TEACHER AND STUDENT DIGITAL LITERACY

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ABSTRACT

The ever-changing landscape of the modern classroom requires both students and teachers to be knowledgeable about technology, including Learning Management Systems (Jerrems, 2024) and Artificial Intelligence (Ali et al., 2023). The levels and areas of emphasis in that knowledge, however, can vary from person to person and generation to generation (Butler, 2022). This research investigates the beliefs and practices of teachers and students concerning optional digital literacy materials in a required first-year speaking and listening course. Researchers gathered data from a teacher survey, a student survey, and student interviews. Results indicate discrepancies between teachers' assumptions of students' digital literacy levels when entering university and what students actually know. Possible interventions and prepared digital literacy materials application are discussed to mitigate teacher-time strain, as well as meet students' varying needs.

INTRODUCTION

Online and digitally-based learning and training are becoming increasingly popular, due to the COVID-19 pandemic and, more recently, the advent of advanced digital technologies such as generative Artificial Intelligence (AI) (Ali et al., 2023; Liang et al., 2025). This rise in classroom technology means teachers must understand their students' levels of digital literacy, as well as methods for best developing technology skills. As younger generations are often referred to as digital natives (Hockly, 2011; Prensky, 2001), having grown up ensconced in technological use and interactions, it is easy to assume a level of proficiency with all technology (Clark & Avrith, 2017). However, university teachers in Japan have found themselves surprised by the lack of expected skills displayed by incoming "digital native" students (Jerrems, 2024; Yamagishi, 2020). Compared to other countries, this deficiency is more prevalent in Japan as students are less likely to use digital technology for academic purposes (OECD, 2019). This disparity also points to differing concepts of digital literacy between students and teachers. Students may be exceptionally skilled in the use of

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messaging apps, electronic payment methods, and many other digital technologies, but still fall short of educator expectations as their knowledge does not cover academic technology use (Butler, 2022).

CONTEXT

Research was conducted at Kanda University of International Studies (KUIS), a Japanese university specializing in foreign languages and international communication. KUIS aims to connect students to the global community by teaching language and culture. Students from Japan and other countries improve their language skills for a variety of individual goals. For students specializing in English, their language level varies, from A2 to near-native in the Common European Framework of Reference for Languages (CEFR). Regardless of department or major, technology has become a new focus as generative AI becomes more commonplace.

As part of a long-term move toward digitalization, the university began supplying teachers with iPads in 2013, required all new students to purchase and bring iPads to classes in 2014, and in 2023, began phasing out iPads in favor of laptops for first-year students. In 2026, all students will be required to have laptops.

Besides Chromebooks, students are free to use any make, model, or operating system they prefer. First-year students receive a technology orientation before beginning their classes, but this covers only the most necessary day-to-day skills, such as registering their attendance and accessing the university's online information hub. Many other basic computer skills and how to utilize a plethora of other digitally accessed university resources are not covered, or are not taught in sufficient detail for students to employ them. For example, many students are unaware of how to use the Self-Access Learning Center's (SALC) website to schedule appointments with teachers or where to find information about Learning Communities, which are student-run groups exploring various interests while using foreign languages.

This leaves students with differing levels of digital literacy from their prior schooling and experience, as well as no standardized foundational skills or outlet for them to develop. The burden of technology education appears to fall on teachers of first-year courses, particularly the mandatory speaking-and-listening class Freshman English. While digital literacy is not a required part of the class materials, teachers of Freshman English often find themselves filling the role of computer instructors, so their students can complete the basic tasks necessary to succeed in the course. For example, submitting assignments, communicating with teachers through

email and the class learning management system (LMS), as well as how to collaborate with other students on digital documents.

Freshman English classes also have required visits from SALC Learning Advisors (LAs). One purpose of these visits is to help students create SALC website user accounts and learn to access SALC services. These services provide invaluable learning resources for students that would otherwise be inaccessible to them.

RESEARCH AIMS AND METHODOLOGY

This research project aims to investigate what materials teachers use to teach students digital literacy skills and the students' opinions about the instruction they receive regarding technology. Finding and sharing this information can help inform teachers' choices about what digital literacy materials would be the most useful for their classes. Additionally, student comments may show discrepancies between what teachers believe is useful and what the students would like to be taught.

A mixed-method approach was employed, utilizing two surveys, one for Freshman English students and one for Freshman English teachers. All respondents were informed as to the aims of the research and that their information would be kept confidential. All participants consented to their data being used for research.

The student survey was given to students across most departments. This survey consisted of multiple-choice questions, with optional short-answer and long-answer questions that allowed for elaboration on answers, totaling 10 questions. It inquired about the technology taught, their opinions about its usefulness, and whether other technologies should be taught, with a total of nine questions answered by 48 respondents.

Student respondents were then approached to ascertain their willingness to be interviewed by the researchers. Despite only one student completing the interview, valuable data were obtained, informing the subsequent analysis. The semi-structured interview consisted of a mixture of 13 open-ended and closed-ended questions. To account for the interviewee's English skill level, Japanese answers were permitted; however, the interview was conducted entirely in English.

A similar questionnaire to the student survey was given to teachers. It primarily asked what technology materials teachers used and what additional materials they felt should be created, with a total of seven questions answered by 15 respondents.

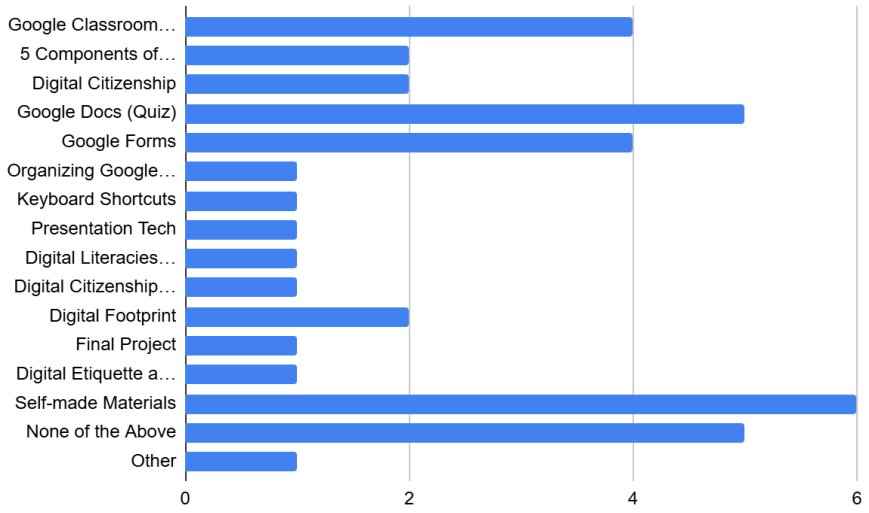
RESULTS AND ANALYSIS

This section will first show the results from the teacher survey, followed by the results from the student survey, and conclude with the data from the student interview. The subsequent discussion will provide further analysis and compare the answers from the two groups.

Teacher Survey

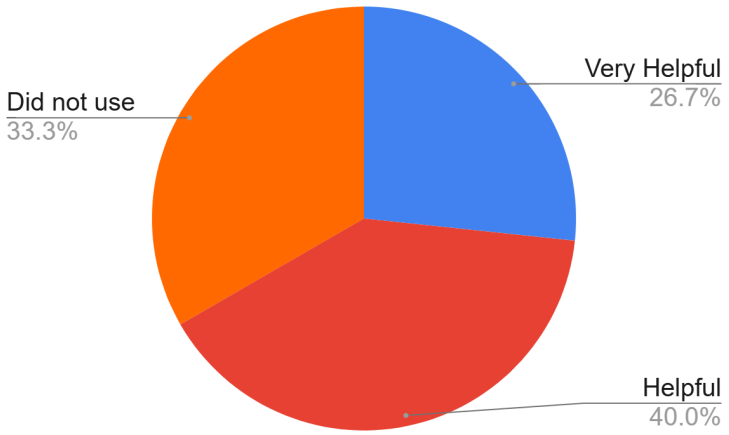
The teachers were surveyed about what digital literacy teaching materials they use in their classes. Of these materials, Google Suite-related (e.g., Google Forms, Google Classroom) tools had the highest adoption rate, with 26.6% of teachers using Google Classroom and Google Forms materials, and 33.3% using Google Docs materials (see Figure 1.1). This is not surprising considering that the primary Language Management System (LMS) at this university is Google Classroom.

Figure 1.1 Teacher-Used Digital Materials



To determine the effectiveness of the materials, their helpfulness was rated. While 33.3% of teachers did not use the new materials, the remaining 66.7% of teachers found them either helpful or very helpful, at 40% and 26.7%, respectively (see Figure 2.1). This indicates that all respondents who used the materials provided rated them positively. When explaining their answer, they gave two main reasons for the materials' helpfulness. First, teachers reported that materials were collected and available from one convenient location. Second, teachers felt that the materials helped students who have little to no technology skills narrow the gap with their more technologically proficient peers. With the aim of these new materials to provide both of these benefits, their explicit mention shows that the materials are performing as intended.

Figure 2.1 Teacher's Rating of Digital Literacy Materials Helpfulness

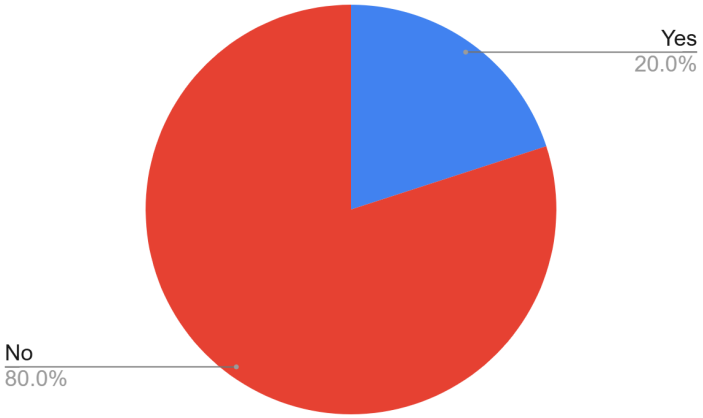


Additionally, the data show that teachers tended to use their own materials or elected not to use explicit digital literacy materials, at 40% and 33.3%, respectively. This finding suggests that there may be a bias towards materials that are more well-known to the teachers.

Eight respondents indicated that they did not use the materials for reasons generally related to time. These reasons came in two varieties: either it impacted class time or the teacher's time. For the former, two teachers preferred a needs analysis to address students' digital-literacy weaknesses rather than pre-teaching technology, and one favored technology-based lessons without tutorializing. For the latter, seven teachers reported that they preferred to use their own materials due to previous experience and/or integration with their current materials.

When asked about the issues with the materials, 80% of the teachers indicated that there were none (see Figure 3.1). The remaining 20% did not explain their problems with the materials. While improvements can be made to current materials, these data show that current materials are performing adequately.

Figure 3.1 Teachers' Indicating Issues with Materials

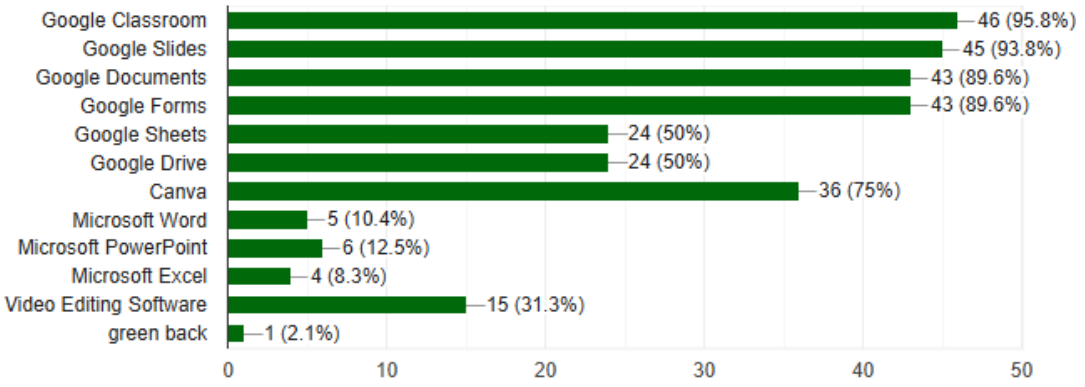


Finally, teachers were asked to give suggestions for future material development. From their answers, three common suggestions appeared. First, providing abridged versions of some materials makes it easier to share with students. Second, producing cohesive lessons with the materials, rather than short stand-alone materials, creates a classroom where students learn about technology and apply it practically. Finally, distributing a survey to analyze students' needs allows teachers to focus on aspects that require the most attention. These suggestions indicate that teachers again prioritize efficient use of class time, preferring autonomous-use materials, lessons extending beyond explicit tech instruction, and means to assess the need for intervention.

Student Survey

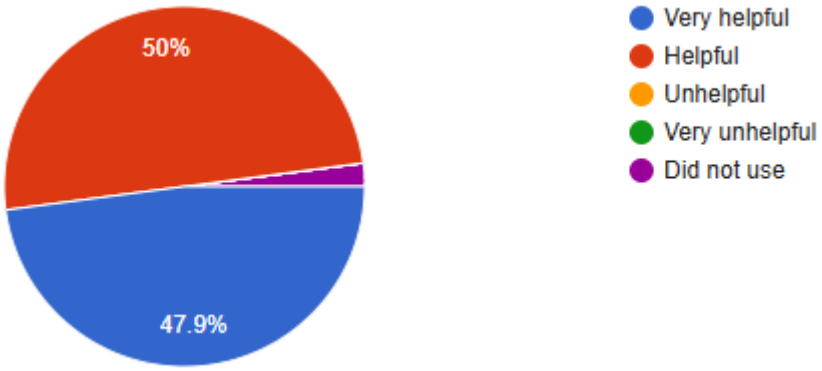
The students were asked what technologies they were taught in class. Google Classroom was the highest, at 95.8%, and Google Slides, Documents, and Forms also saw high usage at 93.8%, 89.6%, and 89.6%, respectively (see Figure 4.1). Similarly, Google Sheets and Drive were also taught widely, as 50% indicated. As mentioned previously, Google's widespread usage makes these results unsurprising. Two notable exceptions outside of the Google Suite, however, were Canva, a site with similar functionality to Google Slides, at 75%, and Video Editing Software, at 31.3%. The researchers understand anecdotally that those two technologies are taught by a large number of teachers for specific projects in the first semester, and thus are also unsurprised to see them mentioned here.

Figure 4.1 What Technology Teachers Taught Students



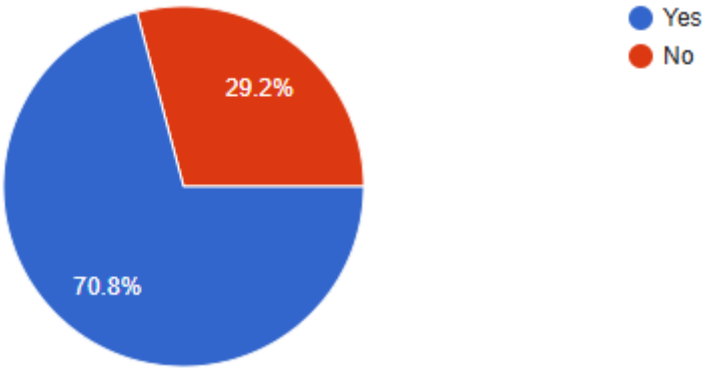
Importantly, the researchers wanted to know if the technology materials helped students. As shown in Figure 5.1, 50% of the students indicated that the technology materials were helpful, and 47.9% indicated very helpful. These findings are particularly valuable because they reveal that the materials are only beneficial to those who use them.

Figure 5.1 Students' Rating Helpfulness of Technology Materials



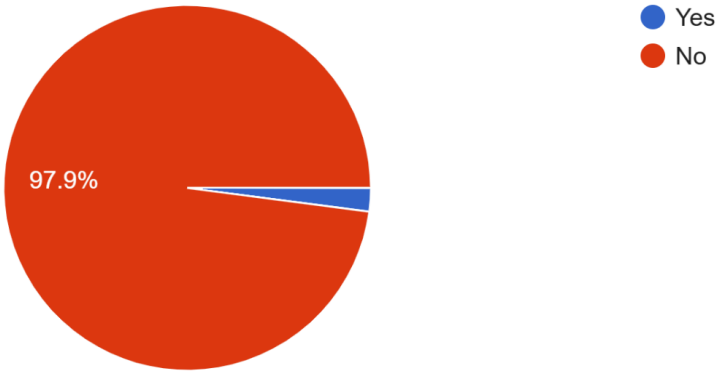
When students were asked about positive experiences regarding the technology materials, 70.8% indicated that they had positive experiences (see Figure 6.1). Twelve respondents provided specific examples, with the three most common answers explaining that the technology taught is useful outside the classroom, that the tools and tasks taught (e.g., Slides and presentations) are helpful for other classes, and that learning technology is a good life skill.

Figure 6.1 Students Indicating Positive Experiences with Technology Materials



Students then considered negative feelings with the technology materials, overwhelmingly reporting they had none, with 97.9% confirming this, as shown in Figure 7.1. This indicates two key points: the majority of students have no issues with the technology materials, and the remainder have a neutral, not negative, experience. This is because while 29.2% of the students didn't have a positive experience, only 2.1% of them had a negative experience, as shown in Figures 6.1 and 7.1, respectively.

Figure 7.1 Students Indicating Negative Experiences with Technology Materials



Students were then asked what technologies, if any, they would like to be taught. Of the 11 respondents, three wanted practice with Excel, two with Google Slides, and two with video editing software. Since Slides and video editing software were used in the class, wanting additional practice with these is understandable. While typically not used in class, the researchers believe that Excel was a common answer due to its prolific use in many Japanese businesses and other industries. One unique response to the question was for typing practice. Since most of the students are more

familiar with devices such as smartphones and tablets, using a keyboard is unfamiliar to some of them.

Finally, when asked if they did anything outside of the classroom to improve their digital literacy, four students reported nothing, two students mentioned classwork, and two students said basic skill videos. The survey results suggest that students are primarily gaining their digital literacy skills through classwork provided by their teachers, highlighting the importance of technology materials.

Student Interview

A semi-structured interview was chosen to ensure key information related to the previous survey could be explored and to allow space for new insights that may occur naturally during the interview. Additionally, this format allowed the researchers to respect the interviewee's time by keeping the interview focused, as well as optimizing conversational flow (De Groot, 2002). While only one student was interviewed, their answers provide valuable insights. These include strategies that their teachers employed that they found helpful, their opinions on integration of technology in the classroom, why students may choose specific technologies, and suggestions for incorporating technology into future classes.

To begin with, the researchers inquired about the interviewee's technology background. They revealed that before starting university, they were a novice with technology and had little to no experience with the majority of the technology used in a classroom. This surprised the researchers, as they had very smooth communications with the interviewee through email, which is a technology noted by the researchers as being a particular weak point for students. When asked about their familiarity with email, the interviewee revealed that they had no experience with it until they started university; however, they credited their proficiency to other students who taught them how to set up email notifications. From the researchers' perspective, this small change appeared to make a big difference in fostering clear communication outside the classroom.

The researchers continued by asking the interviewee if their unfamiliarity with technology was a cause for concern, to which they replied, "yes, it was a very large worry". From various informal conversations with other students, the researchers recognize that this concern is echoed by many students.

When asked how they became accustomed to technology, the interviewee revealed that their teacher had taught new technology to the students explicitly as it came up in class and provided hands-on experience with

the technology. Furthermore, when the students were tasked with using technology, the teacher arranged for them to work in groups. The interviewee explained that both explicit teaching and repeated group work were fundamental in easing the students into the technology used in class. Additionally, they said, "with group work, everyone has different skills. We can learn from a lot of different classmates because the groups are always different". This aspect of the results underscores that a common practice among teachers to shuffle groups can also lead to increased student digital literacy.

As the topic changed to technology used in the classroom, the interviewee responded similarly to the previous student survey, specifically mentioning Google Suite and Canva. They stated a preference for Canva over Google Slides, explaining that "with Canva, you have access to a lot of templates, so it's really easy to make something that looks good". Furthermore, they told the researchers that a majority of their peers had the same preference for Canva. This tells the researchers that students prioritize technology with many integrated and visually appealing features, as opposed to technology that functions best with the LMS, Google Classroom.

When asked their opinion regarding the integration of technology in the classroom, the interviewee explained that technology made the classes better and the importance of technology as a life skill. This reveals that there are benefits both in and out of the classroom for the now common practice of integrating technology with classwork.

To conclude the survey, the researchers asked what technology needs to be taught to all freshmen. The interviewee mentioned three tools: Google Docs, Google Forms, and Gmail. They chose these three because of Google Docs' ubiquitous use in the classroom, the tendency to forget how to use Google Forms, and Gmail's importance in a smooth university experience, respectively. This informs the researchers that these three tools should be prioritized when making future materials. Additionally, regarding email specifically, the interviewee mentioned that while they are taught how to send an email to teachers, they are not taught how to respond to emails, so materials offering suggestions for responding could be helpful.

DISCUSSION

A common concern among teachers was a lack of time, as this was often cited as a hindrance to the adoption of new materials, leading to a preference for their own materials. This could be due to a level of familiarity with self-made materials or indicate a need for more concretely

integrated digital literacy materials in the base class curriculum. Besides time to adapt materials, in-class time was also a concern, as teachers expressed a preference for full lessons that can be integrated with the current unit or out-of-class supplementary materials. This may indicate that teachers prioritize unit content over digital literacy skills, which could lead to teacher disappointment when students cannot meet the teacher's expectations. These implications are important to note, as teachers are often disappointed with their students' initial digital literacy. Teachers may assume that students arrive with a baseline of digital literacy skills and may view those who do not meet their expectations as deficient (Prensky, 2001). A needs analysis at the beginning of classes could help undo said preconceptions and help teachers save time by not covering redundant topics.

Of the technology typically taught, teachers emphasized introductions to Google Suite materials over others, such as Canva. This is likely related to the university utilizing the Google Classroom LMS and how Google Suite materials integrate with it. However, teachers indicated that two types of materials were preferred: small, informative documents that students can autonomously refer to, or cohesive lessons that integrate technology for a larger purpose. This informs the researchers that materials meeting the above criteria may increase the adoption rate of other technologies.

Compared to teachers, who viewed the integration of technologies in the classroom as necessary but time-consuming, students overall were appreciative of the technology taught. Besides the benefits in class, students are aware that the technology taught will have lasting benefits beyond the classroom. However, students seldom seek outside practice or instruction to develop their skills. This means that students tend to rely on the instruction they receive in class, and thus, implementing digital literacy lessons there is all the more important. While it is unfair to expect language teachers to be the sole instructors of technology, the students find themselves overburdened by other classwork, part-time jobs, and building social connections. It would be beneficial to both parties if the technology instruction could be integrated into the classroom. Further material development could focus on teaching students strategies to learn new technologies themselves, so when faced with these issues in the future, they can begin to act more autonomously.

The interview with the student provided further insights into the student's perspective. As stated previously, they came to class with no technology experience, which created anxiety for the student. The researchers have anecdotally noted that other students have had similar experiences with technology and echoed their concerns about technology. Therefore,

implementing digital literacy lessons in the classroom could also help mitigate negative affective factors caused by technology.

While the survey indicated that students did not attempt to improve their technology skills outside of the classroom, the interviewee discussed a form of extracurricular collaborative support, not dissimilar to a community of practice (CoP) or student-led learning community (SLC). CoPs, and by extension SLCs, can be characterized by three traits: a shared commitment to a common purpose, collaborative learning, and the exchange of mutual knowledge on operational procedures (Lave & Wenger, 1991; Wenger, 1998; Wenger-Trayner & Wenger-Trayner, 2015).

According to the interview, students exchanged suggestions and information on how to navigate the class's LMS and other programs, such as word processors, as well as basic computer use. These exchanges occurred in and out of the classroom, representing a clear presence of CoPs naturally developing with KUIS students independently of teacher influence. While CoPs are generally positive, there is a chance that students develop expectations that they learn what they need from each other instead of in class, as well as a class's digital literacy skills diverging from what the teacher expects. This situation highlights the importance of formally teaching students digital literacy skills in the classroom.

As previously discussed, teachers prefer either concise informative documents or full cohesive lessons for teaching digital literacy. The interview with the student provided evidence that small, simple changes could lead to a dramatic increase in digital literacy. By simply making a slight change to their settings and enabling email notifications, their ability to use email increased. Further research could focus on identifying other simple methods that students have found to enhance their digital literacy. Compiling a list of these methods could act as a shortcut to hasten digital literacy among students.

CONCLUSION

As technology becomes increasingly integrated into the curriculum, teachers and students must have a clear and mutual understanding of what is expected of them in terms of digital literacy. This research makes it clear that such clarity is currently lacking, both in official and unofficial capacities. Students' needs will likely remain varied and dependent on backgrounds, requiring personalized resources to reach the expected norms (*Digital Education Action Plan: Policy Background*, 2025), while teachers will require time and support if they are meant to fulfill that role. Students are a real resource to each other in these matters, but are unreliable as a widespread source of development. Further interventions

are needed to provide teachers with widely applicable materials, while students require more formal training if they are to meet the standards of their teachers and the world.

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