Dental University Freshmen's Perception of Email-based Out-of-class Collaborative Learning

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Abstract

Out-of-class online collaborative learning is space where students are expected to autonomously develop a range of resources essential for their successful learning in higher education. Benefits of this type of learning mode include a pragmatic solution to students' demanding self-learning management (such as setting up a date, time and venue for collaboration), which may situationally need to be prioritized among others by curriculum/material designers, considering the busy study schedule of university students. The current research looks at dental university freshmen's perceptions of assigned collaborative learning through email communication outside of the classroom. The data was gathered in the form of voluntary questionnaires from 36 freshman students of two school years. 57 episodes were identified related to the out-of-class computer-assisted collaborative learning. Using qualitative analyses, this research found that different resources for the collaboration are situationally invested, depending on group dynamics and condition settings. Implications for curriculum and materials designers as well as teachers are discussed with a particular emphasis on environmental analysis.

1. Introduction

The English learning curriculum at Kanagawa Dental University (KDU) is designed and delivered to optimize the English proficiency development in the way that the stakeholders (the curriculum developer, teachers, and students) are jointly accountable for the learning processes and end products. The student's share of this joint endeavor is described as active learning (e.g. Johnson, Johnson, and Smith, 1991; Remedios, Clarke, & Hawthorn, 2008; MEXT, 2017) and collaborative learning (e.g. Dillenbourg, 1999a, 1999b; Prince, 2004), both of which aim to activate students' existent and potential resources to enhance their learning processes and outcomes.

Mukai (2017 a) shows an example of the dynamic processes of a material development (Crabbe, 2018); how the curriculum designer developed an online collaborative learning activity as a way of solving situational problems that emerged in the delivery of the cur-

riculum at KDU. The email-based collaborative learning was designed when a range of limitations were reported by the students on out-of-class face-to-face collaboration. In the self-managed learning activity, students were supposed to get together and exchange peer feedback on around-100-word writings in their randomly assigned group, making comments and questions from different perspectives and knowledge bases, so that they would have multiple opportunities to review their own writings for a revision. Many students visited Mukai's office and said that the assigned face-to-face collaboration would negatively fit with their students' available resources (e.g. time constraints, not-well-established relationships among students themselves, unfamiliarity with active/ collaborative learning activities). These constraints had not been fully known prior to the delivery of the curriculum, but they presented themselves in a conspicuous way in the form of requests from students for teachers' interventions into the autonomous learning.

Having evaluated the type and level of 'scaffolding' (Wood, Bruner, & Ross, 1976) needed to facilitate the autonomous learning in a more learner-friendly fashion, Mukai decided to change its interactional mode from a face-to-face to asynchronous electronic interaction. As a result of environment needs analysis, he found that the university e-mail system was available as a promising platform for the out-of-class autonomous learning. This modal shift was expected to benefit the students' learning in that email communication would enable students to free up more time in their tight schedule and lessen social nuisances with unfamiliar group members. This new interactional setting was obviously likely to reduce educational interaction and negotiations among students. However, this scaffolding was judged as a necessary step back to nurture positive attitude towards collaborative learning and to initiate students into a new learning paradigm.

Nation and Macalister (2010) compares a curriculum evaluation to carrying out research and emphasizes the importance of raising relevant questions. Here, the decision made to shift the interactional mode of the collaborative writing feedback activity from a face-to-face to asynchronous electronic one needs to be evaluated, in the first place, by following back the logic behind designing the email-based activity; can the modal shift be justified for its intended scaffolding effect? Specifically, does the email-based collaboration fit enough with the students' existing resources to sustainably promote collaborative learning at KDU English Course? With these questions prioritized, the current research is intended to evaluate a range of aspects, cognitive, affective, and environmental (Nation and Macalister, 2010), of the email-based learning activity. The focus of this paper is on student perceptions of the learning activity.

2. Data collection procedures

Data was collected in December across two school years (2017 and 2018), through a questionnaire given to Year 1 students (Appendix 2). They were informed of use of the data for the purpose of writing academic papers and improving the educational quality at KDU. They were free to opt in or out to answer the questionnaire. They were asked to write freely what they had to say about the collaborative learning activities that they had experienced in the previous seven months since they enrolled in the Year 1 English course. Out of 167 students who were given the questionnaires, 117 responded (See Table 1). 36 students were found to refer specifically to the out-of-class email activity and the other 97 focused on their experiences of collaborative learning activities in the classroom (e.g. group or pair work and presentations). As raw data, the 36 entries were initially analyzed in terms of their contents and 57 different episodes were identified to be related to the email activity. The episodes were categorically named EAEs (Email Activity Episode) and each given an ID number (001 ~ 057), for the convenience of later reference.

Table 1: The number of episodes related to the out-of-class email activity.

	2017	2018	Total
The number of questionnaires distributed	87	80	167
The number of questionnaires collected	70	47	117 (70.1%)
The number of students that reported episodes relevant to the email activity	20	16	36 (21.6%)
The total number of episodes relevant to the email activity (EAE)	**31**	**26**	**57**

3. Data Analysis Procedure and emergent categories

Drawing on Grounded Theory (Glaser & Strauss, 1967; O'Reilly, 2008; Belgrave, 2014), the 57 EAEs were categorized into distinctive labels, with reference to the concept of 'resources', which was theorized in the preceding research (Mukai, 2017 b). Mukai (2017 b), using the ethnographic approach, found how educational practices and cultures of postgraduate learning environments in New Zealand are being situationally created and maintained in the collaboration of stakeholders. Students were found to contribute to this maintenance of active and collaborative learning environments, drawing on and strategically investing a range of 'resources' that they had available for their own learning development. The resource types identified include *active learning resources*, *domain knowledge resources*, *social relation resources*, and *linguistic resources*. Interview with local and international students unpacked how these resources are deployed in different educational situations. For example, international students were usually limited in their *linguistic resources* for participation in very fast-shifting academic turn takings in the classroom while occasionally found to actively participate in the classroom discussion when they were confident in their own *domain knowledge resources* and such *social relation resources* as friendly relationship with other local students. These

findings and categorization processes inform the processes of the current analyses.

Four main categories (*technological resource*, *target language resource*, *general knowledge resource*, and *active and collaborative learning resource*) and five sub-categories were identified to repeatedly come up in the collected data (Table 2).

Table 2: List of the categories found in the analyses of EAEs.

Category	Sub-category
Technological resource	PC-related tech resource
	Email-related tech resource
	Time and effort affordances
Target language resource	Benefits of Resource sharing
	Development of lexico-grammatical resource
General knowledge resource	
Active and collaborative learning resource	

Among them, *target language resource,* which refers to knowledge and skills for using English as a learning object in the learning activity, was found to emerge most frequently (25 episodes) (Table 3). *Technological resource*, then, comes next with 20 EAEs. *General knowledge resource* and *Active/collaborative learning resource* has five and seven EAEs respectively.

Both *Target language resource* and *technological resource* are subdivided into multiple categories. *Lexico-grammatical resource* and *resource sharing* emerged as subcategories from the category of *target language resource*. Three subcategories, which are *PC-related resource*, *email-related resource*, and *time and effort affordances*, comes out of *technological resource*. Frequencies of appearance of the five subcategories are also shown in Table 3 below.

Table 3: Category occurrences in EAEs.

Category	Category occurrences	Sub-category	Sub-category occurrences
Target language resource	25 (43.9%)	Development of lexico-grammatical resource	17 (29.8%)
		Benefits of language resource sharing	8 (14.0%)
Technological resource	20 (35.1%)	PC-related tech resource	4 (7.0%)
		Email-related tech resource	8 (14.0%)
		Time and effort affordances	8 (14.0%)
Active/collaborative learning resource	7 (12.3%)		
General knowledge resource	5 (8.8%)		
Total	57 (100%)		

In the next section, each category is described in details with the evidence of students' perception on this out-of-class email-based learning activity.

3.1. Category: Target language resource

Emmergence of this category shows that students are sensitively monitoring the development of their own target language learning during the engagement in this email activity. The two core sub-categories were identified in this category; (1) *benefits of language resource sharing*, and (2) *development of lexico-grammatical resources*.

3.1.1. Benefits of language resource sharing

Students highlight the beneficial nature of sharing resources involved in the email-based peer activity. They noticed that reading and commenting on their peers' writings gave them opportunities to see how a writing can vary even on the same topic and to learn alternative choices of how they can write on their thoughts/ideas/experiences. The following quotes from the gathered data

represent the positive perception of receiving the target language resources from peer students;

EAE# 013: 'メール学習はちゃんと送れているかが不安だった。しかし、<u>ほかの学生の文章に触れることのできるとても良い機会でもあると思う。</u>'

EAE# 027: 'なかなかグループワークという機会がないので、お互いのスペルミスの確認を行うこともできるし、<u>自分と違う考えや英文の内容なので、とても自分の勉強の参考になります。私はあまり英語が得意な方ではないので、英語ができる人の文章を見たり発表を聞く機会があることはとても自分の不足した知識の補填に助かりました。</u>'

EAE# 033: 'メールアクティビティは他の友達が<u>どのように英作文を書いているのかが分かり、また間違えの指摘をしてもらえるのでモジュール試験の英作文を書くときに参考にすることができ良かったです。</u>'

These three quotes show how students perceive the email-based peer activity as beneficial opportunities to gain good examples or alternative ways of writing on the same topics. Students show and share their language resources among themselves on email communication, some resources being transferred from student to student, without any direct intervention by the teacher.

It should be noted that the benefits of sharing the target language resources are felt not only on the receiving side of communication but on the sending side as well. One quote clearly shows that the idea of sharing the language resources motivates students to take better care of details in their writings to make receivers/readers understand better;

EAE# 020: 'グループワークであるからこそ、<u>他人への伝わりやすさを意識し、工夫することもあった。</u>'

3.1.2. Development of lexico-grammatical resource

The other sub-category that has emerged within the category of target language resource represents the most conspicuous features of language learning, that is, vocabulary and grammar. The questionnaire answers in relation to this category centres around the accuracy parameter of language use in lexico-grammatical features

and thus opportunities to correct grammatical and spelling mistakes. Interestingly enough, the students' perceptions of the benefits of the email-based peer activity on this score are mixed. Here below are 13 samples of positive and negative views of sharing lexico-grammatical resources among one another;

EAE# 005: '添削が適当にされていたので文法力の向上にほぼ意味がなかった。もっと違うシステムを作ってほしい。'

EAE# 025: 'しかし、英作の添削を行っていた課題はあまり意味がないのではないかと感じました。生徒のほんの少しの添削を行っても何が改善されるのかが分かりませんでした。それよりもう少し英作の書き方の基礎、文法をやるべきなのではないかと思いました。'

EAE# 026: 'グループワークはとても良いことです。しかし、力の差が大きい中でのグループ作業は難しいです。特に添削はなかなか大変だったと思います。周りでもそのような意見は多かったです。間違えて添削されてる。ということが多かったです。'

EAE# 027: 'なかなかグループワークという機会がないので、お互いのスペルミスの確認を行うこともできるし、自分と違う考えや英文の内容なので、とても自分の勉強の参考になります。私はあまり英語が得意な方ではないので、英語ができる人の文章を見たり発表を聞く機会があることはとても自分の不足した知識の補填に助かりました。'

EAE# 032: 'メールアクティビティは他の友達がどのように英作文を書いているのかが分かり、また間違えの指摘をしてもらえるのでモジュール試験の英作文を書くときに参考にすることができ良かったです。'

EAE# 038: '作文に関してのフィードバックは、他の人の文章も読めて楽しかった。しかし、単語や文法に関しては、そこそこの英語力がないと見つけられなかったので、難しかった。'

EAE# 039: 'あまり英語力に自信がなかったので、正直、初めはペアワークやメールアクティビティは不安でした。でも、ユニットテストで英作文を書いている時に自分では気がつかなかったようなミスを指摘してもらえたり、質問をもらえることで書き直す時に新たな文を作る参考にすることができたので良かったです。'

EAE# 042: 'メール課題については文法の間違いなどを指摘してもらい勉強になることもあれば、とくに問題はないと思います、としか書いてくれないグループメンバーもいて振り分けられたグループによって学習の機会に差があるように感じた。'

EAE# 046: 'メールアクティビティは、自分の英作を人に見てもらうことで新たな発見があった。しかし、英語が苦手な人にとっては間違いがよく分からないということが起きた。また、メールをもらっても結局のところ、見なかった。'

EAE# 051: 'メールアクティビティーでは、メンバーの英文を読むことで自分の文法力を再確認することができ、とても良いシステムだと感じている。'

EAE# 052: 'いろんな人とメールアクティビティをすることで、様々な視点から自分のミスに気づけたので良かったと思う。'

EAE# 054: '実際、メールのアクティビティや穴埋めのアクティビティのおかげで、文法の能力が保たれていると思う。'

EAE# 055: '人の英文を読み訂正することで自分も同じ間違いをしていたことに気づくことができました。お互いに成長できるアクティビティだったと思います。'

3.2. Category: Technological resource

Using an email as a learning and communication platform was found to be an opportunity for students to reflect on their own technological resources, namely, skills and confidence in using technological devices. Three sub-categories emerged through the analysis; (1) *PC-related tech resource*, (2) *email-related tech resource*, and (3) *Time and effort affordances*. In this section, samples of questionnaire answers will be given to show how students are aware of their own way of using PC and email as communicative tools and how their use of tech devices impact on their learning English.

3.2.1. PC-related tech resource

Three EAEs refer to PC use as an impact on their learning. Here again the students' perception of PC as an educational tool is mixed. One student positively

perceives the opportunity to use PC with the understanding that he or she needs to develop the typing skill which will be necessary in the future life;

EAE# 001: 'メールでのアクティビティが良く、<u>将来必要なタイピングが練習できて良かったです。</u>'

Another student points out the general lack of his or her own technological resource for use of PC;

EAE# 016: 'しかし、個人的な意見ではありますが、課題の提出方法がパソコンメールのみとゆう点が、提出状況が常に把握しづらいとゆう事や、<u>パソコンが苦手とゆう理由もあり、少々やりづらく感じました。</u>私個人の意見ではありますので、この方針に慣れていかなければと感じた4stageでした。'

On the other hand, one student did not hesitate to raise his or her voice high against the use of PC for educational purposes. According to this student, most of the Year 1 students do not have any PC literacy and it is impossible for them to use PC for language learning;

EAE# 006: 'さらに今回の添削をパソコンでやる。これも無理です。一年生のほとんどがパソコンを使うことができないのです。いきなりパソコンでしかも英語でやるというのは絶対にハードルが高すぎです。なので、来年からはやめてください'

3.2.2. Email-related tech resource

Nine EAEs were identified in relation to email as an educational medium. These episodes collectively refer to ambivalent feelings about their unfamiliar use of email as a part of the course work. The unfamiliarity with email, for example, emerges in the form of uncertainty they feel that the receiver has actually received their emails;

EAE# 002: 'メールなどがしっかり届いているかどうかを確認できるサイトがほしい。'

EAE# 003: '自分の提出したファイルが空だった場合などの不祥事に自分では気付くことができないと感じました。'

EAE# 008: '送れたか送れてないかが不安になることが多かった。'

EAE# 014: 'メール学習はちゃんと送れているかが不安だった。'

EAE# 015: 'しかし、個人的な意見ではありますが、

<u>課題の提出方法がパソコンメールのみとゆう点が、提出状況が常に把握しづらいとゆう事や、パソコンが苦手とゆう理由もあり、少々やりづらく感じました。</u>'

These five EAEs suggest that students feel that they want to have some form of response from the receivers indicating that they have certainly received their emails.

3.2.3. Time and effort affordances

The email activity was designed and developed by the current author with a clear intention to deal with time and efforts that would be needed for face-to-face meetings with their peers, so that students could free up more of their learning schedule. Six EAEs positively respond to this designer's intention.

EAE# 007: '<u>メールでのフィードバッグは家でもできて簡潔ではあるものの、</u>自分の提出したファイルが空だった場合などの不祥事に自分では気付くことができないと感じました。'

EAE #008: '<u>ネットの方は個人的には楽だったが、</u>送れたか送れてないかが不安になることが多かった。'

EAE #012: '電子メールで忙しい時でも時間を見つけてできるのでいいと思います。'

EAE #022: 'グループの課題は、課題としてはメールでのグループアクティビティが、実際に集まる必要のあるグループアクティビティよりも良かったよ思います。集まろうとしても、やる気のないひとや都合のつかない人が多かったので、できない事が多かったからです。'

EAE #030: 'メールでのアクティビティは、実際に同じグループの人と会って作業するよりも簡単で、時間の無駄がなく効率が良いと思った。'

EAE #031: 'メールの返信はかなり時間をとりますが、みんなで集まってやるよりも簡単でした。'

On the other hand, two EAEs interestingly echoed to each other in an identical, negative response;

EAE #058 & 65: 'メールがめんどくさい。'

These students clearly show their lack of technological resources to use email for educational purposes, though it is unknown from the current data whether these students actually did develop this type of resource during their en-

gagement in the email activity.

3.3. Category: Active/collaborative learning resource

Students refer to how resourceful they and their group members can be in learning actively and collaboratively in their email activities. Unlike the classroom situation in which teachers set up conditions for learning in the form of classroom tasks or activities and monitor and supervise students' engagement in the tasks/activities, students in the out-of-class learning mode are required to take more responsibility of managing different aspects of their own learning. Students mentioned in the questionnaire answers how they feel about required degrees of active engagement and collaboration skills. The five quotes below show the students' mixed attitudes towards learning skills or resources required for this email activity. The first two evaluate the benefit of the email collaboration highly:

EAE #053: 'メールのアクティビティは自主的に考えながらやるものなので、大変良いものだと思う。'

This EAE suggests that the email-based collaborative learning promotes active involvement, which can benefit students' learning greatly. Next EAE highlights enhanced motivation because of the sheer fun of having opportunities to have access to peers' products:

EAE #037: '作文に関してのフィードバックは、他の人の文章も読めて楽しかった。'

Having fun out of reading other peers' pieces of writing, this student sees collaborative writing feedback as an enjoyable learning process.

On the other hand, one quote indicates an anxiety of collaborative learning management:

EAE #050: '授業外のメールアクティビティは、先生のコメントも欲しいと思いました。'

This student is not satisfied with peer feedback alone but wants feedback from teachers, which suggests that he or she might not quite see peer feedback as instrumental resources for their language learning. On a similar note, the following two EAEs point out a problematic aspect of the peer feedback opportunities:

EAE #043: 'メール課題については文法の間違いなどを指摘してもらい勉強になることもあれば、とく

に問題はないと思います、としか書いてくれないグループメンバーもいて振り分けられたグループによって学習の機会に差があるように感じた。'

EAE #017: 'デメリットは、グループワークへの参加意識や英作文における個々の差であったり、目に付く部分が少し多かった。'

Group dynamics are here problematized as greatly influencing opportunities for and quality of learning in collaborative learning settings. This indicates that active/collaborative learning resources are interactively and situationally generated and sustained, largely depending on social factors.

3.4. Category: General knowledge resource

Students also emphasizes the benefit of the email-based collaborative learning as opportunities to know what and how other people think and to assimilate the way others grasp the world. From this perspective, the computer-assisted collaborative writing activity does not solely provide students with occasions to acquire linguistic knowledge and technical skills but still with chances to expand ways of seeing the world:

EAE #018: 'グループで行なう方が、より理解が深まったり、視野をヒゲルことができたという点である。'

EAE #034: 'メールのアクティビティでいろいろな人の考えを理解することができたことはいいことだと思う。'

Through the collaborative activity, students are thus more resourceful in accepting and sharing different world views.

4. Discussion: students' perceptions on the email-based peer learning activity

The identified variety of category types discloses the nature of the email-based peer-feedback activity as a potentially multi-faceted opportunity for students to develop different resources required for successful learning management. The students were found to be self-conscious in deploying their existent resources in their learning outside of the classroom, monitoring the devel-

opment of their learning while checking on the adequacy of their resources for their situational needs. Differences in this resource adequacy presents itself in the form of a wide spectrum of questionnaire responses that cover the identified categories in very different ways from student to student.

The emerging four major categories represent different aspects of this whole learning process. In the email activity, students use English as the target learning object (*target language resources*) to communicate their ideas and perspectives (*general knowledge resources*) to their peers and receive feedback from them (*active/collaborative learning resources*) in the medium of email on their PC (*technological resources*). Students work on their assigned e-mail activities, drawing on their developed and/or developing resources of multiple kinds and deploying the resources situationally. Through these processes, students naturally experience a range of affective reactions to different aspects of the email learning activity. On the positive side, they reported on sheer fun, enhanced motivation, cognitive benefits, new learnings, while, on the negative side, they described affective and cognitive challenges that emerged through engagement in the activity.

the following sections will discuss findings around different parameters, which will, combined, help evaluate the design of the email-based collaborative learning.

4.1. Disparity between 2017 and 2018 students in technological resource

The current research has gathered data from the 2017 and 2018 school years. The table below (Table 5) shows the numbers of EAEs for each year. The difference in the dominant category is obvious from the table. In 2017, the Year 1 KDU students' attention gathers around the technological aspects of the email activity (58%), whereas in 2018, the Year 1 students have a lot more to say about the language-learning-related aspect of the same activity.

Table 5: Difference between 2017 and 2018 in the coverages of EAE categories

CATEGORIES	2017	2018
Technological resource	18	2
	58.1%	7.7%
Target language resource	9	16
	29%	61.5%
Active/collaborative learning resource	1	6
	3%	23.1%
General knowledge resource	3	2
	10%	7.7%
TOTAL	31	26

One plausible explanation of this disparity is that a major shift was made between the 2017 and 2018 curriculums as to how often computer is used in the classroom. In 2017, the Year 1 students did not use PC in their classroom except the last few weeks out of 24 weeks in total. In 2018, on the other hand, the Year 1 students were asked to bring their PC with them to their classrooms for more than half the course weeks and engaged in a range of learning activities using it in class. For example, students wrote various pieces on the e-mail basis and send them to the class teacher on the spot, who picked up some to show them on the big monitor screen so that the students can share their ideas and writings in class. Or else, students were often asked to write an short essay and email it to all their classmates who sat on the same row or column of the lecture theatre. The idea of this enhanced use of PC in the classroom is to help students develop their PC and e-mail literacy with support from their peers and teachers in class so they will apply the developed technological resources to their out-of-class, autonomous learning. Year 1 students of the 2017 school year did not receive this sort of scaffolding in use of PC during their class hours. For many of them, the email-based out-of-class activity was the only opportunity to use PC and email. It is conceivable that some of Year 1 students in 2017 might have feel far less familiar with this use of computer-technology in English learning environments and that this technological novelty gathered more attention this year than in 2018. My personal observation confirms that outside of the English course, the students have almost zero opportunity to use PC and

email in their university life at KDU. Thus this novelty became all the more conspicuous in 2017.

4.2. No social resources identified

Mukai (2017 b) finds that face-to-face oral communication in the higher education contexts in New Zealand involves a range of *social resources*, such as person to person skills, and personal friendship and acquaintance, as necessities for international students' successful learning experiences. Prior to the current research, issues around social resources were identified to be prominent in the out-of-class face-to-face peer activity which was administered in 2017, and the current author was motivated to design and operate sustainable peer activities that would help students develop social resources while accommodating lack of the same resources for, for example, socially challenged ones (Mukai, 2017 a).

Mukai (2017 a) identifies issues of face-to-face educational communication for KDU students in 2017, which include social awkwardness with newly acquainted group members. It says 'Students insisted that their social relationship is based on and bound solely to their own class. It would be very difficult for them to communicate and collaborate with group members from a different class, and the social unfamiliarity could not be overcome easily.' In the current analysis of data, no similar sentiment was found to be shared among the students. This finding implies that issues around social resources might not be so conspicuous in email-based communication as they were in face-to-face communication in the out-of-class learning environment.

On the other hand, the lack of evidence from this research regarding social resources also suggests that the email-based non-face-to-face learning activity might not be expected to contribute significantly much to nurturing social bonds among group members. This could be explained in terms of shortage of students' distinctive social space (Mukai 2017 b). In face-to-face peer interaction, students may feel allowed to develop given topics on their own according to a situationally made consensus among them. This may often lead to a major or minor diversion from the main educational topic, which can

however serve some social purposes, as might be obvious in the case of jokes and humor. In the case of the current email-based collaborative learning activity, however, most students stick to the given agenda, giving expected or relevant comments and questions to each other, without any significant diversion or irrelevant addition. The students are fully aware that the email interaction is 'monitored' by the teacher through the carbon copy (Cc) function and that the interaction in emails is assessed in terms of required communicative functions (e.g. comment and question). These conditions can be understood to disservice students' free-flowing communication or creation of their exclusive social space.

Conclusion and pedagogical implications

Email-based collaborative learning is found to have potential to help develop a range of resources essential for the higher education environment of KDU. Students were aware of different resources involved in the operation of computer-based peer learning, which can be perceived as either beneficial or problematic. Four major categories were identified as emergent from the qualitative analysis, which are *technological resource, target language resource, general knowledge resource,* and *active and collaborative learning resource.* Students were found to deploy their existent resources situationally while monitoring the development of the resources as well as detecting potential and existing problems. The finding suggests that, in the case of email-based non-face-to-face peer interaction, the curriculum/material designers need to take a holistic view of collaborative learning as multi-faceted learning experiences that require a range of resources for students' educational experiences to be beneficial and motivating ones, as is the case with face-to-face collaborative learning (Mukai 2017 b). This means that lacking this holistic view might lead to a perception gap between students and curriculum/material designers and teachers as to the benefit of computer-based collaboration in English education, which in turn would end up in not being able to provide students with optimal learning conditions.

One important implication from this research is that, while target language resources are the main focus of any English learning activity, the development of English proficiency in computer-assisted collaborative learning cannot stand alone independent of the development of other types of resource. The findings around technological resources particularly help understand this interdependency among different resources. The students who were accustomed to use of PC and email through various in-class learning activities (2018 students) did problematize technological resources far less than the students who were not (2017 students). Instead, 2018 students paid more attention than 2017 students to the development of their target language resources, which perfectly meet the objective of this learning activity. Curriculum/material designers who would intend to introduce computer and internet technology to their products should not take students' technological skills a priori but set up preconditions under which they will be able to be aware of the significance and enjoyment of technical resources for learning and willingly develop the resources. Needless to say, on this score, focused needs analyses are quite important to gather relevant information on students' existing resources before designing curriculum/materials.

The email-based collaborative learning activity was situationally designed and run for KDU students to meet their needs found through the operation of the face-to-face collaborative learning activity outside of the classroom. The identified issues around collaborative learning had been surprising, not fully expected by the current curriculum/material designer, who was then just back from his eight-year stay in New Zealand. This suggests that language curriculum and materials cannot possibly be designed nor executed in a vacuum but they should be made with the socio-cultural, educational, technological environments in full attention. In this sense, environment analysis or situation analysis plays an essential part of the curriculum/material design processes.

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Appendix 1: Information Sheet for the email based collaborative learning activity

KDU English Year 1 Stage 4 E-mail Activity 1 Manga
Now we are going to do the **first** E-mail Activity for this stage. The main objectives of this activity, among others, are (1) to develop communication skills in English and (2) to prepare for Module Shiken.

How do you do this activity?
There are three steps to succeed in this activity.
1. Reading
You read all of your members' writings (which are attached in this e-mail).
2. Writing and sending your comments and questions
Reply to this e-mail. Make sure to click '全員に返信' and write comments and questions in your reply. If you '全員に返信', all your members and Mukai will get your reply at the same time. For each of your member, **(1) you make nice friendly comments, (2) make suggestions about spellings and grammar,** and **(3) ask one question**. Here is an example:

高橋君へ

コメント

すごくわかりやすい英語で、読みやすかったです。家族でのお正月うらやましいです。

文法や単語

いくつか、気が付いたことがあります。「飛行機」の綴りが plane ではなく plain になっていますが、これはスペルミスだと思います。５行目はピリオドが付け忘れています。８行目は受身の形にするために、be 動詞が必要で、'has been given' になります。

質問

お正月にハワイ以外の外国に行くことはありますか？

三沢さんへ

コメント

読んでいておもしろかったので、もっと長い文を読みたかったです。不思議な経験ですね。

文法や単語

いくつかの名詞に a や the が抜けているのではないかな、と思いましたが、ちょっと自信はありません。

質問

小学生の時と高校生の時ではお正月の過ごし方が変わったということですよね？

Make sure to send it by **18:00, Wednesday, November 28th**.
3. Revising the writing
After 18:00, Wednesday, November 28th, you revise your writing on PC, using comments and questions you

have got. Revision Sheet is also attached in this e-mail (in Microsoft Word). **Be careful not to forget to fill in the second page of the Revision Sheet.** Once you have finished revising, submit your revision by uploading it at http://www.labs.kdu.ac.jp/english/activity/. The due date is **9:00, Monday, December 13th**.

Appendix 2: Survey Sheet

Nov 28th Group Work Report   (5 points)

（１）今日のグループプレゼンテーションとグループ学修について報告してください。良かった点、**難しかった点、改善策**などについて、日本語全角で２００文字以上で書いてください。文字数は最後に記入してください。提出は　http://www.labs.kdu.ac.jp/english/　にて。授業内にアップロードできなかった場合は、今週金曜日 18 時までに出してもらえればかまいません。グループ番号や他のグループ番号、グループメンバーの名前が入っていなかった場合は残念ながら減点対象ですので注意して下さい。

また、このレポートは、今後の英語教育の資料として研究発表等に用いることを了承お願いします。その際、個人名、個人情報等は匿名化し、保護します。

出席番号（　）　名前（　　　　）
トピック（　　　　　　　　　　　　　　　　　）
自分の元のグループ番号（　　　）同じトピックで組むことになったグループの番号（　　　　）
合体してできたグループのメンバーの名前
（　　　　　　　　　　　，
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（　　　　　　　　）文字

（２）今年の英語の授業で行った様々なグループワーク（授業内でのペアワークとグループワーク、授業外でのメールアクティビティ）について、以下に自由にフィードバックを書いてください。来年の授業の参考にさせてもらいたいと思います。英語科にとっても、神奈川歯科大学にとっても、また現在進行している日本国を挙げての教育改革にとっても（*）、変化の大きな時代に教育を受ける学生の皆さんのフィードバックは欠かせません。よろしくお願いします。

*　受動的に教師から知識を受け取るだけでなく、他の学習者と能動的・協働的に問題を解決しながら知識や技術を身に付けていく学修を組み込んでいく教育改革のこと。

このフィードバックは、今後の英語教育の資料として研究発表等に用いることを了承お願いします。その際、個人名、個人情報等は匿名化し、保護します。