additionally, we compared the students from KGU with those from the Canadian universities. The pre–post results indicated that the global career course improved students' knowledge, problem-solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation (Figure 2).

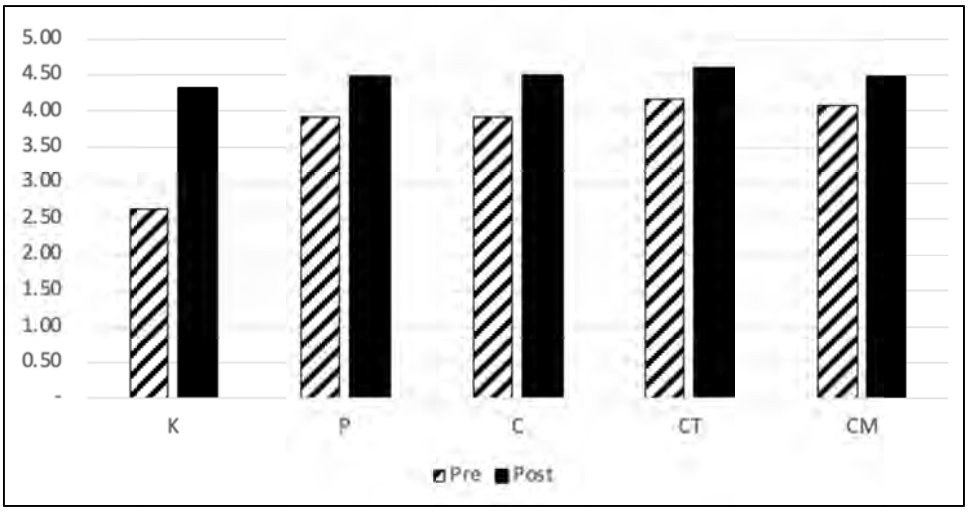

Figure 2. The impact of knowledge, problem solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation, before and after the global career course

Source: Author.

Table 3 presents the main results for the Canadian universities and KGU together. Significant differences between the pre- and post-results were found for knowledge ($t(32)=-16.50$, $p<0.01$), problem-solving skills ($t(32)=-5.35$, $p<0.01$), communication skills ($t(32)=-4.96$, $p<0.01$), cross-cultural understanding and teamwork skills ($t(32)= -4.23$, $p<0.01$), and confidence and motivation ($t(32)=-2.67$, $p<0.05$). By subcategory, there were significant differences for all the measures, except for Ca, CTa, CTf, and CMb.

Table 3. The results of mean scores pre-and post- course of students from the Canadian universities and KGU

	Pre-course		Post-course		Pre−Post	
	Mean score	Standard Deviation	Mean score	Standard Deviation	Changes	Effect size
1. Knowledge (K)	2.62	0.60	4.31	0.60	-1.69*	0.95
a	3.79	0.89	4.30	0.95	-0.51*	0.47
b	2.88	0.99	3.97	1.05	-1.09*	0.76
c	3.30	1.26	4.18	0.85	-0.88*	0.74
d	2.73	1.49	4.03	0.88	-1.30*	0.76
e	2.73	1.01	3.94	0.97	-1.21*	0.80
f	1.91	1.01	4.67	0.74	-2.76*	0.92
g	2.19	0.97	4.47	0.76	-2.28*	0.89
h	1.45	0.79	4.94	0.24	-3.49*	0.97
2. Problem solving skills (P)	3.91	0.68	4.48	0.51	-0.57*	0.69
a	3.88	0.78	4.39	0.70	-0.51*	0.55
b	3.79	0.82	4.30	0.68	-0.51*	0.53
c	4.27	0.72	4.82	0.39	-0.55*	0.59
d	3.70	0.85	4.39	0.79	-0.69*	0.61
3. Communication skills (C)	3.91	0.72	4.48	0.50	-0.57*	0.66
a	4.52	0.62	4.67	0.60	-0.15	0.23
b	3.73	0.98	4.48	0.76	-0.75*	0.62
c	4.00	1.00	4.52	0.57	-0.52*	0.49
d	3.58	0.90	4.36	0.70	-0.78*	0.63
e	3.73	0.88	4.39	0.70	-0.66*	0.66
4. Cross-cultural understanding and teamwork skills (CT)	4.16	0.71	4.60	0.44	-0.44*	0.60
a	4.36	0.90	4.67	0.54	-0.31	0.32
b	4.03	1.13	4.48	0.76	-0.45**	0.42
c	3.94	0.97	4.58	0.66	-0.64*	0.62
d	4.00	0.75	4.58	0.56	-0.58*	0.56
e	4.09	0.84	4.58	0.66	-0.49*	0.55
f	4.52	0.67	4.70	0.59	-0.18	0.28
5. Confidence and motivation (CM)	4.08	0.79	4.48	0.60	-0.40**	0.43
a	3.94	1.09	4.36	0.78	-0.42**	0.38
b	3.88	0.96	4.24	0.83	-0.36	0.33
c	4.27	0.94	4.73	0.52	-0.46**	0.39
d	4.24	0.75	4.58	0.66	-0.34**	0.34
e	4.09	0.81	4.48	0.71	-0.39**	0.42

Note. *p<.01; **p<.05.

Source: Author.

Table 4 presents the results of the students from Canadian universities. Significant differences between the pre- and post-results were found for knowledge ($t(13)=-13.73$, $p<0.01$), problem-solving skills ($t(13)=-3.45$, $p<0.01$), communication skills ($t(13)=-3.04$, $p<0.01$), cross-cultural understanding and teamwork skills ($t(13)=-2.84$, $p<0.01$), and confidence and motivation ($t(13)=-2.65$, $p<0.05$). By subcategory, there were significant differences for all the measures, except for Ca, Cc, CTa, CTb, CTf, CMc, CMd, and CMe.

Table 4. The results of mean scores pre-and post- course of the students from the Canadian universities

	Pre-course		Post-course		Pre−Post	
	Mean score	Standard Deviation	Mean score	Standard Deviation	Changes	Effect size
1. Knowledge (K)	2.96	0.47	4.60	0.51	-1.69*	0.97
a	3.43	0.94	4.29	1.20	-0.86*	0.63
b	2.57	0.94	4.00	1.18	-1.43*	0.87
c	4.50	0.52	4.79	0.43	-0.29**	0.54
d	4.14	0.95	4.64	0.63	-0.50**	0.56
e	3.36	0.74	4.43	0.76	-1.07*	0.80
f	2.14	1.17	4.86	0.36	-2.72*	0.94
g	2.36	0.93	4.79	0.43	-2.43*	0.94
h	1.21	0.59	5.00	-	-3.79*	0.99
2. Problem solving skills (P)	4.25	0.52	4.73	0.49	-0.48*	0.69
a	4.36	0.50	4.79	0.58	-0.43**	0.57
b	4.14	0.66	4.64	0.63	-0.50*	0.63
c	4.36	0.50	4.86	0.36	-0.50*	0.71
d	4.14	0.66	4.64	0.63	-0.50*	0.62
3. Communication skills (C)	4.27	0.55	4.74	0.37	-0.47*	0.65
a	4.71	0.47	4.93	0.27	-0.22	0.36
b	4.21	0.70	4.79	0.58	-0.58*	0.57
c	4.36	0.84	4.64	0.50	-0.28*	0.34
d	3.93	0.73	4.64	0.50	-0.71*	0.67
e	4.14	0.77	4.71	0.47	-0.57*	0.68
4. Cross-cultural understanding and teamwork skills (CT)	4.40	0.57	4.76	0.39	-0.36*	0.62
a	4.64	0.50	4.71	0.61	-0.07	0.10
b	4.29	0.99	4.57	0.85	-0.28	0.38
c	4.07	1.07	4.64	0.63	-0.57*	0.62
d	4.43	0.51	4.86	0.36	-0.43**	0.57
e	4.36	0.63	4.93	0.27	-0.57*	0.68
f	4.64	0.63	4.86	0.36	-0.22	0.30
5. Confidence and motivation (CM)	4.24	0.66	4.60	0.70	-0.36**	0.59
a	4.14	1.10	4.57	0.85	-0.43**	0.51
b	4.07	0.73	4.50	0.85	-0.43**	0.57
c	4.50	0.52	4.79	0.58	-0.29	0.38
d	4.43	0.65	4.71	0.61	-0.28	0.44
e	4.07	0.92	4.43	0.94	-0.36	0.37

Note. *p<.01; **p<.05.

Source: Author.

Table 5 presents the results of the students from KGU. Significant differences between the pre- and post-results were found for knowledge ($t(18)=-11.02$, $p<0.01$), problem-solving skills ($t(18)=-4.09$, $p<0.01$), communication skills ($t(18)=-3.90$, $p<0.01$), and cross-cultural understanding and teamwork skills ($t(18)=-3.20$, $p<0.01$), but not for confidence and motivation ($t(18)=-1.76$, $p>0.05$). By subcategory, there were significant differences for all the measures, except for Ka, Ca, CTa, CTf, CMa, CMb, CMc, and CMd.

Effect size refers to the magnitude of change, which represents an index of the effect of experimental manipulation or the strength of association between variables (Field & Hole, 2003). According to Shiba and Haebara (1990), it is an independent indicator of measurement differences. Therefore, it is important to mention effect sizes. The effect sizes ranged from 0 to 1. In detail, 0.1 was considered to be a small effect, 0.3 a medium effect, and 0.5 a large effect (Mizumoto & Takeuchi, 2008). The effect sizes are presented in Tables 3, 4, and 5. The effect sizes for the five main themes except for confidence and motivation (CM) were above 0.5.

Table 5. The results of mean scores pre- and post-course of the students from KGU

	Pre-course		Post-course		Pre−Post	
	Mean score	Standard Deviation	Mean score	Standard Deviation	Changes	Effect size
1. Knowledge (K)	2.37	0.58	4.10	0.58	-1.73*	0.93
a	4.05	0.78	4.32	0.97	-0.27	0.32
b	3.11	0.99	3.95	0.97	-0.84*	0.83
c	2.42	0.84	3.74	0.81	-1.32*	0.88
d	1.68	0.75	3.58	0.77	-1.90*	0.90
e	2.26	0.93	3.58	0.96	-1.32*	0.80
f	1.74	0.87	4.53	0.90	-2.79*	0.91
g	2.06	1.00	4.22	0.88	-2.16*	0.84
h	1.63	0.90	4.89	0.32	-3.26*	0.96
2. Problem solving skills (P)	3.66	0.69	4.29	0.45	-0.63*	0.70
a	3.53	0.77	4.11	0.66	-0.58*	0.55
b	3.53	0.84	4.05	0.62	-0.52**	0.49
c	4.21	0.85	4.79	0.42	-0.58*	0.55
d	3.37	0.83	4.21	0.85	-0.84*	0.63
3. Communication skills (C)	3.64	0.72	4.29	0.50	-0.65*	0.68
a	4.37	0.68	4.47	0.70	-0.10	0.15
b	3.37	1.01	4.26	0.81	-0.89*	0.66
c	3.74	1.05	4.42	0.61	-0.68*	0.57
d	3.32	0.95	4.16	0.76	-0.84*	0.61
e	3.42	0.84	4.16	0.76	-0.74*	0.66
4. Cross-cultural understanding and teamwork skills (CT)	3.97	0.76	4.47	0.45	-0.50*	0.60
a	4.16	1.07	4.63	0.50	-0.47	0.43
b	3.84	1.21	4.42	0.69	-0.58**	0.45
c	3.84	0.90	4.53	0.70	-0.69*	0.62
d	3.68	0.75	4.37	0.60	-0.69*	0.57
e	3.89	0.94	4.32	0.75	-0.43**	0.46
f	4.42	0.69	4.58	0.69	-0.16	0.26
5. Confidence and motivation (CM)	3.97	0.87	4.39	0.52	-0.42	0.38
a	3.79	1.08	4.21	0.71	-0.42	0.33
b	3.74	1.10	4.05	0.78	-0.31	0.24
c	4.11	1.15	4.68	0.48	-0.57	0.42
d	4.11	0.81	4.47	0.70	-0.36	0.32
e	4.11	0.74	4.53	0.51	-0.42**	0.46

Note. *p<.01; **p<.05.
Source: Author.

4. Discussion

4.1 Overview of the Findings

This study examined the impact of an online global career course on students' entrepreneurial competencies and cross-cultural knowledge, skills, and abilities to determine the quality of COIL education involving three Canadian universities, one Japanese university, and host companies and organizations. The pre–post results for both the Canadian universities and KGU indicated that the course improved students' knowledge, problem-solving skills, communication skills, cross-cultural understanding and teamwork skills, and confidence and motivation. The effect sizes were medium to large. The scores for all the categories except for confidence and motivation were above 0.5, with the knowledge category showing a high score of 0.95. Therefore, hypothesis 1 was supported, consistent with previous research (Appiah-Kubi & Annan, 2020; Inada, 2018a; Kayumova & Sadykova, 2016; McInnerney & Roberts, 2009; Yazici, 2005).

The students showed they had a general knowledge of international business as well as the host companies and their industries through the assignments submitted during both individual and collaborative learning. After acquiring knowledge, they conceived several ideas and analyzed them critically both alone and in teams. In the collaborative learning stage, the students expressed their ideas, asked questions, made comments to improve

their communication skills, and adjusted to new cultures; they also supported their teams using their cross-cultural understanding and team work skills. Some students improved their confidence and motivation.

However, creating a friendly atmosphere in a group while working online remains a challenge. Four subcategories, namely set up a friendly atmosphere and listen to others with a positive attitude (Ca), establish friendly relationships (Ta), respect social rules and group decisions (Tf), and produce adequate results in a completely new project (CMb), did not show any significant differences after the course had been taken. To overcome both the personal and psychological distance, ice-breakers were used so that students could get to know their classmates during collaborative learning. For example, students shared their best products or services of the involved host companies and organizations with the group members. They also discussed their favorite foods and visits to Japan or Canada, and their plans for future careers during their free conversation sessions from Days 3 to 6.

The students from the Japanese and Canadian universities did differ in their improvement in entrepreneurial competencies and cross-cultural knowledge, skills, and abilities; hence, hypothesis 2 was not supported. In particular, while the students from the Canadian universities improved in all five main categories, the KGU students improved in four categories (all except for confidence and motivation). Hence, there were slight differences between the students from the Canadian and Japanese universities.

4.2 Qualitative Findings

4.2.1 Knowledge

For both the Canadian and Japanese students, knowledge showed the most positive difference, including the largest effect size. Owing to the participation of companies and organizations in the global career course, the students had numerous opportunities to learn about international culture, social habits, and other businesses, especially in Canada and Japan. One student from Canada commented, “I learned how to utilize what I learned to come up with new ideas and generate a business proposal by SWOT analyses and business model canvas.” One student from KGU commented, “I was able to gain substantial knowledge regarding the basics of creating business plans, facilitating discussions in English, and understanding the cultural differences between Canada and Japan.” Another KGU student stated, “I believe basic business knowledge, company analysis, and logical thinking will be useful for researching industries for job hunting and when I enter the workforce.” Although few of the students were majoring in business, they could bridge the knowledge gap. One concern for the Japanese students was self-awareness, as they were unsure whether they had a general knowledge of Japanese culture and social habits compared with the other subcategories of knowledge.

4.2.2 Problem-Solving Skills

The students from the Canadian and Japanese universities discussed ideas and improved them with feedback from peers. Canadian students commented, “I gained a different perspective from each person on how to tackle a situation. Putting oneself in another’s shoes helps” and “This course heavily tested my organization, leadership, and time management abilities.” Japanese students had similar comments: “By correctly analyzing the problems, prioritizing them for resolution, and sharing the solutions with team members, it has become possible to derive more optimal solutions” and “I acquired the ability to organize information logically in English when different opinions clashed.” Most of the students made positive comments about collaborative learning with peers.

4.2.3 Communication Skills

To improve their communication skills, the students from the Canadian universities considered how to communicate with the Japanese students (who were non-native speakers) assertively and effectively. The Japanese students also made efforts to communicate with the students from Canada using digital and non-verbal communication and showed appreciation and empathy. One student from Canada commented, “This collaboration has taught me how to be an active listener.” Another added, “I gained some cross-cultural communication skills and changed my speed and added some vocabulary.” Students from the Japanese university commented, “I enhanced digital communication through chat and social networking sites,” “I tried a lot of reactions and hand expressions to enhance our non-speaking communication skills,” and “I learned from the positive attitudes of Canadian students.” Both groups of students were willing to communicate and change their communication approaches to accomplish the projects in the groups.

4.2.4 Cross-Cultural Understanding and Teamwork Skills

The students from the Canadian universities showed respect toward team members, shared tasks equally, and controlled their speaking speed. One student stated, “In this cross-cultural atmosphere, I actively learned and asked about others’ cultures to show respect towards them. Moreover, to work in a team, all members need to

contribute equally and solve problems together." The Japanese students also listened carefully, proactively engaged in projects, and found commonalities in the team's opinions. One student commented, "Because of the different cultural and educational backgrounds, the approaches to the problems and the issues were completely different. However, there were some commonalities to share in a discussion." Hence, the students valued inclusiveness and finding points of agreement, while considering the other party's language ability, situation, position, and valuing different perspectives.

4.2.5 Confidence and Motivation

Many of the Canadian team members highlighted the improvement in confidence to lead a project with peers from different cultures. One student said, "It made me feel better about thinking outside the box." Another stated that they learned the "ability to communicate and engage with Japanese students" and "leadership." Contrastingly, initially, few Japanese students overcame their difficulties in English or gained the confidence to pursue a global career through collaborative learning. One student mentioned, "I lost confidence because my English was not very good and others often moved onto the next topic while I was thinking of ideas." However, other Japanese students mentioned how they overcame the difficulties. They mentioned, "I realized the basic principle that just because my English was poor, it did not mean that my opinions or contributions did not matter. After that, I began to actively participate in discussions, albeit gradually," "I exercised leadership in an international environment," "I gained the confidence to enter foreign companies in the future." The Japanese students' comments suggest that they were initially afraid to communicate with the Canadian students or did not know how to communicate and work with them. Later, they realized the importance of showing willingness to communicate, preparing for the groupwork, sharing opinions and ideas in English, and building confidence and staying motivated. Furthermore, they started to consider their future careers in an international field.

4.3 Implications and Limitations

Co-creation with students, faculty, and companies/organizations is important for entrepreneurial and cross-cultural management and practical learning experience in global career courses. In these courses, students are made aware of the values of diversity, leadership, trust, cooperation, active listening, challenge, and self-improvement. Previous studies have found that successful teamwork in higher education courses includes collaboration (Riebe, Roepen, Santarelli, & Marchioro, 2010; Scott-Ladd & Chan, 2008; Yazici, 2005). Personal development through self-learning, self-reflection, and feedback from team members lead to higher co-creation with collaborators. Further, as Fisher and Coleman (2001) mentioned, students' autonomy in the COIL course is important.

Figure 3 shows that co-creation among students, faculty, and companies/organizations means that students can gain a basic knowledge of business frameworks through the online on-demand lectures and create SWOT analyses, business model canvases, and business plans by themselves. All the students had the opportunity to analyze the real-world business issues provided by the representatives from the companies and organizations and find practical solutions. Then, the students shared their analyses and business proposals with their group members in the collaborative learning stage. In this way, they gained additional knowledge from their peers and selected business ideas through a process of generating and linking ideas to ensure intellectual convergence. This allowed them to create new business proposals repeatedly with feedback from the instructor and their peers in the collaborative learning environment. Thus, some of the students improved their confidence and motivation in both the individual and collaborative learning stages.

The findings suggest that entrepreneurship education must include a practical component to represent work in real-world business markets. As Yasuoka et al. (2018) mentioned, industry–academia cooperation in practical education training is important for students' academic and practical development. The course in this study proved to be significantly positive and presented challenges for the future. After tackling social issues in these fields, students challenged their opinions and shared their business ideas. Therefore, they utilized entrepreneurial thinking to solve problems with those stakeholders.

The preparation of courses with the three Canadian universities and host companies and organizations required a well-structured course design with a large amount of preparation and discussion. However, the students benefitted from the courses by improving their entrepreneurial and cross-cultural management competencies and expanding the opportunities for their future careers in global businesses. Although the students were separated by the time difference between Canada and Japan, synchronous sessions felt better than asynchronous sessions. Appiah-Kubi and Annan (2020) found that some students solved the problems of cultural and language barriers and working in different time zones by using technology. In the collaborative learning stage, although there were no physical activities, such as eating and living together, synchronous collaborative sessions could be included in

the course design.

The students considered the issues that existed in the company or organization as their own, uncovered the issues, and gained empathy with their team members in a highly uncertain environment. Such experience should help them become global citizens and strive for a better society in the future.

The main limitation of this study was its lack of generalizability because of the limited sample size. Therefore, researchers are encouraged to analyze students' entrepreneurial and cross-cultural competencies in larger and more representative samples in different settings. Furthermore, qualitative and longitudinal research on the effectiveness of global career courses should be considered in future studies.

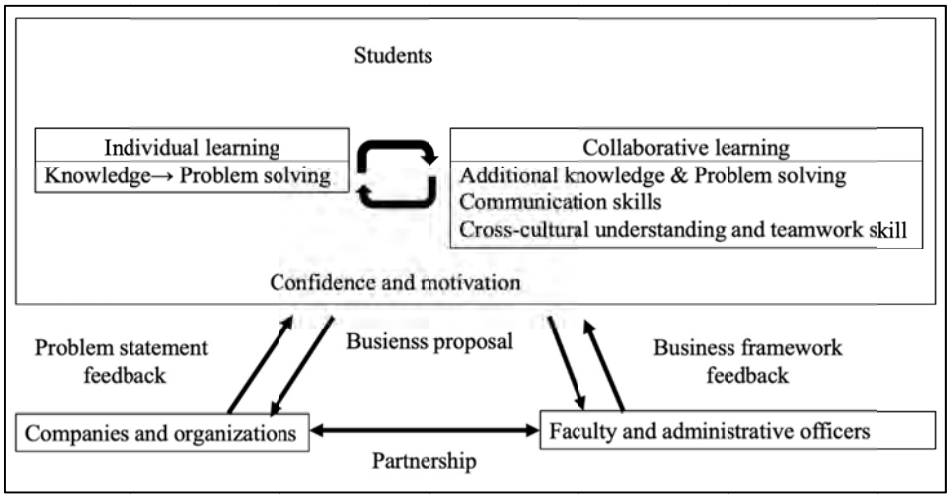

Figure 3. Co-creation

Source: Author.

5. Conclusion

This study explored the impact of entrepreneurial and cross-management competencies in a sample of students from three Canadian universities and one Japanese university with partner companies and organizations. The results showed the development of students' knowledge, problem-solving skills, communication skills, and cross-cultural understanding and teamwork skills after attending a global career course. The large effect size also indicated a positive change in these four categories. Although the students from the Canadian universities also improved their confidence and motivation, the students from Japan were weak in that category.

Students' knowledge, especially pertaining to industry and international business, idea generation, and problem-solving, and confidence to undertake challenging projects improved considerably. Students paid attention to the language and cultural barriers and academic and time differences, and scaffolded each other to gradually show respect to other members, share opinions, and create an online team with empathy among the members. However, while COIL was hugely positive for their academic and practical development, it must create a friendly atmosphere to enjoy more individual and group activities with peers, instructors, and representatives of host companies and organizations on online platforms. In particular, Japanese students, who were using a second language in this program, were more challenged in group work. It could be beneficial to explain the importance of being willing to communicate, prepare for group work, and encourage the sharing of opinions and ideas at the beginning of the course. In terms of practical implications, the use of mixed methods (i.e., on-demand individual learning sessions in the first part and the synchronous collaborative learning in the second part) worked well to improve both the individual and team performance. Furthermore, industry–academia collaborations and practical learning foster co-creation and enhance students' academic and career development, to make them global citizens and leaders in the future.

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Notes

Note 1. Retrieved from https://www.mext.go.jp/content/20210728-mxt_sanchi01-000017123_1.pdf

Note 2. From January to March 2021, the MEXT sent the survey to 1,007 private and public universities including junior colleges. Altogether, 598 institutions responded, a response rate of 59.4%. Retrieved from https://www.mext.go.jp/content/20210728-mxt_sanchi01-000017123_1.pdf

Note 3. Mount Allison University is a member of collaborative educational project. There were no participants in the global career course during the spring of 2021.

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