TEACHING with TECHNOLOGY 2020

Selected papers from the JALTCALL2020 Conference

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Exploring EFL Student Use of Digital Backchannels During Collaborative Learning Activities

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Abstract

This chapter highlights several findings related to the learners' use of digital communication channels during online collaborative activities. The term *digital backchannel* is used to imply that there are two channels of communication operating simultaneously during collaborative activities. The predominant digital channel is that of the online content management system controlled by the instructor and accessed in the target language, English. The secondary channel of digital communication (backchannel) is that of the external personal social network systems (SNS) that students employed to interact with group members and others. The researcher collected qualitative and quantitative data on learner interactions within a yearlong series of language learning activities through internet logs and interviews. The students employed digital backchannels with increasing frequency throughout the study period, even though there was an initial reluctance to use a communication channel, they considered very private for public educational activities. These digital backchannels were primarily mobile-based SNS. The students reported that the use of these backchannels increased in use over the study period and led to increased peer communication and networking. Also, students' language use changed when moving between these primary and secondary communication channels, with L1 being used for the main-channel and L2 used for the backchannel.

この論文は、オンラインの協働作業中の学習者によるデジタルコミュニケーションチャネルの使用に関連するいくつかの調査結果に焦点を当てています。「デジタルバックチャネル」という用語は、協働作業中に2つの通信チャネルが同時に動作することを意味します。主なデジタルチャネルは、インストラクターが制御し、ターゲット言語である英語でアクセスできるオンラインコンテンツ管理システムのチャネルです。デジタルコミュニケーションの2番目のチャネル（バックチャネル）は、学生がグループメンバーや他の人々とのやり取りに使用した外部のパーソナルソーシャルネットワークシステム（SNS）のチャネルです。私は、インターネットログとインタビューを通じて、1年にわたる一連の言語学習活動内の学習者の相互作用に関する定性的および定量的なデータを収集しました。学生は、公的教育活動のために非常にプライベートであると考えられていた通信チャネルを使用することには当初抵抗があったにもかかわらず、調査期間を通じて増加する頻度でデジタルバックチャネルを利用しました。これらのデジタルバックチャネルは、主にモバイルベースのSNSでした。学生は、これらのバックチャネルの使用は、学習期間中に使用が増加し、ピアコミュニケーションとネットワーキングの増加につながったと報告しました。また、これら

のプライマリコミュニケーションチャネルとセカンダリコミュニケーションチャネルの間を移動すると、生徒の言語使用が変更され、L1はメインチャネルに使用され、L2はバックチャネルに使用されます。

Keywords: **digital backchannels, EFL, collaborative learning, mobile learning**

This paper highlights several findings related to the learners' use of digital communication channels during online collaborative activities. The term *digital backchannel* (Yngve, 1970) is used to imply that there are two channels of communication operating simultaneously during collaborative activities. The predominant digital channel is the instructor's online content management system and accessed in the target language, English. The secondary channel of digital communication (backchannel) is that of the external personal Social Network System (SNS) that students employed to interact in any language they choose because the instructor did not monitor these channels.

The researcher collected qualitative and quantitative data on learner interactions within a yearlong series of language learning activities through internet logs and interviews. The activities were online discussions and accessible through a range of mobile and non-mobile devices to allow the method participants found most agreeable. The participants were studying English at a four-year private university in Tokyo, Japan. Commonly used digital backchannels were SNS, such as Twitter and Line, which were drawn into the collaboration. The initial reluctance to use these channels of communication for homework was overcome as the students recognized their value as a digital backchannel for private information exchange independent from the main channel, a Moodle site. The digital backchannels allowed communication in their L1 of Japanese, which appears to have reduced their motivational barriers to the homework by providing support for their public use of English by reducing the potential for embarrassing mistakes, among other reported reasons. The paper includes a review of relevant literature, a summary of the results, a discussion of the findings, and a conclusion with limitations and possibilities for furthering the study.

Literature Review

The term *backchannel* was originally designed to imply two communication channels operating simultaneously during a conversation. The predominant (front) channel is that of the primary communication flow. In linguistics, the secondary (back) channel of communication is a verbal and non-verbal listener response serving a meta-conversational purpose (Yngve, 1970) that may vary in frequency across cultures (White, 1989). This second channel improves the communication process by augmenting the primary channel of information with various mannerisms, actions, gestures, and verbal expressions (Harry et al., 2009). The linguistic Backchannel Output Hypothesis suggests that backchannels may facilitate the fluency of beginner English learners' fluency during oral tasks (Wolf, 2008).

Although historically, the phrase *backchannel* has referred to these verbal utterances and non-verbal body language, its use has expanded. First, the term *digital backchannel* came to refer to synchronous non-verbal, real-time communication, which does not interrupt a presenter or event (McCarthy & Boyd, 2005). Later, it was used to identify asynchronous

microblogging involving the posting of digital content, such as text, pictures, links, short videos, or other media to web-based sharing services (McNely, 2009).

Researchers have investigated synchronous and asynchronous digital backchannels and their role in group interactions, such as one-on-one classroom chats (Cogdill et al., 2001) or public chat backchannels in physically-shared spaces such as an academic conference (McCarthy & Boyd, 2005).

Asynchronous backchannels are not as constrained by the limits of time or space, so are considered a non-disruptive collaborative activity that increases participation and interactions among students (Toledo & Peters, 2010) by allowing all students an equal opportunity to respond to a topic and more time to think and edit, so increasing the chance of thoughtful responses (Birch & Volkov, 2007; Branon & Essex, 2001; Hanson-Smith, 1997; Kitade, 2008; Ortega, 1997). One reason for these improved responses may be that they have more time to process input (Abrams, 2003) and reflect on what they want to express (Althaus, 1997). By leveraging the social communication, connectivity, and heightened multi-tasking skills associated with the everyday lives of students, it is possible to free up the valuable face-to-face interaction time (Jarrett & Devine, 2010; Williams, 2000) for more comprehensive in-class discussions that may positively influence subject matter reflection (Donnelly, 2016). For example, Twitter microblogging as a backchannel technology affords mobility through SMS messaging capabilities (Honeycutt & Herring, 2009), allowing users to engage in collaborative research anytime and anywhere. These microblogging systems also provide near-instantaneous responses with which students have become accustomed (Toledo & Peters, 2010), and information transfer through different media modes (Schick, 2005) such as text and video.

Digital backchannels provide a persistent online space that supports discussions (Carpenter, 2015), so they are ideal for developing communities of practice within higher education (McNely, 2009; Yardi, 2006). Backchannel communication provides support through peer-networking (Hennessy et al., 2016), and it improves the ability to learn from peers in a positive manner (Rogoff et al., 2004) by providing a digital space where students have the freedom to direct discussion that is relevant for their learning purpose in order to create their knowledge (Yardi, 2006). Participants in backchannels tend to be more sociable (McNely, 2009) and make more new connections (Brooke, 1987; Toledo & Peters, 2010). As Erickson and Kellogg (Erickson & Kellogg, 2000) have argued, digital backchannels are mechanisms for creating social proxies that provide a resource for group interactions online that, in turn, helps to build common ground through co-presence and visibility (Clark & Brennan, 1991).

Digital backchannels provide students a greater sense of ownership over learning that shifts the control over learning to students resulting in increased engagement (Camiel et al., 2014). They engage marginalized shy and introverted students by providing a more comfortable mode of communication that is a less threatening way to present ideas (Camiel et al., 2014; Carpenter, 2015; Krishnan & Poleon, 2013; Toledo & Peters, 2010). A digital backchannel chat platform has been shown to promote students' engagement in large English as a Foreign Language (EFL) classes by transferring the side conversation to the forefront (Harunasari & Halim, 2019).

Students who used online discussion backchannel communication have been shown

to have higher critical thinking levels than students who do not use online discussion (Rathakrishnan et al., 2017). Discourse outside front-channel instruction often involves questioning ideas, exposure to alternative points of view (Chen & Looi, 2007), building ideas that may be in conflict with accepted ways of thinking and acting (Brooke, 1987), and introducing unofficial references without disrupting the main-channel interaction (Cogdill et al., 2001), since one person cannot easily dominate the discussion (Branon & Essex, 2001; Ortega, 1997).

A digital backchannel archive can facilitate student assessments or reviews (Carpenter, 2015) and enable teacher self-assessment (Yardi, 2006) and monitor group dynamics to improve future classes (Krishnan & Poleon, 2013; Yardi, 2008; Yates et al., 2015).

Digital backchannels have been utilized to connect synchronously in large classes and venues to support various forms of student-to-lecturer and student-to-student interaction to make interactions in large classes similar to those occurring in small classes (Beatty et al., 2006; Donnelly, 2016). These synchronous interactions do not form a single conversation but instead multiple monologues with a few dialogues between users (Ross et al., 2011). In the classroom, synchronous digital backchannels can give students greater public anonymity when names are not attached to in-class posts while still being privately accountable to the instructor through backchannel logs (Carpenter, 2015). So, students who feel less competent may be encouraged to express their opinions aloud in these backchannel discussions (Bry & Pohl, 2017; McNely, 2009). They also emphasize active listening and informal learning (Toledo & Peters, 2010). One well studied synchronous technology is the audience response systems that have been used to support lecturers' question asking (Caldwell, 2007; Fies & Marshall, 2006; Kay & LeSage, 2009; Lantz, 2010).

Researchers have noted that there may be issues with distraction, which can be supported by the Cognitive Load Theory (Sweller, 1994). Students have always been subject to distractions during class, but in today's connected world, the possibilities for distractions increase, with some suggesting the term *continuous partial attention* describes student cognitive ability to pay attention (Yardi, 2006). Students may process content information on a more superficial level while they divide their attention across multiple domains simultaneously (Hembrooke & Gay, 2003). Researchers have also highlighted other negative issues related to digital backchannels, including rude content, ingroup versus outgroup conflicts, and effects on main-channel participation (Cogdill et al., 2001; McCarthy et al., 2004; McCarthy & Boyd, 2005; Yankelovich et al., 2005). Yardi (2006) recommends that the implementation of backchannels must vary across different contexts and domains and that a backchannel etiquette needs to be developed (Yardi, 2006).

Methodology

The study design was a case study adopted for one academic year to gain a deeper understanding of the processes and outcomes of completing collaborative learning activities through mobile devices by four Japanese university undergraduate EFL classes on translation. One case study group was formed from each class to make four case study groups with between five to eight members. All activities and environmental factors remained constant across all the case study groups, and participation in the study was voluntary. Group 1

contained five girls and two boys, group 2 contained eight girls, group 3 contained six girls, and group 4 contained six girls. There was no restriction on the type of device allowed to access the course Moodle site. The data collection, content, and procedures for each group were identical, and all the interviews took place in the same location with a single interviewer and were of approximately equal length.

The collaborative activities used in this study were group collaborative learning activities within weekly online modules. These activities consisted of homework questions related to translation issues encountered when moving between the Japanese and English languages. These made the students aware of specific known difficulties in language translation between these languages to encourage authentic use of their L2. This would serve the dual goal of content knowledge development and L2 practice. These activities required collaboration to complete so they would stimulate some discussion in the L2.

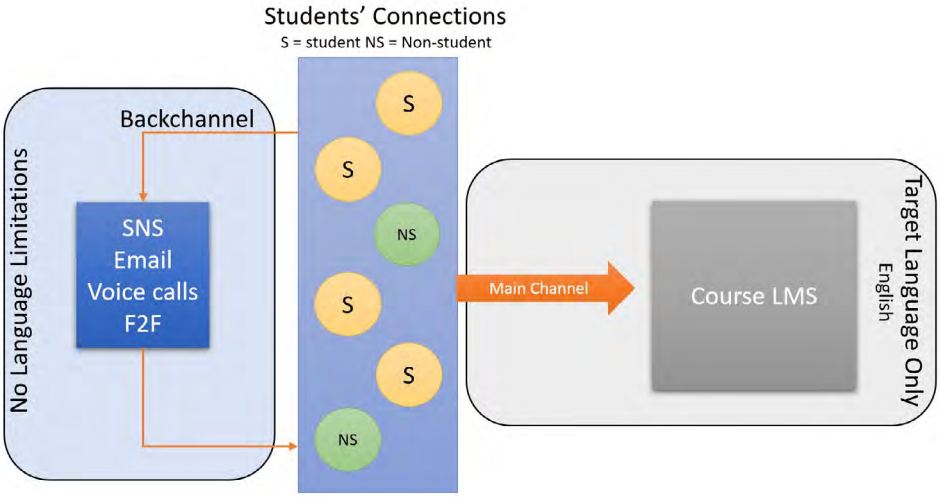
Student online website log data, weekly e-journal reports, and pre- and post-study face-to-face interviews comprised the principal sources of data. The first stage of data analysis was content analysis, where data was coded then categorized into themes. An inductive form of thematic analysis coding (Ezzy, 2002) was adopted to identify themes or concepts in the data, build a systematic account of what has been observed, identify emergent theory, and highlight issues and problems not anticipated. A single researcher performed this coding.

Results

This chapter highlights several preliminary findings related to the learners' use of digital communication backchannels channels during online collaborative activities. Figure 1 is an outline of the digital communication channels that were mapped during the case study research. Here the main channel of communication is represented on the right by the Moodle site. Here the language of communication was English, and the instructor monitored the activities. The students entered this site to complete the required steps for homework completion. These included information posts and a minimum number of discussion comments. In addition to this main channel, the students utilized a digital backchannel in the form of SNS, email, voice calls, and non-digital face-to-face (f2f) communication. The instructor did not monitor these backchannels because they were initially private to the students, so there were few limitations on information type and source. The central box indicates the students and non-students that took part in these communication channels. While the students were asked to only work within their assigned group, the students could get the assistance of non-students from different groups, different classes, and even different schools. All of this was possible because of the digital backchannels and the freedom they provided.

Figure 1

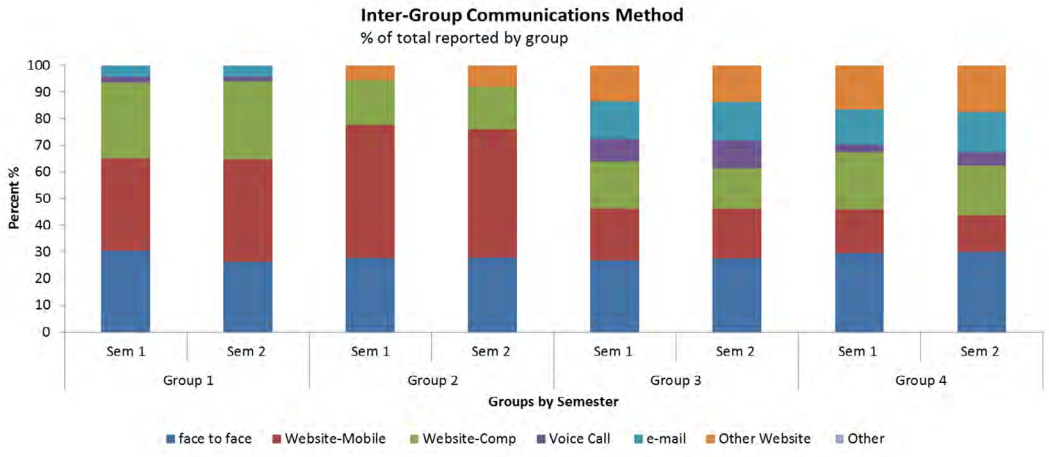
Digital Communication Channels



In Figure 2, the graph presents students' reported methods for inter-group communications coded from their weekly e-journal reports and interviews. Each week, the students were asked to comment on the activities and their group work. This was in addition to pre- and post-interviews. The reported method of within-group communication included f2f, Moodle website via a mobile device, Moodle website via desktop computer, voice phone call, email, Other websites meaning SNS, and any other means of communication- no other means were reported.

Figure 2

Group Communication Methods



F2F was the most common form of communication and was commonly reported to take place between classes or during lunch. Mobile access to the Moodle website was also very popular and included access for reading and posting of information from their group.

For groups two to four, *Other Website* was common and were reported as including SNS sites such as Twitter, Facebook, Line, and Mixi. Also, the other digital backchannels of voice calls and email were frequently reported.

Discussion

The first finding related to how the blurring of boundaries between friends and others increased the development of new peer connections and relationships. The mobile phone use for homework allowed the students to communicate more with their group members because the phone was always present and reduced the need to meet face-to-face. While the students were happy to discuss the topic face-to-face with friends, they did not like the idea of meeting face-to-face with group members that they did not already know. They mentioned that they would not talk with some of them at all if the homework were just face-to-face. However, the same students felt that the mobile phone offered a comfortable backchannel to communicate with those students that they would otherwise not speak with, resulting in an increased chance of making new connections.

Post-Interview Group 2 Student

I: Why are you closer second semester than first? Why did you become close?

S: I think after doing the homework for many times, we exchange the idea many times, we can get familiar with other people. Although in the class, of course, we cannot meet everyone, but from the comment I can feel some characters of them.

I: So you get better friends with them.

S: Yes.

This online method of communication may have lowered barriers for shy and introverted students by providing a more comfortable mode of communication (Camiel et al., 2014; Krishnan & Poleon, 2013). This observed tendency of students to enlarge their online peer networks aligns with the research showing that when students have the freedom to direct discussion in a collaborative environment, they will seek methods relevant to their learning purpose (Yardi, 2006). Mobile SNS that the students previously used only for very private friends started to be used as a backchannel channel for communication with these new peer connections. This may also lead to a reduction in ingroup versus outgroup conflicts (McCarthy et al., 2004; McCarthy & Boyd, 2005). Now, these requests were also seen by friends who were not in their group or even in the same school so that they could get feedback and advice. This aligns with previous observations that these digital backchannels provided more information on the topic of discussion than would be available without them through the main-channel, which may improve critical thinking (Rathakrishnan et al., 2017), and the building of new ideas (Brooke, 1987; Chen & Looi, 2007). These channels were outside the main channel of the Moodle site, even though the Moodle site offered most of the same affordances for communication.

The second finding concerned the students' mobile social networks Twitter and Facebook, which were almost exclusively accessed through their mobile phones. At the beginning of the research, the mobile SNS were firmly in the students' private space for entertainment, so students strongly disliked using them to assist with homework.

Pre-Interviews Group 4 Student

I: So does your group use Twitter to talk about my homework?

S: No. Actually, we don't talk about the homework…

I: Why do you think that is?

S: Mm, I haven't thought that idea [laughs], so I have no idea why that – we think about its private space, so maybe your website is homework/study space, so we divide into space; study or private.

I: Okay. Do you think most students do that?

S: Mm [laughs], maybe, I think.

I: What's the difference between study space and private space?

S: We only do homework things in your website. If we can want other communication – so the space is – can be the – like social communication space.

Post-Interviews Group 4 Student

I: Do you use it [SNS] for homework a little?

S: A little.

I: When?

S: When [pause] we are near deadline of homework.

I: Why?

S: I want to check my group member did it.

I: You don't check my website?

S: I did it – I do it sometimes but Twitter is more [pause] useful to check it because Twitter is [pause] – many people see Twitter many times.

Above is an excerpt from the interview transcript of the same student. The first example is from the pre-interview, and the second example is from the post-interview. These examples show the apparent change in attitude concerning the private and public space in which their mobile social networks belong. They explain clearly in interview one that the

SNS that they access only with their mobile are separated from their school life. When asked why they separate the two, they explain that one is for their private things, and the other is their study space. Here they are identifying a *homework space* and a separate *private space*. This example suggests that most students see the homework website, what they call *your website*, for everyone to use, and mobile social networks for those people with whom they socialize. However, when asked about these same websites in interview two, they say that their group did start to use them for the homework when they were close to the deadline. They were, for the most part, not using the sites for discussion, but instead to post status updates on SNS because they knew that all their friends were continually monitoring these sites with mobile phones, so it was the best source of real-time information updates on the activities of other groups members. This suggests that the students were self-motivated and actively trying to remove any barriers that exist by incorporating these digital backchannels to overcome the limitations that the students felt existed with the main man-channel of information, the Moodle site.

Several members from each group all echoed these feelings about their mobile social networks being personal and separate from homework. One student from group 4 explained in interview one that even though these social networks are open to public viewing, they hide their meaning so only their friends can understand the meaning. At the beginning of the course, mobile SNS, such as Twitter, were identified by the students as something they would not like to use for homework. Some students strongly expressed a need to keep some part of their lives private from school so that they would have a way to relax. Other students identified the SNS as a private place in which homework is not allowed.

However, this attitude changed over the year as the students started to incorporate their mobile social networks into the collaboration process. The homework website did have a mobile notification system that emailed participants after a message post, but the students were allowed at any time to turn this off. Some started to use their private mobile social networks to help keep track of when their group members posted a homework related message. Students reported that group members started to use mobile social networks to let each other know that there were new comments on the homework website. This is similar to the creation of a virtual space for real-time chat communication reported during conferences (McCarthy & Boyd, 2005). As noted in the research (Toledo & Peters, 2010), this change in attitude suggests students will evolve practices that are less disruptive to the everyday technology use patterns to which students have become accustomed.

They used these systems as secondary notification channels by which their friends in the group could request an immediate and private comment on their posted homework message, which has been shown to increase engagement in language classes (Harunasari & Halim, 2019). This desire for more notification of any updates to their group comments suggests that these third-party sites were increasing the quantity and quality of the collaborative experiences by reducing the delay between responses allowing more time to think (Toledo & Peters, 2010). This extra time has been shown to translate into more thoughtful responses from students (Birch & Volkov, 2007; Branon & Essex, 2001; Hanson-Smith, 1997; Kitade, 2008; Ortega, 1997).

The evidence in this section suggests that homework communication on mobile devices leads to these previously private mobile communication paths being exploited for homework.

SNS seem to be providing an alternative digital backchannel information stream, which is a mixing of public homework and private social spaces through the mobile device. Students attempted to make communication more efficient, increasing collaborative quality, which should positively affect the richness of learning.

The third finding was that the students placed their first language (Japanese) into their private communication world while their second language (English) was used for public communications.

Pre-Interviews Group 3 Student

I: Oh okay. Good. When you talk about or chat about homework on Mixi, why don't you do the same thing on my website?

S: I think it's homework, so [Seikakuna bunsyou] correct sentences. I should do [Shinken ni Majime ni Yarubeki…] I should do seriously. So I chat long time on Mixi, but [that] I can't say on the homework page.

I: Okay. Why can't you?

S: Mixi is Japanese but homework is English, so I don't have vocabulary in English, so Japanese is easy, maybe I think.

I: Alright, so you don't use English on Mixi?

S: Yes.

When communicating f2f or using a digital backchannel, the language of communication was usually Japanese. Alternatively, the homework website, which everyone can see, including the course instructor, is an all English language environment. They are allowed short Japanese examples of a few words when explaining a translation, but otherwise, everything must be in English. This public forum for their language was difficult for those students who lacked confidence in their English ability. So, to reduce the chances of a potentially embarrassing public mistake, they used their private mobile communication channels to check their ideas with friends and others. As has been shown, students will seek more comfortable and less threatening forms of communication (Camiel et al., 2014; Carpenter, 2015). This may support students who feel less competent when expressing their opinions to peers (Bry & Pohl, 2017; McNely, 2009), but without the benefits of target language practice.

Conclusion

The study design was a case study adopted for one academic year to gain a deeper understanding of the processes and outcomes of completing collaborative learning activities through mobile devices. Japanese university undergraduate EFL students studying translation formed four case study groups with between five to eight members. Student online website log data, weekly e-journal reports, and pre- and post-study face-to-face interviews

comprised the principal sources of data. The data analysis consisted of content analysis, where data was coded then categorized into themes through an inductive form of thematic analysis coding.

The boundary between friends and others was blurred, so increasing the development of new connections and relationships. The mobile phone use for homework allowed the students to communicate more with their group members because the phone is always present and acting as an always-on digital backchannel. In addition, it reduced barriers and the need to meet f2f with peers they were not familiar with so increasing the peer network (Camiel et al., 2014; Krishnan & Poleon, 2013).

There was an apparent change in attitude concerning the private and public space in which mobile social networks belong. SNS sites firmly in the students' private space moved into the public space by the end of the study to be used as a digital backchannel for updates, answer checking, and notifications from students. This supports the idea that students will evolve practices that are least disruptive to themselves (Toledo & Peters, 2010).

The students placed their first language (Japanese) into their private communication world while their second language (English) was used for public communications. This meant that they fulfilled the requirements of communicating in L2 when the instructor could see, but the private SNS sites allowed a digital backchannel in L1 where they could gather information and ask for advice confidently from group members and others not related to the course or school. This shows that students are using these backchannels as less threatening forms of communication (Camiel et al., 2014; Carpenter, 2015) in which they feel more confident (Bry & Pohl, 2017; McNely, 2009).

This research was limited to Japanese participants at the tertiary level of education. Also, the private nature of the students' SNS service use did not allow for data collection to see the types of information they passed through these digital back channels. Future research would include a more diverse sampling in terms of age, cultural background, and study area. If these findings could be identified across a diverse sample, it would indicate common affordances of the digital backchannels that could inform curriculum design. The inclusion of a digital backchannel system that the researcher could directly observe would allow for the categorization of information exchange types. This would provide a much greater understanding of how, when, and for what purposes the students utilize these backchannels during learning.

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