Tripping Over Cables: Discussing Tech Pitfalls and Working Toward a Positive Framework

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Abstract

The resources and learning opportunities that technology offers educators are well documented. Its urgent relevance came to light through the learning environment of 2020-2022, but with most institutions easing back to face-to-face structures, teachers need to re-evaluate the use and purpose of technology in their classrooms. Duoethnographic dialogues are held between two Digital Natives working in secondary and tertiary schools in Kansai, Japan to explore their beliefs and understandings. Through dialogues and discourse, our excitement towards new developments, our use and practices, and the difficulties and failures of a poorly directed push towards tech in the classroom. Similarities and differences are drawn from our lived experiences, allowing us to explore educators' limitations on technological skills, knowledge and comforts, students' access and familiarity, and institutional guidelines and provisions. We discuss the benefits and pitfalls of technology in the classroom and question its necessity, particularly as a motivational pathway or social equalizer. Through this discussion, we aim to suggest when a low- or no-tech approach might be more effective, and how tech integration can lead to better working conditions, more productive learning environments, and a better understanding of student needs.

Keywords: No-Tech Approach, Technology in the Classroom, Accessibility, Digital Literacy, Motivation, Ed-Tech Framework

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Introduction

We are currently in one of the fastest-shifting periods of educational technology usage, across and blending the taxonomies introduced by Selwyn (2013). Institutional drives toward technology have been accelerated by recent remote-teaching requirements, with this newfound availability of devices opening diverse new classroom approaches. However, adoption is rarely uniform within an institution and many adaptations necessitated by the online shift of 2020-2022 were rushed through with minimal scrutiny. Many teachers, learners, and institutions now face technology they may not have selected, requested, or received training for. This highlights issues already present within education, as widening disconnects between these three vital links - selection, training, and guidance - can have negative impacts on learner outcomes and the wider classroom environment.

The two researchers had already experienced and witnessed examples of these disconnects within their teaching contexts: kindergartens, private language schools, high schools, training colleges, and universities as both full-time and part-time employees in Japan, South Korea, Australia, and the U.K. While both are advocates for tech adoption and excited by its possibilities, they have had issues within their own practice and increasingly observed issues more broadly in their workplaces and learner cohorts post-2022. Through an earlier phase in this research, they explored having felt their way through these issues, without clear connection to or background in Computer Aided Language Learning (CALL) and the approaches and inspirations that are available within its canon. As the research developed through further dialogues, an urgent need for a user-friendly, accessible, and flexible framework for evaluating the educational utility of technology became apparent. They hope that a wider attitudinal study, more closely referenced to CALL research can lead to a productive and flexible model for future use.

Methodology

Approach

A Duoethnographic approach resulted from discussions between the contributors prior to the research. Duoethnography formalised these discussions using a collaborative, qualitative method, utilising their ongoing dialogues. Through this method, they were able to explore their histories, beliefs, and practices relating to CALL, and explore the differences in their experiences (Brereton & Kita, 2020; Norris & Sawyer, 2012). First, starting topics were chosen for recorded discussions. Through transcript analysis, the researchers were able to identify key themes, underlying issues, and points of interest to be further explored (Lowe, 2018). These initial discussions resulted in an earlier presentation entitled *"Tripping over Cables: When technology slows us down"* (Hook & King, 2023) which outlined the issues surrounding the researchers' experiences of technology in education.

Shared Histories

The researchers conducting this investigation are self-described 'Digital Natives', having had access to technology in their homes and schools from a young age. As Gillis (2020, para. 1) states, Digital Natives "have spent nearly their entire lives surrounded by computers, digital devices and the world of social media" making them "very comfortable with and fluent in the use of technology." Both researchers were born in English-speaking countries and have taught English as a foreign language in Japan for many years, have taught students ranging

from toddlers to the elderly, and have worked in a wide range of institution types and sizes. Both researchers are currently teaching 'Gen-Z' students who were born into a world where technology is considered ubiquitous (Al-Azawei & Alowayr, 2020).

Initial Topics of Discussion in Earlier Research Phase

This initial dialogue reported attempts at tech integration and their relative successes and failures, and generally reoccurring issues. Though their experiences differed, they identified commonalities in their beliefs regarding causes at an institutional level and in classroom implementation. Frequently shared beliefs included:

- interest in incorporating technology into teaching practice more effectively;
- observed negative impacts of poor implementation;
- observed disconnects between desired outcomes and those seen in the classroom;
- an urgency to course correct; and
- desire to get more from technology regarding learner outcomes.

Further Topics of Discussion in the Earlier Research Phase

Through the first dialogues and resulting analysis, the researchers reflected on their core beliefs regarding continued failures of technology in the classroom and identified their needs. They were able to pinpoint commonalities in their experiences and beliefs, and categorised them thus:

- Shared experiences, regardless of differences in:
    - cohort (Junior high, high school, and university)
    - institution size and funding
    - employment status (part-time or full-time)
- Recognised benefits and drawbacks:
    - 'techno-joy' and personal experience of technology enhancing education
    - acceptance of technology as not the only tool for effective teaching
    - Acknowledgement that poorly used technology can be a net negative in classrooms
- Novelty and Motivation:
    - novelty is one of many motivating factors
    - normalisation of technology in tech-savvy generations
- Gaps in skill and familiarity:
    - differing generational attitudes to technology usage
    - differing access to training and support
- Tool selection:
    - top-down goals
    - lack of input from students & part-time teachers
    - sometimes lack of input from full-time teachers
- Poor communication across implementation:
    - rollout
    - training and uptake
    - workarounds and alternatives
    - re-evaluations
- Inherent ableism:
    - self-regulation
    - attention overload

- classroom management issues
- absence of moderation

Results

Early Research Stage

Where environments were similar, the researchers' experiences broadly aligned on issues regarding learner inexperience and casualisation. In the former, redesigned syllabi were required to train and add fail-safes addressing learner inability. In the latter, both researchers noted the different experiences that accompanied employment statuses, and how that affected their teaching autonomy and ability to communicate with institutions regarding. Both observed frustrations at gaps in decision-making and the need for rapid adjustments to planned courses and the tech intended to support them. These issues were universally heightened for part-time instructors, with less autonomy and communication.

Experiences also varied across teaching contexts, with secondary education seeing more unilateral decision-making of digital tools. While classroom autonomy was still noted, requirements for uniformity in testing, medium-of-assignment and -communication limited teachers' choices. While both tertiary and secondary education experienced some issues with recent widespread availability of learner desktop-base devices, secondary education saw these issues amplified in part due to hurried adoption and consequent oversights in moderation.

Later Research Stage

In later dialogues, a clear theme emerged regarding CALL as being largely absent in much of their training and subsequent practice. This added to reported feelings of being self-taught and a need for improvisation. This resulted in a repeated desire for a user-friendly and widely available framework for tech integration informed by research into learner, teacher, and institutional experiences. The model of utility (Figure 1) emerged from these discussions. This emergent need is the organising principle for the Tripping Over Cables project moving forward.

Discussion

Several disconnects between institutional- and educator-driven desires for tech adoption and effective implementation were identified through these discussions. These had an observable negative impact, creating friction between educators and institutions, between learners and educators, or between teacher desires and results. The lack of framework by which tech usage could be justified emerged as the connective tissue between various forms of breakdown. The most commonly recurring themes are explored below.

Novelty and Normalisation

Technology in the classroom was often presented to the researchers as intrinsically motivating to learners. However, both researchers found this rarely true, with novelty felt in older generations rather than 'Gen-Z' learners. Novelty, as per Dornyei (2001), is one motivating feature in the language classroom amongst many others which could be enhanced using technology but can also be countered by issues such as malfunction, unequal access, or

resultant inflexible lesson plans. Digital-native students were found to experience tech "normalis[ation]," described by Bax (2003, p. 23) as "...the point at which technology is no longer seen as novel and is incorporated into language learning processes without comment." In the researchers' experiences, technology is not novel nor intrinsically motivating to learners with technology long embedded in their lives. Bieri and Elliot (2017, p. 54) note that students "report less interest in using [digital tools] for language learning" and this may be because "they would like to keep social tools for themselves, and may resent an encroachment upon technology they see as personal." As Millennials, the researchers' tech was introduced as workplace tools, word-and-data-processing, and email-based formal communication which was novel for them and their teachers. From their observations, this led to false assumptions about current learner motivators.

Communication Breakdowns Between Learner, Teacher, and Institution

This generational gap was also observed in learners' knowledge base - as the Millennial generation's education had been predominantly text-based, they had both assumed and witnessed an overestimation of these skills in learners. Yet at all levels, unfamiliarity with desktop operating systems, file attachment, and platform account management such as password resetting were all assumed skills that were discovered to be insufficient - acutely in Japan, where learner computer literacy has been consistently low (Murray & Blyth, 2011; Weniger, 2022). Presumption of literacy led to unsubmitted work, missed communications, and frustration for all. This necessitated reallocating course time to ensure learners acquired the skills necessary to fully participate.

Outside classrooms, both researchers witnessed communication breakdowns between institutions and instructors. Those who decided on new technology introductions were not classroom-based and usability issues were common. Coupled with insufficient training, this led to reduced uptake of new tools. Toyama (2015) observed similar issues, noting that:

> … Large-scale roll-outs of educational technology rarely result in positive outcomes. In any representative set of schools, some [students] are doing well and others poorly. Introducing computers may result in benefit for some (the ones highlighted in pilot studies), but it distracts the weaker schools from their core mission. … An even bigger problem is that administrators rarely allocate enough resources to adapt curricula or train teachers. Where teachers don't know how to incorporate digital tools appropriately, there is little capacity for the technology to amplify [students' education]. (paras.7-8)

One resource particularly lacking in Japan was time, as "Japanese teachers work 53.9 hours per week… the longest average work week [in the] OECD…", and confidence in new approaches is low (Katsuno, 2019, p.87) and unsurprisingly, low confidence in new tech was observed in the researchers' colleagues.

Casualisation worsened these challenges, reflecting Beaton & Gilbert's (2012, para. 1) description of working in a university as potentially being isolating, "exacerbated if someone is a part-timer in multiple institutions" and could lead to "feel[ing] excluded from… meetings or social events because these fall outside their contracted time. They may also lack access to the university's resources." Full-time employees were observed to have greater insight into departmental decision-making processes and could provide feedback - both rarely offered to part-time teachers. As "universities [in Europe, Australasia and Canada] are increasingly

relying on contract academics for 'near-voluntary' part-time work" (CUAT, 2015, para. 1), the researchers believe this necessitates a framework teachers can consult in their practice, regardless of status and context.

Unequal Access

Downie et al. (2021, p. 2) see teachers and learners describe technology in the classroom as "modern and expected in higher education, while being equalising" and while both researchers observed as much in highly-motivated and mature-aged learners, pre-existing issues were often exacerbated for others. Toyama (2015, para. 6) describes this as the "'Law of Amplification': Technology's primary effect is to amplify human forces, so in education, technologies amplify whatever pedagogical capacity is already there." The researchers found that solely tech-medium instruction had the potential to create more inequality than it solved. Müller et al., (2009) support this, saying "the more digital technology pervades society, the more it becomes attached to existing patterns of social inequalities" (p.73) and, in the classroom, "the introduction of technology into schools serves to amplify existing forms of inequality" (p.77).

Attentional issues exemplify this inequality. Young learners were able to navigate technology independently but not self-regulate and stay on task. Both teachers had planned lessons where students independently research and complete tasks, necessitating giving learners unfettered internet access. While this allowed some learners to thrive and extend their learning, it created a great disadvantage for those demotivated or otherwise struggling to concentrate. The self-regulation required to ignore the entertainment options, especially for higher-secondary learners, was an unreasonable demand. Similar issues were seen economically, with high-income-background learners more familiar with studying digitally, able to access modifications and personalisation, and replace broken devices. Lower-income learners were observed to have been demoralised by higher training requirements and excluded by device loss.

Conclusion

These discussions had one motif: why technology was being used? In the majority of cases discussed, lack of clarity between parties regarding why institutions and educators chose particular tools had contributed to the issue. Thus, the researchers desired greater dialogue and institutional transparency in the acquisition, implementation, and activation stages, and a reflective phase for teachers in planning technology use, feeling that an established framework for practice would be invaluable in mitigating or preventing harm. Institutionally, this could enable clear insight into goals and awareness of different approaches to tech-assisted teaching for all staff and allow teacher tech usage to target learning outcomes effectively.

Thus, the researchers found that three key factors combined to form utility: accessibility, relevancy, and regulation. Taken equally, tech was likely to contribute positively. Out of balance, easily identifiable breakdowns were seen to frequently occur.

- Relevancy combined with access but without regulation created distractions, e.g. YouTube as entertainment vs. research
- Lack of relevance demotivated, as learners were uninterested or hostile to the tech usage, e.g. English-class social media activities

- Relevancy combined with regulation produced focused activities that supported learners but limited access to tech became a demotivating factor, e.g. lack of sockets making devices unusable

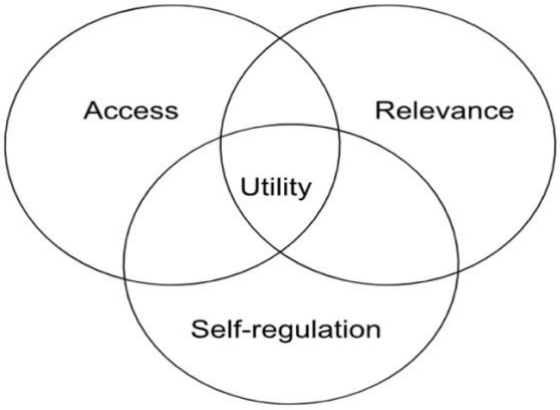

Figure 1: The Access, Relevance, Self-regulation and Utility Venn Diagram

The researchers agreed on the need to analyse issues technology may introduce and have pathways to communicate with decision-makers addressing whether to use a tech-based approach including:

- Training
    - Can both I and my students use this tool with confidence and minimal disruption?
    - If not, is sufficient time and ability to train my students available?
    - What is the time investment for creating digital materials/tasks?
- Purpose
    - What are the benefits?
    - Why is it superior to a no- or low-tech option?
    - Is this view supported in literature/research?
- Drawbacks
    - Is anything necessary being removed by introducing technology?
    - Is a barrier being created between teacher/learner and learner/learner?
    - Is rigidity being introduced e.g.
        - Is the lesson less flexible?
        - Are students being given fewer options?
- Access
    - Is it universally accessible? Consider:
        - Physical limitations
        - Financial inequality
        - Language barriers
        - Emotional/Attentional challenges
    - Is it user-friendly?
    - Is it sustainable i.e. will data be lost?
    - Is regulation in place/possible?

Expanding these ideas, informed by wider sets of experiences and perspectives, and deeper familiarity with CALL research is the intention of the researchers going forward. The ultimate goal is the development of user-friendly frameworks that can be made readily available, ensuring that the technology they are excited about can be used positively, widely,

and diversely. By centering experiences in the framework they hope that, as per Richards & Renandya (2002, p. 361) “it is the teacher, not the technology, who determines the quality of the learning that takes place in the classroom.”

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