Beyond Access: Computer Self-Efficacy and Learner Agency in Online EFL Education

アクセスを超えて：オンライン EFL 教育におけるコンピュータ自己効力感と学習者エージェンシー

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Abstract

The global pandemic of 2020 caused a massive shift in the educational landscape, transforming an emerging technology into the foundational setting for instruction: computer-mediated learning. For students of English as a Foreign Language (EFL), this transition introduced a "digital filter" with the potential to exacerbate learning difficulties cause by both the technology necessary for participation and the associate social isolation. Guided by Bandura's Social Cognitive Theory, this study sought to explore the potential to increase digital agency through four dimensions of student perceptions of self-efficacy: Computer Literacy (CL), Online Learning (OL), Learning English Online (LEO), and Online Collaboration (OC).

The data used in this study was collected from a population of first-year Japanese university students (N = 173) during a 10-day intensive online English course taught in the summer of 2020. The program utilized a project-based learning pedagogy and made use of an "avatar" system. A 27-item survey measured students' perceptions of self-efficacy across the four dimensions at the start of (n = 75) and at the conclusion of (n = 55) the instructional intervention.

Independent-samples Welch's t-tests revealed statistically significant increases in perceived self-efficacy across all measured dimensions. Computer Literacy showed the most substantial growth, yielding a very large effect size (d = -1.54), suggesting that including technical instruction as a part of content instruction can be key in unlocking agency in computer-mediated learning environments. While preliminary ANOVA test results indicated that prior satisfaction with online course created divergent baselines, these initial impressions did not determine final success. The findings suggest that perceptions of digital agency can be positively impacted by intentional instructional design. The study recommends that educators integrate technical training into content instruction as a way to empower students to overcome digital barriers.

Keywords: Digital agency, Computer self-efficacy, Online EFL learning, Social Cognitive Theory

要旨

2020 年のパンデミックは教育現場に激変をもたらし、コンピュータ媒介学習を教育の基盤へと変貌させた。特に英語（EFL）学習者にとって、この移行は技術的障壁と社会的孤立からなる「デジタル・フィルター」を生じさせ、学習を困難にする可能性があった。本研究は、バンデューラの社会学習理論に基づき、「コンピュータ・リテラシー（CL）」、「オンライン学習（OL）」、「オンライン英語学習（LEO）」、「オンライン協調学習（OC）」の 4 領域における自己効力感の変容を、デジタル・エージェンシー向上の観点から検証した。

2020 年夏季に実施された 10 日間の集中オンライン・プログラムに参加した日本の大学生（N = 173）を対象に、アバター制度を用いたプロジェクト型学習を導入し、介入前後で 27 項目の調査を実施した（n = 75, n = 55）。ウェルチの t 検定の結果、全領域で自己効力感が有意に向上した。特に CL において極めて大きな効果量（d = -1.54）が確認され、技術指導を内容教育に統合することがエージェンシーを拓く鍵であることが示唆された。事前の満足度は初期値に影響したが、最終的な成果を決定付けるものではなく、意図的な指導設計がデジタル・エージェンシーを向上させ得ることが結論付けられた。

キーワード：デジタル・エージェンシー、コンピュータ自己効力感、オンライン EFL 教育、社会学習理論

Introduction

Language is inherently ambiguous in that words and phrases intended to have one meaning have the potential to be interpreted differently by the audience. In the field of education, one of our primary goals is to help students learn our material. The term “learning” is easy to conceptualize, but difficult to define in way that all would agree. Traditional definitions of learning define it as “changes in behavior that result from experience or mechanistically as changes in the organism that result from experience” (De Houwer et al., 2013, p. 621). Lefrançois (2019) adds more specificity to this definition by referring to “potential” changes in behavior “that result from experience, but are not caused by fatigue, maturation, drugs, injury, or disease” (p. 57). In the end, the changes in behavior are what can be observed after the experience of learning has occurred. These are the kinds of things that can be tested. However, this is an incomplete view of the learning construct, which is not only the product of what has been learned but also the process of how learning occurs (Alexander et al., 2009). As professional educators, it is important to consider this distinction because in formal education, the process of learning is greatly impacted by the learning environment and the teaching materials and activities employed to produce those changes.

With the term “online learning,” there is even less attention paid to the process of learning. In a review of the literature examining the use of the term between 1988 and 2018, Singh &

Thurman (2019) found a range of meanings and some confusion about the term's general usage. Their primary observation was that "online learning" usually referred to the media of instruction, the electronic delivery of materials and the temporal aspect of the lessons. What tended to be missing from the definition were mentions of students' processes of "learning, cognition, awareness and retention" (Singh & Thurman, 2019, p. 302).

Serving as a historical baseline the digitizing of education, the global pandemic brought about by Covid-19 resulted in the closing down of traditional classrooms and the forced transformation of all content into an online learning format. Though the occurrences of delivering courses online had been dramatically increasing during the ten years prior to the pandemic (Martin et al., 2019), this period marked the definitive shift from using technology to augment education to using it as the foundational environment where education took place. During this unprecedented change, educators were forced to digitize classes intended for a face-to-face environment. Students were also facing a situation where they could only access their learning environments through computer mediation.

For students of English as a Foreign Language (EFL), this shift had the potential to be particularly challenging. Effective EFL pedagogy benefits from conditions available in a physical classroom: real-time communication, immediate feedback from teachers and classmates, and the opportunities for group work and collaboration. These benefits are made all the more challenging when passed through a digital filter. And as developing communicative ability in a foreign language requires opportunities to interact in the foreign language, it is possible that the online learning environment would potentially produce more impediments to learning than would be noticed in general content classes (Aulia, 2022; Nartiningrum & Nugroho, 2020).

While technology is now deeply integrated into post-pandemic education, a digital filter, easily identifiable during this era (Figure 2) has become a permanent fixture of computer-mediated education. For students of EFL, their success in an online class was, in part, dependent on their ability to use their devices to gain for themselves the communicative and collaborative opportunities that they would have immediate access to when classes meet face-to-face. With a standard face-to-face model, this is accomplished through a tetrad consisting of the instructor, the content, an individual student, and the classroom environment of students that make up the class. As Figure 1 illustrates, the connections are direct, so if students encounter some impediment to learning, they have immediate access to help from their instructor or from other students. Instructors, reacting to students' feedback and their own direct observations, can freely moderate, review or supplement content as needed.

Figure 1. Interactions in a Face-to-Face Class

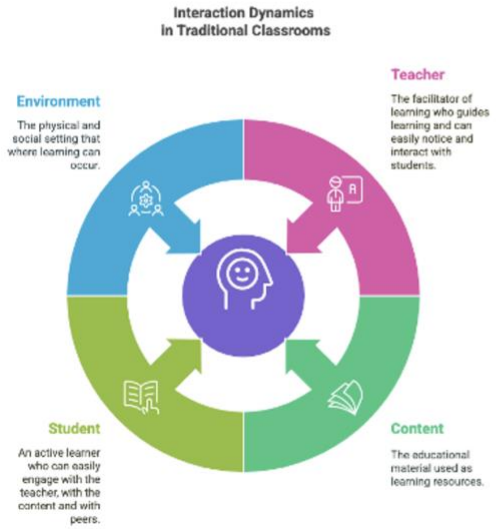
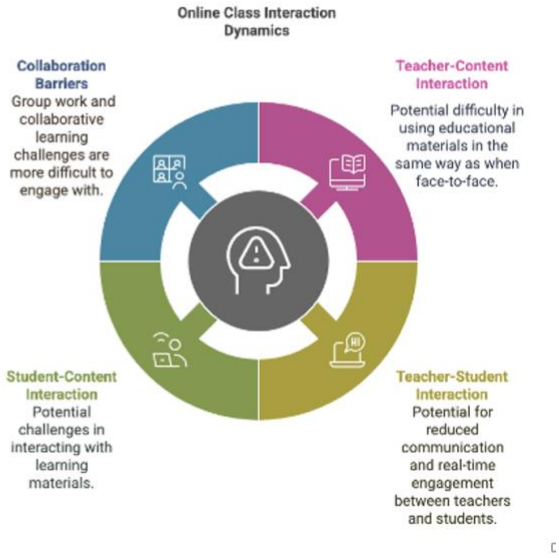


Figure 2. Interactions in a Computer-Mediated Class



For Japanese EFL students, who are known for being hesitant to speak up in class when they are having troubles (Maher & King, 2022), the filter introduced with computer mediation and the accompanying technical challenges have the potential to exacerbate potential learning difficulties. Specifically, more than the required hardware necessary for participating in a class, the ability to fully engage with their online courses requires students to have a certain level of technical competence and general self-efficacy (GSE) (Cancino & Towle, 2022; Omotoy, 2023). Computer self-efficacy (CSE) is no longer a supplementary skill, it is a necessity because while students' perceptions of GSE are related to their beliefs in their abilities to achieve certain goals, CSE is the level of belief that they have the ability to accomplish those goals through the use of a computer (Bandura, 2006; Sun & Rueda, 2012). Without this psychological foundation, the computer becomes a barrier to student learning in the same way a locked door will prevent them from entering the classroom (Ertmer et al., 2011).

This study uses data of student perceptions of self-efficacy, computer self-efficacy and their ability to learn in an online environment collected during the 2020 pandemic as a formative stress-test of perceived student capability at the time. The goal is to establish a longitudinal baseline for understanding the relationship between perceptions of computer self-efficacy and students' other perceptions about their ability to achieve academic success in the increasingly computer-mediated environments that make up modern education.

Literature Review

The transition to online learning environments has necessitated a deeper understanding of the technological factors that impact student success. Central to this understanding is distinguishing between students' exposure to technology and their actual competence to use technology for academic purposes. For EFL learners, being online completely changes how they can interact with their teachers, classmates and classroom materials. By analyzing these types of interactions through the lens of poste-pandemic baseline, we can develop a better

understanding of how to help students develop the agency required to academically succeed in a computer-mediated classroom.

The Myth Regarding Digital Natives

In today's world, there is often an expectation that students who have grown up in the digital age have a natural facility with digital tools, however, the ability to use computers effectively is not one that develops organically. Described as "digital natives" since 2001, few studies have shown observable cognitive changes in this current generation of learners (Mertala et al., 2024; Smith & Storrs, 2023). Most students today have at least a basic understanding of computers and software for social use, but lack the understanding and skills of computer literacy to use them for learning and academic research (Araújo-Vila et al., 2020; Smith & Storrs, 2023).

Unfortunately, the legacy of this concept of "digital natives" has led instructors to expect their students to have a foundation of technological skills, and thus fail to plan the teaching of these incidental required skills as a subset of the overall learning objectives within the class design (Kirschner & De Bruyckere, 2017). The failure to teach incidental technical skills as part of the broader context of a given class has the potential to become a barrier to academic success. Within the parameters of a given class, providing students with opportunities to both learn about and use computers in different ways helps them develop their confidence in using modern technology to further their learning (Araújo-Vila et al., 2020; He & Freeman, 2010; Sun & Rueda, 2012).

Bandura's Social Cognitive Theory as a Framework for Agency

Bandura's Social Cognitive Theory (SCT), which highlights the role of "the social environment on motivation, learning, and self-regulation" (Schunk & DiBenedetto, 2020, p. 3), is a framework for human behavior that explains behavior as the result of an interaction of personal factors and environmental influences. Within SCT, these environmental influences are just as influential as personal cognition and behavior (El-Bassiouny & El-Naggar, 2023). One component of SCT is self-efficacy (SE) which refers to people's perceptions as to their ability to accomplish specific tasks (Compeau & Higgins, 1995). According to Bandura (1989), people's beliefs in their own abilities to accomplish tasks have an effect on the expectations they set for themselves. Those with higher perceptions of their own self-efficacy believe more is possible than those with lower perceptions of self-efficacy (Zimmerman et al., 1992). This foundational belief in one's own abilities is the driver of human agency. Without it, one's environment is felt to limit opportunities for growth rather than provide opportunities for growth.

Dimensions of Self-Efficacy in Computer-Mediated Learning

Withing a computer-mediated learning environment, perceptions of self-efficacy manifest in different critical areas:

- Computer Self-Efficacy (CSE): Extending to digital tools, CSE refers to an individual's belief in their ability to accomplish specific tasks with a computer (Compeau & Higgins, 1995). A higher perception of CSE has been shown to relate to greater confidence in the ability to use digital tools to engage with online learning materials (Cancino & Towle, 2022). Moving beyond basic ICT literacy in for general technology use, CSE is a primary factor related to one's belief in being able to be agentic and having the ability

to take an active role in one's education. Students with high levels of CSE will exhibit the behaviors necessary to succeed: intentionality, forethought, and self-reflectiveness.

- Online Learning Self-Efficacy (OLSE): This relates to students' beliefs in their abilities to benefit from an online course. In an online environment, students' success depends greatly on the activation of self-regulated learning behaviors. Perceived self-efficacy in this area primes students for the kinds of learning behaviors they will activate in the class (Schunk & DiBenedetto, 2020), and students with higher levels of perceived self-efficacy make use of more varied learning strategies, have greater satisfaction with their online courses, and achieve higher grades (Artino, 2008). Students who approach online learning with a positive attitude also tend to be more prepared to learn online (Koca et al., 2024). It follows that students with lower perceptions of self-efficacy achieve worse outcomes and enjoy the online learning process less. While students have developed self-efficacy for learning in face-to-face environments, success in online learning requires a skills and abilities that may be beyond what students have learned throughout their previous years of formal education.
- Learning English Online Self-Efficacy (LEOSE): Learning a foreign language online adds unique challenges when compared to regular content classes. Student-centered classes based on constructivist ideas of pedagogy are filled with opportunities for students to receive input, produce output, and receive immediate feedback. Transitioning to an online class introduces a digital filter resulting in a host of social and communication barriers due to "a lack of nonverbal cues and real-time feedback" (Omotoy, 2023, p. 6). Therefore, in order to replicate the common language learning activities present in a face-to-face class, the onus is more firmly placed on the students to self-regulate, "participate actively and not passively in the online platform, collaborate with their classmates in group work activities, use creativity, and exchange resources and materials with their classmates" (Cancino & Towle, 2022, p. 27).
- Online Collaboration Self-Efficacy (OCSE): This dimension assesses students perceived ability to both benefit from and contribute to pair work/group work in an online learning environment. Research has shown that students who are able to interact and collaborate on an online platform tend to have greater satisfaction and achieve successful outcomes at a higher rate than their peers who do not (Croxton, 2014).

Ultimately, the four dimensions listed above are necessary for students to succeed in an online EFL course. CSE is related to confidence with the technology in general. CSE has been shown to be related to students anxiety, recall, and intention to take online language classes (Cancino & Towle, 2022). This suggests that CSE is a fundamental component related to successful online language learning. It is the difference between computers being a useful tool for learning vs. an impediment to learning. OLSE refers to students' confidence that learning in an online environment is possible. LEOSE is related specifically to the possibility of learning English online. Finally, perceptions of OCSE are related to students being able to participate in an online learning community as opposed to being isolated behind a computer screen. The more developed these dimensions are in students, the more comfortably they can navigate an EFL online learning platform and the more potential they see in their ability to learn.

The Current Study

The literature establishes the theoretical importance of various dimensions of self-efficacy with regard to online learning. This research explores these areas as they relate to first-year Japanese university students enrolled in a two-week intensive English course taught during the summer vacation after completing their first semester of online classes. This study serves as a critical

examination of student self-efficacy following the stress-test caused by the requirement for students to learn online.

Research Question and Hypothesis

The primary research question guiding this study is: To what extent are perceptions of self-efficacy in using ICT related to perceptions of self-efficacy in online learning, learning EFL online, and the ability to communicate and collaborate in an online classroom? Based on the intervention of an intensive online course, two hypotheses were tested:

- H_1 (Directional): the post-test group would score significantly higher than the pre-test group across all four subscales (H_1: $\mu_{post} > \mu_{pre}$).
- H_2 (Correlational): there will be statistically significant positive correlations between all four subscales in the pre-and post-test groups.

Methodology

Research Context and Participants

Data was collected from a population of 173 first-year students at a private university in Japan at the start and at the end of a mandatory 10-day intensive online English program in the summer of 2020. This program, intended as a simulated study abroad in Japan program, consisted of three synchronous 90-minute lessons held daily Monday through Friday for two weeks. Lessons were taught over Zoom utilizing the free version of the Canvas LMS. Instruction and course materials/activities were designed to facilitate a high-interaction learning environment.

- Pre-test: $n = 75$ (43.3% response rate)
- Post-test: $n = 55$ (31.7% response rate)

Instrument

The instrument used to collect data for this study was a 27-item survey developed to measure students' perceptions of their self-efficacy related to online education. Because success for the students and of the intensive program was dependent on the students' abilities in various arenas across the virtual environment, the survey attempted to capture their perceptions of digital agency across four distinct yet interrelated subscales.

1. Computer Literacy (CL): 9 items measuring perceived ability to use computers and common software.
2. Online Learning (OL): 6 items measuring the belief in one's own ability to benefit from and learn in an online course.
3. Learning English Online (LEO): 5 items targeting their perceptions about being able to learn English as a foreign language in an online course.
4. Online Collaboration (OC): 7 items measuring perceived ability to participate in and benefit from collaborative activities conducted online.

As "self-efficacy is concerned with perceived capability" (Bandura, 2006b, p. 309), all items questioned ability rather than intention (can do as opposed to will do). Participants judged their ability to accomplish listed tasks on a scale of 0 to 100, inputting their answers in 10-point

increments. To ensure student understanding, each section of the survey began with an explanation of the scale and illustrative examples ranging from “definitely cannot do” (0) to “definitely can do” (100).

Instrument Reliability

Because the survey was administrated anonymously, internal consistency across the four subscales was evaluated independently for both the pre-test and post-test groups using Cronbach’s alpha. The analysis indicated strong to excellent reliability for three of the four constructs: Online Learning (α = .91 pre; (α =.96 post), Learning English Online (α = .93 pre; α = .91 post), Online Collaboration (α = .92 pre; (α =.87 post). The Computer Literacy subscale demonstrated high reliability in the pre-test (α = .85) and acceptable reliability in the post-test (α = .67). Overall, these indicated that the instrument was a reliable measurement of the students perceived abilities to effectively learn through a digital filter.

Instructional Design and Class Structure

From the pedagogical point of view, aside from language acquisition, one of the main goals of the course was to facilitate the development of digital agency among the students. Therefore, this 10-day intensive course was designed to maximize student engagement through a project-based curriculum with built-in opportunities for collaboration and interaction. Monday through Friday for two weeks, the class met synchronously on Zoom for three 90-minute periods a day. These 30 class periods over 10 days were the equivalent of a full year of instruction for a class taught during a regular semester schedule. Each day followed the same basic structure with first period being focused on input, 2nd period focused on output, and 3rd period being dedicated to group work, with weekly projects due each Friday.

To overcome any potential affective filters exacerbated by the digital filter of computer mediation, the course implemented an “avatar” system. Rather than discussing their own lives and making shyness or privacy possible reasons for students not to engage with their classmates, students created fictional characters from diverse global backgrounds and religions. As students adopted the backgrounds of their avatars, they had content to share with their classmates that would not make any of them feel uncomfortable because everyone was role-playing. The projects of the class were designed to build the four competencies deemed necessary for succeeding in studying EFL online. The first project had student groups plan a themed trip to Japan based on their Avatars’ interests and record a video of their PowerPoint presentation. The second project built on the first, and student groups were instructed on how to build a website using Google Sites to now document the trip that their avatars had taken to Japan (in the past). For both projects, individual members had their own responsibilities in order to make sure all members participated in the project creation equally. By providing time and opportunities for, and instruction on computer usage, language input, language output, and collaboration among students, the class structure intentionally targeted the four dimensions of self-efficacy measured in this study.

Procedure

As the researcher was also one of the instructors of the intensive course every effort was made to make a clear boundary between class activities and research related to the class. After the first day of instruction, students were sent an email containing a link to the 27-item instrument hosted on Microsoft Forms. The email explicitly stated that participation was entirely voluntary

and not a graded task for the course. If they clicked the link, students were presented with an informed consent page that explained the purpose of the research while highlighting that participation was voluntary and that data would be collected anonymously. Students who clicked through were presented with the instrument. After the final class on the tenth day of instruction, another email was sent to the students with another link to the same survey. Anonymity was again highlighted so that students could be sure that their decision to participate or not participate would not have any impact on their final grade in the course. This method of data collection had statistical implications: As no identifying data was ever collected, it was not possible to compare individual pre- / post- survey results. Therefore, for the purpose of statistical analysis, responses were treated as independent samples of a single population.

Results

To understand the factors influencing digital agency in Japanese EFL students, the data were analyzed in three stages. In the first stage, a preliminary analysis was conducted to see if levels of satisfaction students had with their online spring classes had created a divergent baseline from which they were starting this summer intensive program. In the second stage, the internal relationships between the four subscales were examined through a correlational analysis. The final stage was to test the primary hypothesis by using independent-samples t-tests to measure changes in perceived self-efficacy on the four subscales after the instructional intervention.

1. Preliminary Analysis: Prior Satisfaction (ANOVA)

As the pandemic had forced these students into online learning before they ever had a chance to set foot on campus, an initial comparison was conducted to see if there were statistically significant differences in the sample based on their level satisfaction with the online classes they had taken in the spring semester. On a satisfaction scale of 1 to 10, students who marked 4 or less were grouped as having low satisfaction (n = 22) while those who marked between 5 and 7 were grouped as mid-level satisfaction (n = 40). Scores of 8 and higher were grouped as having high satisfaction (n = 13). Table 1 shows the means and standard deviations of each group of students on the different subscales. While all four of the subscales showed higher means for the high satisfaction group, a one-way ANOVA found significant differences on three of learning subscales:

- Online Learning (OL) : $F(2,72) = 5.43$, $p = 0.006$
- Learning English Online (LEO): $F(2,72) = 8.224$, $p < .001$
- Online Collaboration (OC): $F(2,72) = 3.980$, $p = .023$

Interestingly, there was not statistical significance on the Computer Literacy (CL) subscale ($F(2,72) = 2.036$, $p = 0.138$). The Bonferroni post hoc test showed that where there was a significant difference, it was primarily between the High Satisfaction group and the Low Satisfaction group. However, comparing the groups on LEO, differences between the High Satisfaction group and the other two groups were significant. Table 1 shows means and SD for each subscale.

Table 1

Self-Efficacy Descriptives by Satisfaction Levels with Spring Online Classes

Self-efficacy Scale	Satisfaction Level with Online Spring Classes	*N*	Mean	*SD*
Computer Literacy	Low Satisfaction	22	57.22	18.32
	Mid Satisfaction	40	52.72	19.83
	High Satisfaction	13	65.56	23.62
Online Learning	Low Satisfaction	22	50.68	20.65
	Mid Satisfaction	40	58.35	19.01
	High Satisfaction	13	73.33	20.07
Learning English Online	Low Satisfaction	22	39.82	20.02
	Mid Satisfaction	40	48.43	18.22
	High Satisfaction	13	67.08	21.21
Online Collaboration	Low Satisfaction	22	48.31	22.80
	Mid Satisfaction	40	57.25	18.00
	High Satisfaction	13	68.02	21.61

2. Relationship Analysis: Correlations Among Subscales

Pearson product-moment correlations were calculated for both the pre- and post-test groups. As hypothesized, all four subscales demonstrated positive correlations ($p < .01$). The correlations are presented in Table 2. The pre-test correlations are presented in the lower-left triangle of the matrix, and the post-test correlations are presented in **bold** in the upper-right triangle of the matrix.

Table 2

Split Correlation Matrix for Pre-test (n = 75) and Post-test (n = 55) Subscales

Subscale	CL	OL	LEO	OC
Computer Literacy (CL)	—	**.664****	**.601****	**.420****
Online Learning (OL)	.685**	—	**.743****	**.388****
Learning English Online (LEO)	.506**	.666**	—	**.606****
Online Collaboration (OC)	.495**	.536**	.687**	—

Note. Pre-test correlations are below the diagonal and post-test correlations are above the diagonal in **bold**. All tests are significant at the $p < .01$ level (one-tailed for positive correlation).

3. Primary Analysis: Changes After the Intervention

To address the primary research question, an independent-samples Welch's t-test was conducted as it has been shown to have more robust control of Type 1 error rates when sample sizes are unequal and the assumption of homogeneity of variance is violated (Delacre et al., 2017; Ruxton, 2006). Table 3 shows the statistically significant increases across all four dimensions measured in this study. The most substantial increase of perceived self-efficacy was observed in Computer Literacy, which had a very large effect size (d = -1.54). This indicates that the design of the course, with its scaffolded assignments building to larger comprehensive projects were successful in boosting students' confidence to both use technology learn with it.

Table 3

Pre-Test vs. Post-Test Comparison

Subscale	Pre-Test Mean (n=75)	Post-Test Mean (n=55)	*t*-value	Sig.	Effect Size (d)
Computer Literacy	56.27	81.56	-9.09	$p < .001$**	-1.54
Online Learning	58.70	74.24	-4.46	$p < .001$**	-0.79
Learning English Online	49.13	68.01	-5.4	$p < .001$**	-0.95
Online Collaboration	56.49	74.31	-5.47	$p < .001$**	-0.95

Note. All tests are significant at the $p < .001$ level (one-tailed pre < post).

Discussion

The primary objective of this research was to examine how a 10-day intensive English course could increase the digital agency of Japanese university students during the 2020 pandemic. To achieve this result, the instructional design of the course was intentionally planned to maximize student output and production in a fully online format The results clearly support the hypothesis that a targeted instructional intervention can significantly boost perceived self-efficacy the dimensions related success in online language learning.

Building the Technical Foundation for Agency

Considering this intensive course was not their first fully online class but rather was scheduled after they had completed a semester of online classes, the growth of Computer Literacy (CL) was substantial. Overall perceptions in this domain grew from a pre-test mean of 56.27 to a post-test mean of 81.56 (d = -1.54). In the context of Bandura's SCT, the foundational key to success in an online classroom is CL. As noted above, for students to have a positive perception of online learning, computer mediation must not be seen as a barrier. By modeling desired skills and requiring students to use those skills in developing an online identity through avatar creation, the course forced students to move beyond a passive reception of class content towards active linguistic and digital creation. By removing the barrier and opening the tool

shed of technological capability, students had the capability to exercise agency in their academic and collaborative tasks.

Synthesizing Self-Efficacies

In the initial survey, questions about satisfaction with their online classes in the spring semester created different baselines for Online Learning (OL) and Learning English Online (LEO). After just 10 days of study, this intensive program appears to have synthesized these two domains. The post-test correlation between OL and LEO rose to $r = .743$, the highest in this study. This suggests that as students successfully navigated the digital landscape of class, they no longer viewed OL in general and LEO specifically as separate challenges. Over this two-week period, they became a single integrated perception of capability.

Communication, Collaboration, and the Avatar Shield

The significant growth in perceptions of self-efficacy in Online Collaboration (OC) ($M = 56.49$ to 74.31) highlights the success of the instructional design. Social barriers and a lack of non-verbal cues make computer-mediated language learning that much more difficult than is the case in traditional classrooms. In this case, the use of fictional avatars and projects that focused on the avatars' lives, likes and dislikes provided a costume for students to wear that facilitated interaction. Through group assignments, students were able to work together to combine diverse personalities and interests into collective agency. The slight weakening of the correlation between individual challenges (OL) and collaborative success (OC) in the post-test suggests students developed a more nuanced understanding of collaboration. Rather than just being a component of general study skills, it morphed into something more distinct.

Beyond the 2020 Baseline

Perhaps the most important finding of this study is the evidence that intentional instructional design with tasks that scaffolded language and technological tasks could increase students' self-efficacies in online learning despite poor prior experiences. Although pre-test results showed that students with low satisfaction from their spring courses also had low perceptions of self-efficacy, a year's worth of instruction conducted over a 10-day period was enough to provide the agentic boost necessary to become successful online language learners. This suggests that perceptions of digital agency are not fixed traits but a dynamic perception that can be developed through exposure and project-based mastery.

Limitations and Recommendations

While this study had significant findings, there are several limitations that offer opportunities for future research.

Data Pairing: Due to the decision to keep the participants completely anonymous during the 2020 stress-test, pre- and post-test data could not be paired. While the independent-samples Welch's t-test accounted for this condition, future studies using paired samples would be able to track changes in individual students' pre-/post- scores would provide a more nuanced insight into individual growth.

Contextual Specificity: This study focused on first-year Japanese university students during a period of remote teaching caused by a global health crisis. As that crisis is over, continuing

research in long-term fully online or hybrid settings would help determine if student gains in self-efficacy continue to grow with more exposure to online learning.

Sample Size: The pre-test group (n = 75) was larger than the post-test group (n = 55). Adjustments were made in the statistical calculations, but the power of the findings would increase with more balanced samples.

Recommendations for Educators

Integrate Technical Training: In this study, Computer Literacy showed the highest effect size (d = -1.54). In the modern classrooms, technology is a ubiquitous part of the landscape. However, educators might feel that their classroom focus should be on CONTENT X, while also believing students either have the requisite CL to use ICT to facilitate their learning and participation or that it is another teacher's/course's responsibility to teach those skills. In order to lower the barrier for all students, no matter their levels of CL, technical training should become included in instruction. By preparing models of submissions and/or including "how to" instructions along with task instructions, educators can better help students develop their digital agency.

Leverage Identity-Based Tools in Language Learning: When the focus is on language use and the development of communicative skills, having students create and use fictional avatars can be one way to lower the affective filter. By communicating about their fictional "other", students have less reason to feel social anxiety and thus become more willing to become active language learners.

Conclusion

The study presented in this paper demonstrates that digital agency regarding students perceived capability to learn, collaborate, and use technology is not a fixed state. Through targeted instruction, students can develop higher levels of self-efficacy in these areas. In this case, the 10-day intensive study abroad in Japan simulation proved effective in fostering a fully online classroom into a gateway for academic growth. The results demonstrate that prior impressions regarding online learning can create a divergent baseline from which students begin new classes. However, that is not a determining factor in their future success. By providing students with technical know-how as an integrated part of the content being taught, educators can empower students to overcome any digital filters they might perceive.

Ultimately, this study reinforces Bandura's (2001) theory of human agency. As accounted for in Social Cognitive Theory, when students believe they have the ability to influence their learning environment, they are more capable of succeeding in it. As society moves into a technology-integrated future, fostering digital agency in students should be a central goal of any curriculum.

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