

# Effects of Flipped Learning on Japanese Undergraduate Students' Global Learning

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## **Abstract**

This study was aimed at investigating the effects of flipped learning on Japanese undergraduate students' global learning. The research participants were 15 undergraduate students, who took the global education course in the academic year 2018 at a Japanese university. The data such as pre/post-test, a questionnaire, and reflective notes were collected and analyzed qualitatively and quantitatively to examine the effects of the flipped learning approach employed in the course.

**Key Words:** Global Education, Flipped Learning, Higher Education, Japan

## **Introduction**

The world has been changing at a dramatic speed due to world-wide phenomena associated with globalization. More people, products, money, information, and so on move across nations than ever. This enhances interconnectedness of people, events, and systems in politics, economy, culture, ecology, and technology on a global scale (Anderson, 1979). Meanwhile, there have appeared issues or problems such as global warming, nuclear issues, and refugee issues facing us no matter where we live. One of the biggest organizations working for global issues is the United Nations. It developed Millennium Development Goals (MDGs) in 2000 at the UN Millennium Summit to address eight issues and all the member states agreed to work on these issues. According to the UN Millennium Development Goals report (2015), it concluded that this MDGs project was partially successful in that even though some issues were satisfactorily eased, the other issues remained unsolved and, at the same time, new issues arose. By reviewing its outcomes, the UN established 17 Sustainable Development Goals in 2015 and this project is currently under its way. In short, it is still a long way to solve such global issues. In fact, Bremmer (2012) maintains that we are living in the world without any leading organization or nation called “G-Zero” world. If so, we are not able to rely on the organizations or nations working for global issues, but we should take actions to solve them by ourselves. Therefore, education needs to prepare the youth to be capable of doing so. In this sense, global education can play a major role to achieve this goal.

## **Global Education**

Global education was born in the U.S. in the late 1960s in order to prepare the young to effectively and responsibly live in a global society and has developed since then. Global education attempts to achieve this goal by developing students’ global perspectives. Although different scholars and educators suggest different elements as components of global perspectives, the six conceptualizations: perspective consciousness; cross-cultural learning and cross-cultural communication skills; global interdependence; global history; global issues; and participation in a global society are the most common (Kasai, 2009). Each definition of the six conceptualizations is as follows:

1. Perspective Consciousness – The recognition that every individual has a perspective that is not universally shared, while the perspective can be continuously formed and reformed by influences over time (Hanvey, 1976)
2. Cross-cultural Learning and Cross-cultural Communication Skills – Knowledge about one’s own culture and other cultures, and skills in effectively interacting with people from diverse cultures and countries (Merryfield & Subedi, 2001)
3. Global Interdependence – Interconnectedness of people, events, and issues linked to one another, and the ways in which they affect and are affected by other people, events, and issues (Pike & Selby, 2000)
4. Global History – A history that is interconnected across the world and it may also consist of interrelated regional histories (Anderson, 1979)

5. Global Issues – Persistent worldwide problems that cannot be solved by one nation alone (Alger & Harf, 1986). Global issues include human rights, pollution, poverty, ethnic conflicts, and population problems.
6. Participation in a Global Society – People’s actions on a local scale to solve or ease global issues that they learn about (Alger, 1985).

Global education was introduced at the beginning of the 1970s in Japan and it has been practiced mainly in some subject areas such as English and social studies (Ishimori, 2015). However, this practice tends to be very limited in that only a small number of the teachers who are concerned about global education put it into practice under their tight or limited teaching conditions (Kasai, 2018). Therefore, it is necessary to develop an effective and efficient instructional approach to teach global perspectives. To satisfy such a need, flipped learning was employed and implemented in a global education course at a higher educational institution in Japan.

## **Research Context**

### ***Purpose of Study***

This study was aimed at investigating the effects of the flipped learning in the global education course on undergraduate students’ global learning in terms of its effectiveness, efficiency, and appealing.

### ***Research Site***

The research participants were 15 undergraduate students, who took a global education course in A.Y. 2018 (from April to July) at a Japanese university, a private university in a western part of Japan. The global education course, a 4-credit course (30 lessons / 90 minutes per lesson), was designed to teach all the six conceptualizations in global perspectives. This course (Refer to Table 1) mainly consists of two parts: a knowledge building part and a teaching analysis one. The study focused on the former part: lessons 3-16.

Table 1

*Lesson Topics of the Course*

<b>Lessons</b>	<b>Topics</b>
Lessons 1-2	Introduction to Global Education
Lessons 3-16	Building Knowledge of the Six Conceptualizations
Lessons 17-30	Analysis of Teaching the Six Conceptualizations

### ***Instructional Framework of This Course***

An instructional framework by teaching all the six conceptualizations was constructed based on

relevancy of the contents among them (Kasai, 2018). The framework was illustrated below.

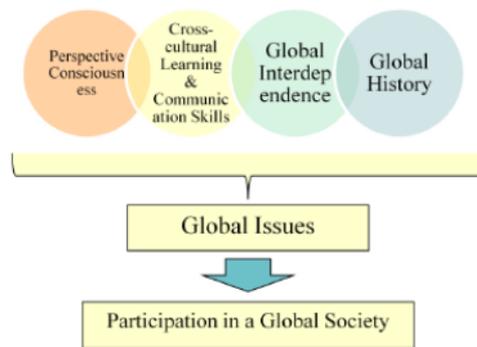


Figure 1. Instructional Framework for the Course

The rationales for this instructional framework are that the first four conceptualizations respectively overlap in terms of the learning contents and that they are also considered as prerequisite elements to learn about global issues and solutions to the issues. In short, perspective consciousness and cross-cultural learning and communication skills enable students to collect information about global issues from multiple sources including people with diverse cultural backgrounds and to critically analyze it, while global interdependence and global history help them to understand global issues as systems, in which we have been influencing and influenced by these issues for a long period of time no matter where we live. Therefore, the order of teaching these conceptualizations in this course were (1) perspective consciousness; (2) cross-cultural learning and communication skills; (3) global interdependence; (4) global history; (5) global issues; and (6) participation in a global society.

In addition to the use of this instructional framework, flipped learning was employed to teach the six conceptualizations effectively and efficiently. First, the contents of the six essential conceptualizations in global perspectives were documented, which resulted in the text titled “Living as a Global Citizen.” Meanwhile, short quizzes were developed to measure students’ acquisition of the contents. Then, the contents of the text were published into three types of media formats (PDF, MP3, and Scorm Package<sup>1</sup>) and these media resources as well as the check quizzes were uploaded in Moodle, an open e-learning platform.

In the global education course, the students studied the contents of each conceptualization through the three media resources and answered a check quiz before class. In the classroom, they checked the answers of the quizzes as well as spent most of the lesson time on various types of learning activities to deepen the target conceptualization that they learned online. After class they were required to post their reflective messages about their learning experiences in the Moodle system as well as read their classmates’ messages and replied to at least two of them. This flipped learning cycle in this course is illustrated in Figure 2.

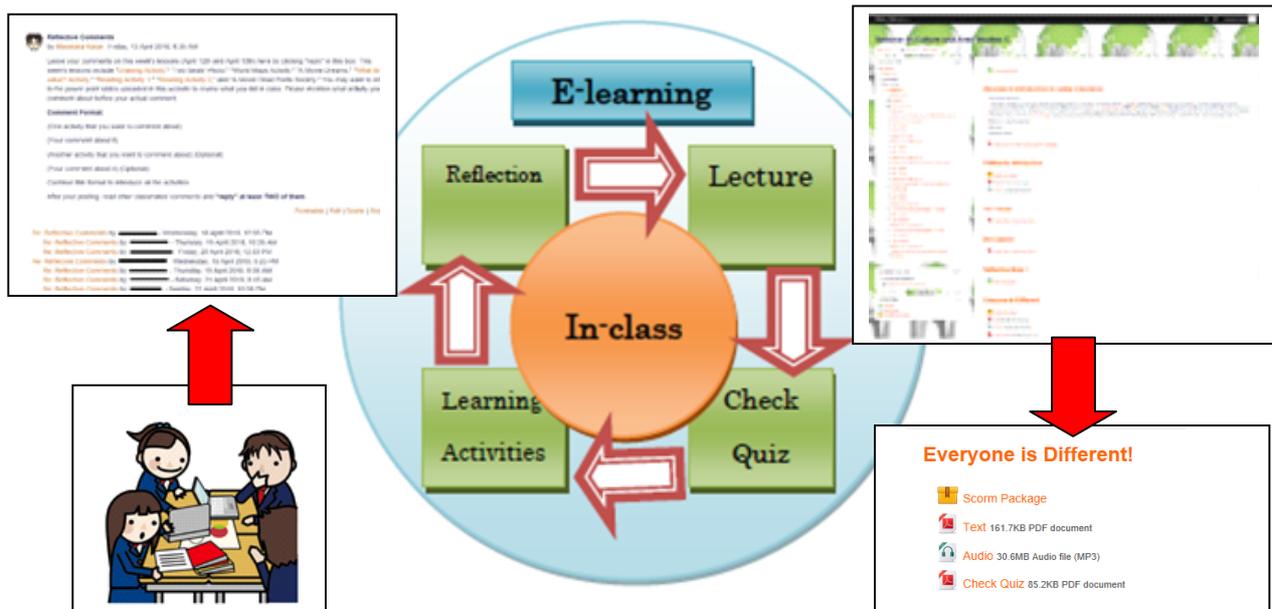


Figure 2. Flipped Learning Cycle

Since this course lasted 15 weeks and had two lessons: one on Thursdays and the other one on Fridays, e-learning assignments (studying the contents and answering a check quiz) were announced at the end of Friday's lessons (due before the following Thursday's lessons). Then, the students learned about the target conceptualization that they studied online by participating in various relevant learning activities in class (See Table 2).

Table 2

*Flipped Learning Lessons of the A.Y. 2018 Global Education Course*

Lesson	Date	In-Class Learning Topics	E-Learning Assignment Announced
1	4/5	Course Introduction	Preface & Introduction
2	4/6	Education and Society	Perspective Consciousness
3	4/12	Perspective Consciousness	
4	4/13		Cross-cultural Learning
5	4/19	Cross-cultural Learning	
6	4/20		Cross-cultural Communication Skills
7	4/26	Cross-cultural Communication Skills	
8	4/27		Global Interdependence
9	5/10	Global Interdependence	
10	5/11		Global History
11	5/17	Global History	
12	5/18		Global Issues
13	5/24	Global Issues	
14	5/25		Participation in a Global Society
15	5/31	Participation in a Global Society	
16	6/1		

### **Data Collection and Analysis Methods**

Scores of pre/post-tests, responses to the questionnaire, and reflective notes were collected and analyzed qualitatively or quantitatively, or both to examine how effective, efficient, and appealing the flipped learning was for the participants to learn the essential conceptualizations in global perspectives. Methods to analyze the data for the study were listed in Table 3.

Table 3

#### *Summary of Data Analysis Methods*

Target to Investigate	Data Source(s)	Analysis Methods
Effectiveness	Pre- and Post-test	Wilcoxon Signed-Rank Test
	Reflective Notes	Qualitative Coding (Sato, 2008)
	Questionnaire	Descriptive Statistics
Efficiency	Questionnaire	Descriptive Statistics
Appealing	Questionnaire	Descriptive Statistics

### **Findings and Implications**

A Wilcoxon Signed-ranks test was conducted to investigate the effects of the e-learning in this course on the participants' acquisition of six conceptualizations in global perspectives. The results showed that there was a statistically significant difference between the scores of the pre-test and those of the post-test (See. Table 4), and thus it can be concluded that the participants performed the post-test (Mdn=21.00) better than the pre-test (Mdn=10.50),  $Z=2.52$ ,  $p<.01$ ,  $r=.89$ . In short, the flipped learning seemed effective for them to acquire basic knowledge of the conceptualizations.

Table 4

#### *Result of Wilcoxon Signed-Rank Test (2 Related Samples)*

Ranks				Test Statistics <sup>b</sup>	
		N	Mean Rank	Sum of Ranks	
pre-test - post-test	Negative Ranks	0 <sup>a</sup>	.00	.00	pre-test - post-test
	Positive Ranks	8 <sup>b</sup>	4.50	36.00	Z
	Ties	0 <sup>c</sup>			Exact Sig. (2-tailed)
	Total	8			

a. post-test < pre-test

b. post-test > pre-test

c. post-test = pre-test

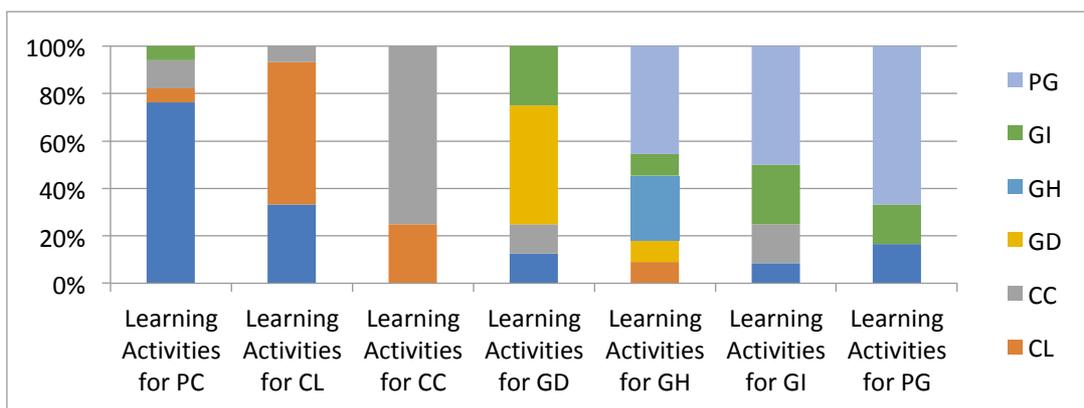
a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Next, the reflective notes that the participants posted in the Moodle system were analyzed through qualitative coding to examine the effects of in-class activities. The reflective notes were divided into the following seven conceptualizations: learning activities for perspective consciousness; cross-cultural learning; cross-cultural communication skills; global interdependence; global history, global issues; and participation in a global society. The notes were coded to find

words, phrases, and sentences indicating their learning about the contents of the conceptualizations in global perspectives and calculate the number of them. For example, a student posted the following message about a debating activity, “Through the debate **I learned that it is very difficult to explain what we are thinking to another group (CC)** and also I'm not sure this is right but **I just felt that our perspective is influenced by our background and culture (PC).**” The student stated a difficulty in communicating with people with different cultural backgrounds in the first highlighted sentence, while she mentioned one of the features of people’s perspectives: changeability in the second one. Thus, the student was considered having learned about cross-cultural communication skills and perspective consciousness through this activity. The results of coding all the reflective notes (See Appendix B) showed that most of the participants made comments about all the conceptualizations in global perspectives across all the learning activities and the 100% stacked bar chart produced based on the result (See Table 5) indicated that the learning activities mostly helped them to study the target conceptualizations as planned.

Table 5  
*Result of Reflective Note Analysis (100% Stacked Bar Chart)*



Considering the results above, it can be concluded that e-learning and in-class learning respectively seemed effective for the participants to acquire the six conceptualizations in global perspectives. Meanwhile, both e-learning and in-class learning tended to be mutually beneficial. According to the questionnaire (See Appendix C), 12 out of 13 respondents (one respondent answered “Neutral”) answered “Very Helpful” or “Somewhat Helpful” to question 8 in the questionnaire, asking whether the online assignments were helpful to their in-class learning. There seemed to be a possibility that “division of labor for effective learning” (Miyaji, 2009, p. 98) allowed the participants to study the target conceptualizations effectively and, at the same time, both e-learning and in-class learning synergistically enhanced the participants’ learning as well.

The flipped learning approach in this course possibly helped the participants to learn the conceptualizations more efficiently than before. According to the questionnaire, 10 out of 12 respondents answered that they completed the online assignments within 30 minutes. One of the reasons why they could complete for such a short period of time was because the online assignments enabled the participants to study them in the way they preferred. According to the questionnaire (questions 2, 3, and 5), they worked on the assignments in various places (9-homes,

1-campus, 2-home and public transportation, and 1-working place) by using different tools (10-personal computer, 1-smart phone, 1 tablet PC, 1-personal computer and smart phone) and media (4-Scorm Package, 9-PDF). In short, the online assignments could possibly meet the needs of the participants' diverse learning styles, which resulted in their efficient study (Jun, Kubota, and Suzuki, 2008).

Finally, appealing of this flipped learning was examined by employing John Keller's ARCS model. This model is one of the instructional designs including four factors (Attention, Relevance, Confidence, and Satisfaction) to maintain or enhance learners' motivations and this model particularly deals with appeal of the instruction (Keller, 2010). The participants (N=13) were asked to answer the questions in the questionnaire (questions 16 – 19) based on these four factors. All the respondents, except for one respondent answered "Neutral" to question 18, answered these four questions positively. This result seemed to indicate that this flipped learning successfully provided the instruction which had some appeal for them to study the conceptualizations. This finding possibly resulted from careful selection of the learning activities, which the previous study (Kasai, 2018) had already found appealing.

### **Conclusion**

This study attempted to examine the effects of the flipped learning approach on undergraduate students' global learning at a Japanese university in terms of its effectiveness, efficiency, and appealing. The results indicated strong positive effects. However, there are some rooms to improve it. The flipped learning in this study distinguished e-learning tasks (studying the contents through the media, answering the check quizzes, posting reflective messages, and responding to other students' messages) from in-class learning activities. This clear distinction of learning activities seemed to enhance students' learning effectively and efficiently to some extent. However, e-learning has a great potential to engage students in their learning more by creating online tasks encouraging them to interact with learning contents, an instructor, and other classmates (Moore, 1989). In short, there is a high possibility to integrate more e-learning tasks in this flipped learning approach. For example, students can complete some learning activities online such as discussions, share their work, and give feedbacks on it each other. This further integration is expected to make this flipped learning more effective, efficient, and appealing.

### **Acknowledgement**

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## Appendices

### Appendix A: Results of the Pre-Test and Post-Test (N=8)

Student	Pre-Test	Post-Test
1	10	17
2	15	17
3	8	9
4	11	25
5	2	18
6	16	35
7	17	29
8	7	24

### Appendix B: Results of Reflective Note Analysis

	PC	CL	CC	GD	GH	GI	PG
Learning Activities for PC	13	1	2	0	0	1	0
Learning Activities for CL	5	9	1	0	0	0	0
Learning Activities for CC	0	1	3	0	0	0	0
Learning Activities for GD	1	0	1	4	0	2	0
Learning Activities for GH	0	1	0	1	3	1	5
Learning Activities for GI	1	0	2	0	0	3	6
Learning Activities for PG	1	0	0	0	0	1	4

\*PC=Perspective Consciousness, CL=Cross-cultural Learning, CC=Cross-cultural Communication Skills, GD=Global Interdependence, GH=Global History, GI=Global Issues, PG=Participation in a Global Society

## Appendix C: Results of the Questionnaire (N=13)

Questionnaire									
<p>● Read each question carefully and check (✓) ONE item that applies to your response.</p>									
<b>Online Assignments:</b>									
(Studying the contents of the media and answering the check quizzes)									
Q1. On average, how long did it take to complete the online assignments?									
1	Less than 10 minutes	4	11 to 20 minutes	5	21 to 30 minutes	2	More than 30 minutes		
Q2. Which tool did you mainly use to complete the online assignments?									
10	Personal computer	1	Smart phone	1	Tablet PC (e.g., iPad)	1	Others (Personal computer & Smart Phone)		
Q3. Where did you usually complete the online assignments?									
9	Home	1	Campus	0	Public transportation (e.g., bus, train)	3	Others (Home & Public transportation & Working place)		
Q4. How was the procedure of the online assignments?									
1	Very easy	7	Easy	3	Neutral	0	Difficult	0	Very difficult
Q5. Which medium did you mainly use to complete the online assignments?									
4	Scorm Package (Text & Audio)	9	PDF (Text)	0	MP3 (Audio)				
Q6. On average, how were the contents of the media?									
1	Very easy	6	Easy	6	Neutral	0	Difficult	0	Very difficult
Q7. On average, how were the contents of the check quizzes?									
0	Very easy	8	Easy	5	Neutral	0	Difficult	0	Very difficult
Q8. On average, how helpful were the online assignments to your in-class learning?									
6	Very helpful	6	Somewhat helpful	1	Neutral	0	Not so helpful	0	Not helpful at all
<b>Online Reflective Assignments:</b>									
(Posting your reflective message and replying to two messages)									
Q9. How was the procedure of the online reflective assignments?									
2	Very easy	3	Easy	6	Neutral	2	Difficult	0	Very difficult
Q10. On average, how helpful was your message posting to your learning in this course?									
4	Very helpful	6	Somewhat helpful	3	Neutral	0	Not so helpful	0	Not helpful at all
Q11. On average, how helpful was your replying to two of your classmates' messages to your learning in this course?									
4	Very helpful	4	Somewhat helpful	5	Neutral	0	Not so helpful	0	Not helpful at all
<b>Individual Presentation Project</b>									
(Preparing for an individual presentation and giving the presentation)									
Q12. How was the procedure of the individual presentation project?									
0	Very easy	0	Easy	7	Neutral	6	Difficult	0	Very difficult
Q13. How was the information analysis assignment?									
0	Very easy	2	Easy	10	Neutral	1	Difficult	0	Very difficult
Q14. How was the daily lives activities assignment?									
0	Very easy	7	Easy	4	Neutral	2	Difficult	0	Very difficult
Q15. How helpful was this individual presentation project to your learning in this course?									
8	Very helpful	4	Somewhat helpful	1	Neutral	0	Not so helpful	0	Not helpful at all
<b>General Learning Experiences in This Course</b>									
Q16. Do you think that you become interested in global education because of this course?									
10	Strongly Agree	3	Somewhat Agree	0	Neutral	0	Somewhat Disagree	0	Strongly Disagree
Q17. Do you think that you can relate what you learned in this course to you or your daily lives?									
8	Strongly Agree	5	Somewhat Agree	0	Neutral	0	Somewhat Disagree	0	Strongly Disagree
Q18. Do you think that you feel confident in applying what you learned in this course to you or your daily lives?									
5	Very confident	7	Somewhat confident	1	Neutral	0	Not so confident	0	Not confident at all
Q19. Are you satisfied with what you learned in this course?									
10	Satisfied very much	3	Somewhat satisfied	0	Neutral	0	Not so satisfied	0	Not satisfied at all

### Footnote

1. Scorm (Sharable Content Object Reference Model) package is a set of standards or specifications for e-learning. It enabled the students to read and listen to the text all at once on the same screen for the global education course.