Educational Effects of the Manga Case Method in Online and Offline Environments

Using a Manga Case related to Social Media Literacy

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***Abstract*—This article aims to compare the educational effect of the Manga Case Method in offline and online environments. The Manga Case Method is an educational tool described by Manga. In this study, we used a manga case designed to improve learners' literacy when using social media in a company. We conducted experiments of the Manga Case Method in both offline and online environments. The results show that leaners' viewpoints become more diverse in an online environment and that leaners' feelings of immersion are increased in an offline environment.**

Keywords—manga case method; case method; Computer-supported collaborative learning (CSCL) ; social media literacy

I. INTRODUCTION

It is important that social media literacy be grounded in the everyday life of learners in terms of its content and applications. That is to say, it is essential to give them an understanding of what kinds of dangers are hidden within the everyday context and to teach them how to discover and avoid such risks [1]. It is within this context that manga case materials, utilizing expressions and narrative approaches from manga, are being developed [2][3][4] (Fig. 1). By utilizing expressions from manga, these materials draw the learner into the world of the case, where they participate together with their peers in a narrative related to the world of the case. In this way, they are taught ways to "pick out and interpret information from the everyday context" and to "apply acquired knowledge to the context." LINE Corporation, for example, has developed manga case materials for teaching junior high school students about online communication [5]. Furthermore, Orita and colleagues have developed the manga case material "Yamato Aoi" for the purpose of teaching social media literacy in organizations [6][7].

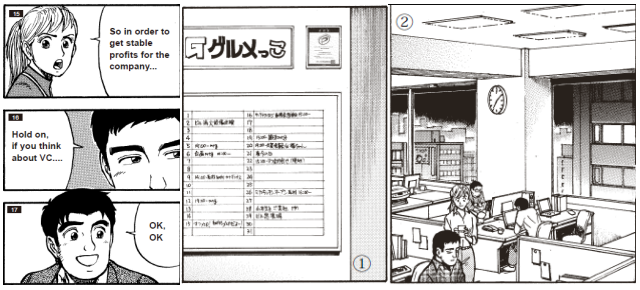

Fig. 1. Example of manga case materials

It can be said that the manga case method is fundamentally a development of the case method [8]. Its educational effects, however, differ from those of the standard case method. The manga case method exhibits the following two characteristic educational effects [9][10]. Firstly, manga enables learners to draw upon diverse perspectives and then, through group discussion, enables them to learn the viewpoints of others and discover new perspectives. Secondly, manga is different because of the increased feeling of immersion in the materials that it creates: learners experience the events in the materials as if they were real and learn from the point of view of the characters in the story.

The development of online learning systems for the standard case method, however, has been progressing rapidly. Online CSCL systems are being developed for "scaffolding" and "reducing the hassle involved in gathering students all in the same place" [11][12][13][14][15]. Such studies have shown that educational effects are different in offline and online environments.

As such, there is a need to clarify how such educational effects might also differ between offline and online environments in the manga case method. Such findings would enable the development of learning systems in line with the characteristics of the educational effects of the manga case method.

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In this context, we conducted an experiment on the manga case method in both online and offline environments, and then compared the educational effects in both instances. The results of the experiment were analyzed from two perspectives: firstly, whether or not learners were able to draw upon diverse perspectives, and secondly, whether or not the learners became immersed in the materials.

The following section presents a review of the existing literature, followed by a discussion of the experimental design. Subsequent sections present an analysis of the results of the experiment and a discussion of these results. The paper finishes with concluding remarks and directions for further research.

II. Existing Literature

In recent years, there has been a shift in emphasis from educational methods focused on knowledge acquisition to methods focused on learning techniques and ways of using knowledge [16]. Case method approaches, such as the case method and manga case method, have been highlighted as examples of these new forms of educational methodology [3][8]. In case method style learning, learners are presented with a setting embedded with a variety of issues and they are then required to make an appropriate decision on each issue. The decision is reached through activities such as group discussion. In the discussion process, learners make sense of their own knowledge, learn about the perspectives of others, and discover completely new viewpoints. The manga case method has the additional element of the learner being able to draw upon information embedded in the drawings for themselves [3].

The development of online learning systems for the standard case method, on the other hand, has been progressing rapidly. Online CSCL systems are being developed for "scaffolding" and "reducing the hassle involved in gathering students all in the same place." Rosatelli and colleagues, for example, developed the online case study learning environment LeCS (Learning from Case Studies) [14]. Furthermore, studies in the field of collaborative learning have shown that educational effects in online and offline environments differ. Fisher and colleagues, for example, carried out a comparison of collaborative educational effects for face-to-face collaborative learning and computer-mediated collaborative learning [15]. Results showed that learners in a computer-mediated environment utilized a wider variety of resources when engaging in discussions.

Characteristics of the educational effects of the manga case method include enabling learners to draw upon diverse perspectives and producing a high level of immersion. There are, however, no studies focused on these aspects that compare the educational effects in offline and online environments.

III. Experimental Method

This section presents the experimental design. The experiment involved conducting a manga case method in both offline and online environments and then comparing the educational effects.

Firstly, the questions set for participants are outlined. Subsequently, the experimental method for both offline and online environments is presented.

A. Question Design

"Yamato Aoi" was used as the manga case material [6]. The general outline of the story of "Yamato Aoi" can be summarized as follows. The main character (Yamato Aoi) works in sales in a company (Jentsu), which operates a social media website. In this company, there are many employees with a variety of views on social media usage. One day, Yamato Aoi visits the offices of a client and is accused of leaking information through a blog. The pseudonym of the blogger who runs the site is similar to Yamato Aoi's name and the content on the site contains confidential information about Jentsu. The story ends with Yamato Aoi strongly denying that she is the author of the blog.

Information concerning the benefits and disadvantages of social media for IT companies is embedded within "Yamato Aoi." By conducting a discussion using this educational material, it is possible to learn about different perspectives on measures for preventing problems and ways to deal with issues when they do occur.

TABLE I presents the questions used in the experiment. Questions 1 to 4 were included for the purpose of making sense of the situation presented in the manga case materials. Following these questions, Q5 poses a problem-solving question: "It has been decided that rules for employees regarding internet usage in the company will be developed. Make a poster presenting these rules."

By engaging in discussion about these questions, learners are encouraged to make sense of their own knowledge, learn about the perspectives of others, and discover totally new perspectives.

TABLE I. Assigned Questions

No.	Question
Q1	What kinds of social media are used by Yamato Aoi?
Q2	Who are the characters, what are their roles and functions, and what are their respective stances on internet usage?
Q3	From Yamato Aoi's perspective, what are the benefits and drawbacks of using social media? Which frames support your answers? Why? Who is benefitting in each case (e.g., Yamato Aoi, the company, the client)?
Q4	The manga ends with Yamato Aoi saying "that wasn't me." This can be interpreted in three ways. Which do you think is correct? 1. Somebody intentionally set Yamato Aoi up and wrote the blog entries. 2. Somebody with the same name or a similar nickname has become mixed up in all this. 3. Yamato Aoi wrote something that she meant to keep private and is lying in an attempt to keep it hidden. What kind of additional information would help you to discern the truth?
Q5	It has been decided that rules for employees regarding internet usage in the company will be developed. Make a poster presenting these rules .

B. *Manga case method in an offline environment*

This section discusses the manga case method used in the offline environment. The experiment was administered as part of a class on information literacy. The participants were forty-two first year university students majoring in international communication. The experiment was conducted in eight groups of four to eight members and was carried out over a two-day period. The timetable is presented in TABLE II.

C. *Manga case method in an online environment*

This section discusses the manga case method used in the online environment. In modifying the experiment for an online environment, Moodle (Modular Object-Oriented Dynamic Learning Environment) [17], a well-known and commonly used LMS, was used. The timetable is presented in TABLE III.

The manga case materials were converted into a viewable format using the Moodle book module (Fig. 2). Printouts of the materials were also distributed. The Moodle assignment activity was utilized for the individual questions, with participants having to submit their answers (Fig. 3). For the group questions, a module was created to enable participants to comment on any page of the manga through Moodle (Fig. 4). This method enabled the manga case method to be realized online, enabling engagement in discussion with reference to a particular frame of the manga.

The experiment was administered as part of a class on information literacy. The subjects were a group of ninety first year students majoring in economics. Students were divided into fifteen groups of six (Group A ~ O). Group members were assigned to groups randomly, irrespective of their seating arrangement in class or other aspects, and were instructed to engage in discussion only through the LMS.

IV. RESULTS

This section presents the results of the experiment in the online and offline environments. First of all, a comparison of the results for the final output (Q5) is discussed. Subsequently, a comparison of the forms of discussion that emerged during the group discussions is carried out.

TABLE II. OFFLINE EXPERIMENT TIMETABLE

Session No.	Duration (minutes)	Description
1	Introductory Exercise	Students were made to answer Q1, Q2, and Q3 as an introductory exercise.
2	Day 1 90 mins	Example answers to Q1 and Q2 were shown in class.
3		In class, participants were made to discuss Q3 in a group and then come to a conclusion.
4		In class, groups were made to discuss each group's conclusions to Q3.
5		In class, participants were made to discuss Q4 in a group and then come to a conclusion.
6	Day 2 90 mins	In class, groups were made to discuss each group's conclusions to Q4.
7		In class, participants were made to discuss Q5 in a group and then come to a conclusion.
8		In class, groups were made to discuss each group's conclusions to Q5.

TABLE III. ONLINE EXPERIMENT TIMETABLE

Session No.	Duration (minutes)	Description
1	Week 1	Outside of class time students were made to answer Q1 and Q2 individually.
2	Week 2	In class, participants were made to answer Q3 individually.
3		As an in-class activity, groups were made to choose their group name using the group chat functionality and then engage in an icebreaker exercise.
4		Outside of class time, groups were asked to discuss Q3 and submit their conclusion as a group.
5	Week 3	Outside of class time, group conclusions for Q3 were posted on Moodle and students were asked to evaluate them.
6		In class, students were asked to answer Q4 individually.
7		Outside of class time, groups were asked to discuss Q4 and submit their conclusion as a group.
8	Week 4	Outside of class time, group conclusions for Q4 were posted on Moodle and students were asked to evaluate them.
9		Outside of class time, students were asked to discuss Q5 and submit their conclusions as a group.
10		Outside of class time, group conclusions for Q5 were posted on Moodle and students were asked to evaluate them.

Fig. 2. Manga case method posted on Moodle

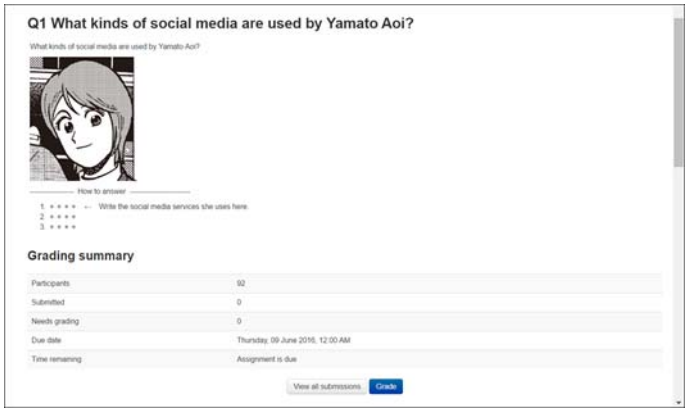

Fig. 3. Example of a question on Moodle

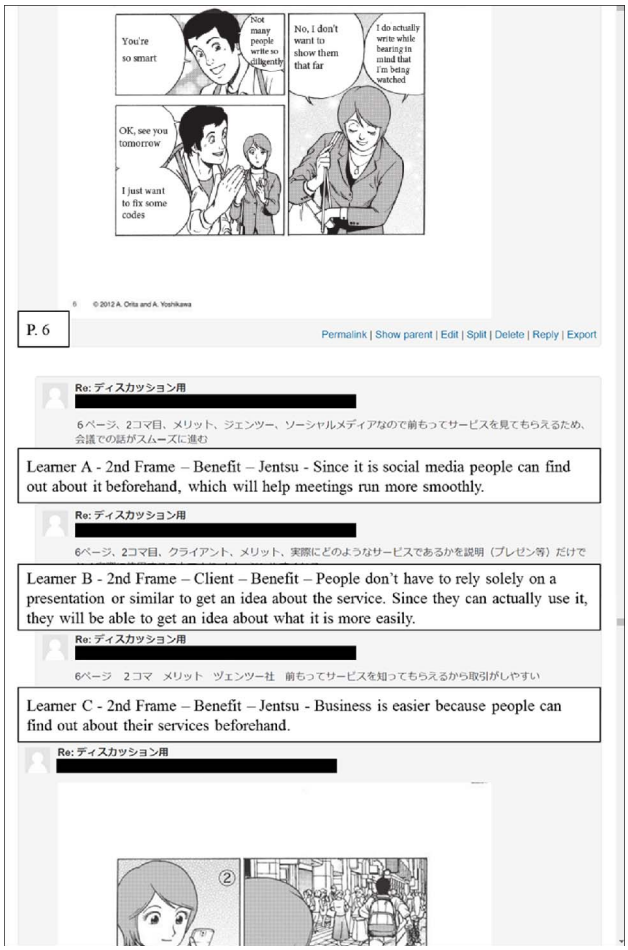

Fig. 4. Discussion on Moodle

(Learners made the following comments in response to P.6:
Learner A - 2nd Frame – Benefit – Jentsu - Since it is social media people can find out about it beforehand, which will help meetings run more smoothly.
Learner B - 2nd Frame – Client – Benefit – People don't have to rely solely on a presentation or similar to get an idea about the service. Since they can actually use it, they will be able to get an idea about what it is more easily.
Learner C - 2nd Frame – Benefit – Jentsu - Business is easier because people can find out about their services beforehand.)

A. Comparison of final outputs

This section compares the outcome of Q5: "It has been decided that rules for employees regarding internet usage in the company will be developed. Make a poster presenting these rules."

The number of rules suggested by students was twenty-eight for offline learning and seventy-two for online learning. TABLE IV presents examples of these rules. Examples in the case of offline learning included rules such as "Do not post company information on your private account." Examples in the case of online learning, on the other hand, included rules such as "Apply admin rights to the loan computers provided by the company and place usage restrictions on them" and "Do not use free public Wi-Fi."

In order to compare the diversity of perspectives with regard to the rules suggested, the rules were coded and then the percentages were compared. Coding was performed using open coding. The final five labels were "ID/PW related security," "Separation of accounts," "Other human-related rules" "Post content," and "Technology-related." TABLE V presents examples of rule categorization. Rules such as "At the time of formal employment employees should disclose their SNS accounts to the company" were coded as "ID/PW related rules." Rules such as "Separate your personal and work-related accounts" were coded as "Separation of accounts." Rules such as "Do not post slanderous content" were coded as "Post content." Human-related rules that did not fit into the above categories, such as "If you drink, don't post. If you are going to drink, don't post" were coded as "Other human-related rules." Rules referring to aspects of online security technology such as "Specify your internet environment as 'at work'" were coded as "Technology-related."

Fig. 5 presents the percentages for each of the categories. Fig. 5 demonstrates that technology-related rules were only produced in the online environment. Results of a chi-square test show this to be significant, with a p value of .059<0.10. Further, according to Cramer's rule (V=0.302) the effect was of a medium size [18]. Additionally, analysis of the actual value and the residual error showed that there was only a significant difference in the "Technology-related" category, with a p value of .016<.05.

In addition, it was only in the online environment where rules emerged that proactively promoted the merits of SNS, such as "Use SNS to enable smoother in-house communication."

Next, in order to compare the diversity of perspectives and learners' feeling of immersion in the materials, a comparison of the subjects of the rules was carried out. Subjects were categorized as either "Company" or "Individual." TABLE VI presents categorization examples. Rules that focused on individual employees, such as "Be aware that anyone can see what you are writing when you post," were coded as "Individual." Rules such as "Educate regular employees (including contract and part-time employees) in online literacy," that focused on the company, were coded as "Company."

The results of the classification are presented in Fig. 6. Fig. 6 shows that it was only in the online environment that rules relating to the company emerged. Results of a chi-square test show this to be significant, with a p value of .012<.05. The effect was small, with φ=0.252 [18].

B. Comparison of discussion formats

This section presents a comparison of discussion formats. TABLE VII presents example discussions. In offline learning, conversations exhibiting empathy with the characters were observed. Examples include statements such as "That's OK. Her (Yamato Aoi's) expression is what's important" and "Maybe she (Yamato Aoi) didn't want that guy to know about it… but he did… it's kinda gross." This kind of discussion, where the characters were viewed with empathy as if they were actual people, has been observed as a characteristic of the manga case method [19].

TABLE IV. EXAMPLES OF RULES

Offline Example	Online Example
・Do not post company information on your private account. ・Employees should check that their coworkers are following the rules.	・Apply admin rights to the loan computers provided by the company and place usage restrictions on them. ・Do not use free public Wi-Fi.

TABLE V. RULE CATEGORIZATION ACCORDING TO CONTENT

Category	Example
ID/PW-related Security	・At the time of formal employment, employees should disclose their SNS accounts to the company. ・Regularly change your passwords.
Separation of Accounts	・Separate your personal and work-related accounts. ・Never post personal information, such as your real name, on the accounts you use at work.
Post Content	・Do not post slanderous content. ・Do not leak or post company information outside of the company.
Other Human-related Rules	・If you drink, do not post. If you are going to drink, do not post. ・Use SNS to make in-house communication smoother.
Technology-related	・Specify your internet environment as "at work." ・Produce a log of when the internet is used and then only check that log when a problem arises.

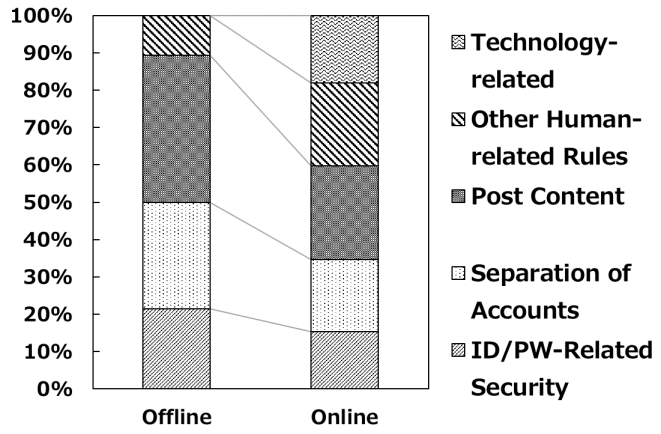

Fig. 5. Rule Category Percentages by Content

TABLE VI. RULE CATEGORIZATION ACCORDING TO SUBJECT

Classification	Example
Individual	・Be aware that anyone can see what you are writing when you post. ・Do not post text or images where your company can be identified.
Business	・Educate regular employees (including contract and part-time employees) in online literacy. ・Show the company accounts that are publically accessible (like Twitter) and enact measures so that leaks or flaming can be quickly dealt with.

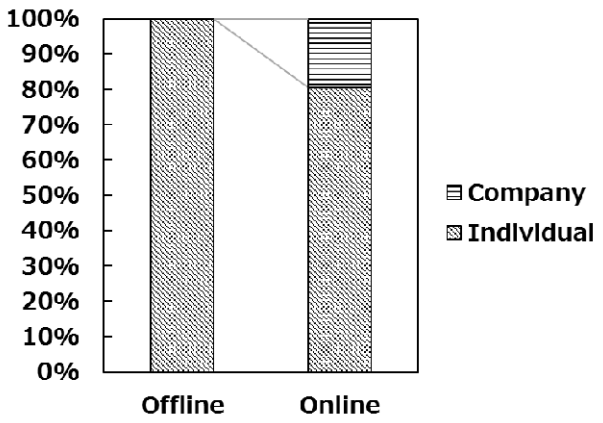

Fig. 6. Rule Category Percentages by Subject

TABLE VII. EXAMPLES OF DISCUSSIONS

Offline	Online
★A: **That's OK. Her (Yamato Aoi's) expression is what's important.** ★B: Is it important? ★A: There was ●●, and then when the person brought the cake in it was kinda awkward... **Maybe she (Yamato Aoi) didn't want that guy to know about it... but he did... it's kinda gross.**	★C: I think that all of them are very good. **Setting up some kind of training would also help prevent employees causing problems, I suppose...** ★D: **The company could loan computers and mobile phones to employees and then limit use of the functionalities to the minimum necessary.**

In online learning, on the other hand, statements that exhibit empathy in this way were not observed. The only statements observed were those that considered the rules from an objective perspective. Examples include statements such as "Setting up some kind of training would also help prevent employees causing problems, I suppose" and "The company could loan computers and mobile phones to employees and then limit use of the functionalities to the minimum necessary."

What follows is an analysis of the progression of discussion in the case of online learning. The results of the analysis uncovered four patterns.

(1) Add Rule and Stop: First of all, an initial idea for a rule is proposed. Next, rules are added by the participants and the discussion concludes.

(2) Technological Proposal: First of all, an initial idea for a rule is proposed. Next, rules are added by the participants. Subsequently, at the stage when ideas become exhausted, proposals for technological solutions are discussed. TABLE VIII presents examples of this format. In TABLE VIII it can be seen that, after a brief consideration of the proposed rules has been carried out, a comment from a technological perspective is offered: "One thing that I thought of is, as an improvement measure, how about producing a log of when the internet is used and then only checking that log when a problem arises?"

(3) Realization of Benefits: First of all, an initial idea for a rule is proposed. Then, rules are added. At this point, a rule that will restrict some kind of basic behavior is considered. From

there, there is a realization of the benefits of SNS and a rule that would capitalize on such benefits is proposed. TABLE IX presents an example of a rule that leverages the benefits of SNS is proposed: "Either of them are OK! Ah, would it be OK to write something positive? Like, for example, 'Effectively use SNS to collect a large amount of information.'"

(4) Opinion and Objection: First of all, an initial idea for a rule is proposed. Next, opinions and objections related to said rule are expressed. It should be noted, however, that these come from only one perspective and comments that lead to new ideas do not occur. TABLE X presents an example where a learner objects to a proposed rule: "In the manga, I couldn't tell whether it was just someone with the same name or not, but wasn't the name the cause of the problem? Don't you think that that needs to be prevented in some way?" In the subsequent debate, however, no opposition was expression towards this statement.

In some cases, patterns (2), (3), or (4) were observed together within a single group. TABLE XI presents the categorization of the group discussions. Of the fifteen groups, patterns (2) and/or (3) were observed in eleven of the groups.

Furthermore, a questionnaire regarding investigative learning for online learning was carried out. Fifty-one out of the seventy-five people surveyed answered "Yes" in response to the question "When responding to manga case method problems did you do any research independently (e.g. looking up a word in a book or on the internet)?"

The existing literature shows that the discussion progression in offline learning follows the process described below [19]. (1) Learners present their opinions: during the discussion, then reflect on their own knowledge or concepts and dig deep into their opinions. (2) Other learners do not simply accept the views of others, but notice contradictions and areas for improvement. The views of others are then expanded and/or revised through questioning and rebuttals. Repetition of steps (1) and (2) leads individuals to further delve into their own views and the views of others, leading to mutual expansion and an increased awareness of the given situation.

V. Discussion

Based on the results presented in Section 4, this section discusses the characteristics of the effects of online and offline learning. Two questions are discussed: (1) whether or not it was possible to create a feeling of immersion, and (2) whether or not learners were able to draw upon a diversity of perspectives.

A. Was it possible to create a feeling of immersion among learners?

The discussion formats in TABLE VII show that, in the case of offline learning, learners displayed empathy towards the characters. Conversely, in online learning they were not empathetic towards the characters and a dispassionate debate based on the accumulation of facts progressed. Furthermore, Fig. 6 illustrates a strong sense of empathy towards the characters in offline learning, as learners only proposed rules in which the subject was the character.

One characteristic of the manga case method is a high level of immersion in the world presented in the case. Through such immersion, learners learn how to make use of their knowledge while creating connections between themselves and the real world [3]. When immersed in the manga case, for example, a narrative emerges where the learner talks about the characters as if they were him/herself or another real person [4]. This effect enables the learner to have a model experience of problem solving in the real world. This thus enables knowledge to be learnt in a practical form, founded on a social constructionist perspective [20].

TABLE VIII. Technological Proposals in Online Learning

Initial Idea	This concerns Q6: "Please make some suggestions for internet usage for company employees." I came up with the following ideas: Rule 1 Rule 2 Rule 3 Rule 4
Addition of Rules	I think that any of them are very good. Setting up some kind of training would also help prevent employees causing problems, I suppose, so what do you think about adding two suggestions like the ones below? Rule 5 Rule 6
Addition of Rules	A number of rules are added.
Technological Proposal 1	One thing that I thought of is, as an improvement measure how about producing a log of when the internet is used and then only checking that log when a problem arises?
Technological Proposal 2	The company could loan computers and mobile phones and then limit use of the functionalities to the minimum necessary. Since those devices are provided by the company, if you set it up so all the history would be recorded, you could go back and check it if a problem arose.

TABLE IX. Realization of Benefits in Online Learning

Addition of Rules	1. Do not post private information so easily. 2. When posting private information do not use an account with your real name.
Addition of Rules	1. Use it with an awareness of the fact that anyone can view it. 2. Encourage use of a lock when used for private purposes. 3. Do not indiscreetly post personal information.
Realization of Benefits	Either of them are OK! Ah, would it be OK to write something positive? Like, for example, "Effectively use SNS to collect a large amount of information."
Realization of Benefits	That sounds good! As a rule for effective use of the internet, without destroying its benefits!

TABLE X. OPINIONS AND OBJECTIONS IN ONLINE LEARNING

Addition of Rules	Using SNS for work increases the amount of information you get, so while it is a good idea, how about making sure to keep work and private completely separate?
Opinion/Objection	In the manga, I couldn't tell whether it was just someone with the same name or not, but wasn't the name the cause of the problem? Don't you think that that needs to be prevented in some way?
Addition of Rules	I think that it is important to protect privacy. Also, work and personal activities must be separated,
Addition of Rules	OK, so to summarize this, how about we say that there needs to be a good balance between work and the protection of privacy?
Addition of Rules	Sounds good! Having too many rules is not that good, so... All you can really do is to teach people to be individually responsible, isn't that right?

TABLE XI. CLASSIFICATION OF DISCUSSION FORMATS

Group	Add Rule and Stop	Technological Proposals	Realization of Benefits	Opinion/ Objection
Group A			X	
Group B	X			
Group C				X
Group D	X			
Group E	X			
Group F		X		
Group G		X		
Group H		X		
Group I		X	X	
Group J		X		
Group K		X		
Group L		X		X
Group M		X		
Group N			X	
Group O	X			
Total	4	8	3	2

The above results show that online learning did not result in a feeling of immersion. It is therefore concerning that learners may not have acquired knowledge that has a connection to the real world.

B. *Was it possible for learners to draw upon a diversity of perspectives?*

First of all, TABLES VIII and XI show that, in most of the groups, technological proposals were considered at the point when learners expressed their ideas. Furthermore, it can be seen from Fig. 5 that technological suggestions emerged only in online learning.

The reason for this may be that, while investigative learning can occur during asynchronous discussion in an online learning environment, investigative learning is difficult to carry out during discussion in an offline environment. Moreover, the results of the questionnaire on independent investigative learning show that, in online learning, the majority of learners conduct their own investigations with regard to knowledge that they do not understand.

In addition, Fig. 6 shows that rules where the subject was the company did not emerge in the offline environment. This may be due to the fact that, in the high-immersion setting of offline learning, learners created suggestions from the viewpoint of the characters, while in online learning environment they considered the situation from a more detached perspective.

These results imply that online learning may foster the ability to incorporate a wider perspective. For the manga case method in particular, it has been shown that a diversity of perspectives leads to more lively discussion and thus increased educational effects [10][19]. This is a learning model based on Miyake's theory of constructive interaction [21]. Through questioning and objection/rebuttal, learners can become aware of perspectives that are new to all participants. As such, a the broad rangeness of perspective is an important element.

Even so, in the online learning environment very few questions or opinions emerged (TABLE X, XI); even when they did, they did not lead to further debate. As such, and in contrast to the offline environment, the discovery of new perspectives did not occur.

VI. CONCLUSION AND FUTURE DIRECTIONS

The purpose of this study was to investigate differences between the educational effects of the manga case method in online and offline environments. An experiment was conducted in both types of environment and the educational effects were analyzed. The analysis focused on two aspects: whether or not learners were able to draw upon diverse perspectives and whether or not a feeling of immersion was created.

The discussion of the results showed that (1) that online learning produced a lower level of immersion in the case materials, and (2) that students in such an environment would engage in independent investigative learning. These results showed that the viewpoints of the learners would become more diverse. Conversely, opinions and questions did not arise during the discussion, meaning that discussion did not develop into a deeper debate.

On the one hand, offline learning created higher levels of immersion in the case materials and encouraged empathetic responses to the characters. On the other hand, it was shown that this high level of empathy led to a narrowing of perspectives. Furthermore, previous studies have indicated that offline learning can lead to deeper debate owing to the mutual exchange of questions and rebuttals [19].

Directions for future research will now be discussed. In recent years, there have been moves to introduce hybrid learning, which combines online and offline learning, into case method education [11]. The objective of hybrid learning is to combine both environments in order to compensate for each one's weakness and leverage each one's strengths. Specifically, it has been shown that this can have the effect of increasing learner participation rates and improving discussion quality [13].

Accordingly, it is anticipated that the findings from this experiment will be utilized in the development of a hybrid learning system, which will be aligned with the specific

characteristics of manga case materials. At this stage, it is anticipated that the hybrid learning system will consist of the following three steps.

Step one will involve carrying out online learning. Learners' ability to carry out independent investigative learning will be facilitated by having them engage in asynchronous discussions online. This will help them to discover high-level solutions from a technological perspective. The lower level of immersion in this environment will make it possible for them to look at solutions from a wider variety of viewpoints.

Step two will involve carrying out offline learning. Learners will bring the solutions that they came up with in the online environment to an in-person discussion. Here, face-to-face discussion will encourage the diverse perspectives that emerged through online learning to confront each other and result in a lively discussion. Increased immersion will increase the real-world simulation effect.

Step three (and further steps) will involve alternating between online and offline learning. That is to say, in the subsequent stages, online and offline learning will be carried out alternately.

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