査読論文

Helping Teachers Get on Board with Technology: Training within Communities is the Key

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Although the benefits of using technology in the classroom have been known for some time, research has shown that, for a number of reasons, teachers of many different subjects have been reluctant to use it as part of their classroom practice. Some institutional factors, such as a lack of funding for technology, unreliable Internet access, etc., limit teachers in what they are able to attempt, even if willing to do so. However, even when these issues pose no problems, and technology is readily available, such as in the Japanese EFL context, teachers may still resist using it for a variety of reasons, the most prevalent being that they are not provided with adequate training. What happens, then, when *all* teachers, due to a global pandemic, are suddenly forced to provide emergency remote teaching (ERT) to students? Peer support groups such as Professional Learning Networks (PLN) may provide an answer.

Keywords: professional learning networks, emergency remote teaching, peer training, information and communication technology, technostress

1 Background

In the spring of 2020, the COVID-19 pandemic began spreading across the world. In Japan in particular, some schools quickly responded and declared that all classes would be provided online, while others delayed commencing their semesters, then began offering online courses later. One of the authors of this chapter, Melodie Cook, was the Program Chair for the Niigata chapter of the Japan Association for Language Teaching (JALT). Usually, her task was to find speakers to come to Niigata and give theoretical or practical pedagogical presentations to local chapter members. She realised that because travel during COVID-19 was unfeasible, as Japanese government officials urged citizens to stay home, it might be possible for the Niigata Chapter to host meetings related to teaching with technology via Zoom. At the same time, a Facebook group was started online called Online Teaching Japan (OTJ). This new group, founded by a faculty member of Oberlin University, developed rapidly in late-March as a variety of educators, from pre-K to graduate school, grappled with the new reality of teaching online. Enlisting the help of members from OTJ, she found a plethora of peer resources and training, enabling teachers to learn how to provide students with best language teaching practices in an online format (Online Teaching Japan, 2022).

The second author, Erin Noxon, had been involved in online education of teachers for a decade before the onset of the pandemic. Google Educator Groups (GEGs), which are local teacher driven educational technology collaboratives, have

existed in Japan and around the world since 2014 and would have some local level events, but were also focused on online collaborative global events about cutting edge projects and tech (GEG Asia-Pacific Connect, 2022). The onset of the pandemic changed the focus rather rapidly to a more local and basic level. The goal quickly became to assist the teachers in the local community and in the greater Japan community of educators on using the basic technologies they already had available to them that they had not used before. It was important that online events be planned to collaborate with local educators who were struggling with the same technology others had been using for more than a decade. Together these GEGs helped to get a variety of educators online and able to teach remotely.

We have written this article to help other teachers understand one of the basic needs in providing practical, hands-on training for other teachers requiring immediate knowledge and practice using new technologies is to establish a collaborative community. In this paper, we discuss reasons why some teachers tend to be wary of information communication technology (ICT), or other teaching-related technology and then offer practical details for using technology, not only for this unusual time in teaching history but also perhaps as a part of regular peer teacher training within a group such as a PLN.

2 Review of the Literature

In this section, we will highlight the benefits for teachers and students when technology is used and give reasons for teachers' resistance to using it. We will then highlight the importance of training, even when it is of short duration. The literature does not focus solely on EFL/ESL teachers, but on all teachers affected by the current COVID-19 situation around the world. Of course, issues pertaining to EFL teachers will be highlighted.

2-1 Benefits of technology for teachers and students

Technology offers many time-saving devices for teachers. Hicks (2011) lists grading, planning, record-keeping, reducing workload, and interactively involving students in lessons as a few of these (p. 190). However, while there are teachers who embrace technology and use it in their classrooms, others may use it to "conduct low-level tasks such as conducting practice drills and/or using computers as a free-time or reward activity" (Hsu, 2016, p. 30). In terms of EFL specifically, Li & Walsh, (2010) found that teachers tended to use computers for PowerPoint presentations and review of grammar structures. Garcia Chamorro and Rey (2013) reported that university EFL teachers in Columbia tended to use computers to have students practise receptive rather than productive skills tended to equate individual study with autonomous learning.

There is no doubt that in today's world, technology is taking centre stage in students' lives as well. Hicks (2011) asserts that "The prevalence of technology in everyday life has shifted students toward a more visual learning style" (p. 189). Because of this, she argues, students may not respond to traditional teacher-fronted learning styles or textbook learning. In the backgrounding to a study of K-12 students, Carver (2016) explained that students are "ready to use technology to explore their world"

saying that "…technology can increase student motivation, attitude, engagement, and self-confidence, while improving organisation and study skills" (p. 110).

Technology, too, can help students with disabilities. According to Hicks (2011), technology provides "rehabilitative tools that aid (students with disabilities) in gaining cognitive and physical skills and abilities" (p. 190). Teachers who avail themselves of such tools may find their students make "miraculous gains" (p. 189) that would not be possible through traditional teaching methods.

2-2 Reasons for Resistance

However, while teachers may say that they believe the use of technology benefits students, what they say and what they do may be at odds (Carver, 2016; Garcia Chamorro & Rey, 2013; Unal & Ozturk, 2012; Yaratan & Kural, 2010). A number of researchers have characterised reasons for resistance to technology broadly into two areas: institutional factors and teacher (personal) factors.

(1) Institutional factors

Institutional factors are those which are related to the schools that teachers are working in. These include poor infrastructure (inconsistent electrical power supply, insufficient Internet connectivity) and financial constraints (purchasing and installing ICT, operating costs, students' economic status) (Coklar, Efilti & Sahin, 2017; Kisanga & Ireson, 2015; Wachira & Keengwe, 2011) resources (Nikolopoulou & Gialamas, 2016; Kisanga & Ireson, 2015; Unal & Ozturk, 2013), institutional attitudes and beliefs (Dehqan, Barjesteh & Faraji, 2017; Carver, 2016) school culture, and assessments (Carver, 2016) and lack of training and technical support (Dehqan, Barjesteh & Faraji, 2017; Villalba, Gonzales-Rivera, Diaz-Pulido, 2017; Hsu, 2016; Kisanga & Ireson, 2015; Hicks, 2011). There are degrees to which these institutional factors present themselves in different cases, however. The teachers in Kisanga & Ireson's (2015) study, which took place in Tanzania, reported a large number of institutional problems. Those in Carver's (2016) study, also felt that the biggest barrier for them was a lack of technology available. Yet, other research (Coklar, Efilti & Sahin, 2017; Dehqan, Barjesteh & Faraji, 2017; Nikolopoulou & Gialamas, 2016; Johnston, Riordain & Walse, 2014; Unal & Ozturk, 2012; Wachira & Keengwe, 2011; Hicks, 2011) shows that teachers repeatedly reported a lack of training and institutional support as affecting their decisions about using technology in their classes.

(2) Teacher factors

Teacher factors include teachers' perceptions of their knowledge and skills (Villalba, Gonzales-Rivera & Diaz-Pulido, 2017; Carver, 2016), in other words, digital literacy (Mac Callum, Jeffrey & Kinshuk, 2014). Teacher's beliefs about the efficacy of using technology in the classroom (Hicks, 2011) and teacher resistance (Dehqan, Barjesteh & Faraji, 2017; Kisanga & Ireson, 2015 Unal & Ozturk, 2012) are also factors that affect a lack of use of technology in classrooms. According to Hicks (2011)

teachers "fear they will 'look stupid' in front of their tech-savvy students" (p. 189). If they attempt to use the device or technology and fail at it, they risked something and gained nothing. This is embarrassing, and they will be wary or unwilling to try using technology again in the future (Pejouhy, 1990). Thus, if teachers lack confidence (Johnston, Riordain & Walshe, 2014), or feel inadequate or anxious (Dehqan, Barjesteh & Faraji, 2017; Nikolopoulou & Gialamas, 2016; Mac Callum, Jeffrey, & Kinshuk, 2014; Wachira & Keengwe, 2011) in this way, they may eschew using technology in their classes. Perceived usefulness of the technology and ease of use (Mac Callum, Jeffrey & Kinshuk, 2014) also fall under teacher beliefs.

The above research reports on teachers from all fields, but the same factors are prevalent among EFL teachers as well. Yaratan & Kural's 2010 study found that some EFL classes lacked technological resources and teachers lacked time for their use. Garcia Chamarro & Rey (2013) found, while teachers were interested in using technology, they did not receive adequate training nor knew of ways in which they could have had students use technology interpersonally. Li & Walsh, (2010) reported that EFL teachers in China, while generally holding positive beliefs toward technology, said they did not have enough time, institutional support, or saw the need for more ICT integration.

2-3 Technostress

Both institutional and personal factors that may restrain teachers from adopting technology into their classrooms may be encapsulated by the term "Technostress" coined by Sami & Pagannaiah (2016), cited in Coklar, Efilti & Sahin (2017). Technostress includes teachers' finding it difficult to keep up with the pace of new technologies, failing to "interact with new technologies in a healthy way" (Coklar, Efilti & Sahin, 2017), resulting in physical or psychological problems. A modified list of technostress factors and what comprises them, as expressed by Turkish teachers, can be found in Table 1 (spelling and grammar errors in the original text have been corrected by the authors).

Table 1
Factors and items comprising Technostress

Factor 1: Learning-Teaching Process Oriented	The idea that I won't be able to teach the whole course content, because technology use time makes me anxious.
	I think that technology use requires more effort in the classroom and affects technology use negatively.
	I feel forced to become more dependent on the Internet in the educational process.
	I am worried because digital-technology oriented materials are becoming more common in the educational process.
	I feel uncomfortable that technology devices are used for extra-curricular purposes during the lessons by students.
	I am worried that technology blunts students' research skills.

Factor 2: Profession Oriented	I think technology makes the teaching profession more difficult. I think the teaching profession is losing its value because information sources have become technology-oriented. I am worried that educational understanding might change because of technological devices. I am worried that I might get unemployed in the future due to technology use. I am worried that I might lose prestige because new teachers can use technology better. I think technology use increases teachers' workload.
Factor 3: Technical-issue oriented	I feel uncomfortable as I am constantly worried about infecting technologies with viruses. I am worried that the data I store in digital environments (memory sticks, Internet, etc.) can be lost or change hands. I am worried because there is too much information (passwords, account names, etc.) to remember for technological environments and I might forget these. I feel uncomfortable because technology costs a lot (purchase, repair and maintenance, paid websites, etc.) I am worried about the negative effects of technological devices within the classroom (noise, heating, etc.) I am worried about the security of technological devices (storing, keeping, etc.) at the school
Factor 4: Personal Oriented	**I am worried that I might not be able to learn to use technology even if I want to.** **I am worried about technology use, due to the necessity to keep up with constantly developing technology.** **I might give up on using the technology as I cannot find sufficient opportunities for technology education.** **I am uncomfortable because I am not familiar with the terminology used in defining new technologies.**
Factor 5: Social Oriented	I feel uncomfortable that digital technology use takes too much time. I think social interaction between everyone in the educational process is damaged due to technology use. I am worried that I can have problems with my colleagues about technology use. I am worried that technology can cause health problems (sight, hearing, pain, etc.).

(Coklar, Efilti & Sahin, 2017, pp. 34-35)

While all factors may resonate to some degree with most teachers, Factor 4 above is especially salient to this paper, as this particular technostress factor refers largely to teachers' feeling they lack knowledge or training; this is the problem we are attempting to address.

3 The World Changes: ICT Training is needed

Before COVID-19 began spreading around the world, many teachers were, while encouraged to use technology, allowed to choose whether to avail themselves of it or not. For example, events put on by the GEG community focused on exciting new tech and software, and often only the educational technology savvy would choose to be involved and attend. However, when schools began closing and teachers found themselves instructed to make use of ICT, this choice was taken away from them. Suddenly, they were being introduced to a host of new technologies, yet could not receive face-to-face training at conferences due to travel restrictions worldwide. It was clear that training was needed; fast, efficient, and clear training that could be readily accessed.

Most literature on teachers' adoption of educational technology highly depended on the kind of training teachers received in using it. According to Ertmer (2005, cited in Carver, 2016) "teachers need effective technology integration professional development that focus(es) on content appropriate technology and skills, provide(s) hands-on opportunities, and address(es) teachers' needs" (p. 111). Hicks (2011) asserts that if teachers are not only properly trained, and also provided with technical support, they will be more likely to integrate technology into their everyday classrooms. If they feel secure and positive about using technology, they will feel more relaxed and less anxious (Mac Callum, Jeffrey & Kinshuk, 2014). This bears out in earlier research by Unal & Ozturk (2012) which found that social science teachers who used ICT in their classes received "most of their resources from other teachers" (p. 941) either in person or through resource-sharing websites.

ICT training need not be extensive; Mac Callum, Jeffrey & Kinshuk recommend that "Designers need to remove technical obstacles to ensure that all mobile learning initiatives are as easy to use as possible with little initial training needed" (p. 151). In addition, they suggest that this initial training be followed up with institutional support and additional training, if needed. Training need not necessarily be in person either; the teachers in Dehqan, Barjesteh & Faraji's (2017) study recommended, among other initiatives, that in-service classes be held online, virtually, and interactively.

Wachira & Keegnan (2011) recommend that mathematics teachers form small-group professional learning communities (PLCs) "...in which they support each other as they learn how to use various technology tools" (p. 24). Such communities, they argue, can help teachers overcome fears and barriers and build their confidence as they experiment and use new technologies. Teachers can bring sample lessons to the group and offer peer support to those less technologically proficient. Regarding EFL, the participant teachers in Li & Walsh's (2010) study said that they "wanted to adopt model CALL lessons from their peers" (p. 115). While increasing the collaboration and reducing the isolation amongst classroom teachers, PLCs also help teachers to expand their knowledge base and be more aware of overall issues with students (Mundry & Stiles, 2009).

3-1 Considerations: Helping teachers to learn more about ICT

As has been established so far, communities are important for teachers so that they can enhance their professional practice through learning from others. However, when there is nothing more to learn within their local context, teachers have to connect with other educators outside of their own local communities to learn more. During the onset of the COVID-19 pandemic, many realised that at their school level they did not have an extensive enough knowledge base at that level to sustain the online classes they were suddenly having to offer. Therefore, interacting outside of the local level became critically important.

(1) Professional Learning Networks

The most commonly referred to connected teacher community of professionals outside their local teaching community in the research is called a "Professional Learning Network" or PLN. Both OTJ as well as GEGs are examples of PLNs. A PLN is any group that collaboratively learns together and shares knowledge between educators who are not connected to a local community of practice, in order to better teach their students (Brown & Poortman, 2018). By engaging in a PLN a teacher can learn from others in a broader context and then bring that knowledge back to their local school, PLC, or context to use in a useful way in their own practice.

After a teacher has learned something new at any training, PLN event, or meeting, they can then share that new knowledge by creating their own sharing or training session for members of their local school community or PLC and informally share their new knowledge. This level of the process is very important because, while there is much to be learned from the larger PLN community, the teacher still has to find ways to use what they have learned in their own teaching and practice locally. Through a small group learning process within PLCs at the school or the curricular level, they can collaboratively learn what is useful for their own classes and curriculum (Mundry & Stiles, 2009).

(2) Community Membership and Participation

Learning communities must be organised in ways to accommodate all of the members that wish or need to be a part of the community. This is in order to develop what Mundry and Stiles (2009) referred to as "human capital"; to invest in humans rather than objects and machinery to develop their skills and knowledge base. The members must also respect and understand the importance of the climate and the collegial nature of their membership. The human and social aspect is critical in the community for support of technology integration (Zhao, Pugh, Sheldon, & Byers, 2002). Particularly important is the concept of respect. Teachers' evaluation of the effectiveness of their community were often impacted largely from their feelings on the culture of the group. Communities are results oriented, but the culture of the community must be developed and a comfortable time negotiated so that it builds leadership and does not create a negative atmosphere (Louis, Kruse, & Byrk, 1995).

4 Conclusion

As mentioned above, in the early days of COVID-19 it was imperative that a great number of teachers required training; training that would provide them with hands-on suggestions that they could use immediately in their (Zoom) classes. Thus, as mentioned above, the Niigata JALT Chapter was prompted to begin hosting webinars to provide necessary training to language teachers in a timely manner. This kind of training met most of the recommendations listed above: teachers learned the skills they needed when they needed them, training was not time-consuming, and introducing participants to the existence of OTJ helped them join a PLN with experts they could access immediately. They could then bring that knowledge and learning back to their local schools and professional practice and attempt to configure it to work for their classes and programs. As is evident from the review above, although there are many factors which may hinder teachers from taking technology on board, if they can access resources offered by their peers, they may be more successful in making necessary technology changes to the practice with less stress.

All of the participants in a PLN, whether it be OTJ, a GEG, or any other network, must be equal stakeholders and participants and everyone should feel comfortable participating, sometimes learning and sometimes leading. If everyone can come together from many different backgrounds, disciplines, and contexts, it can create powerful social, cultural, and intellectual connections and not only will the community be richer, the participants will learn more and therefore improve their professional practice (Matthews, et al., 1996). OTJ was a grassroots effort at that time, educators all struggling together. After a few weeks, members started putting on presentations, sharing their knowledge. Others joined in and hosted their own meetups, rapidly spreading their ideas (Online Teaching Japan, 2022). People who had long been members of GEG groups started making YouTube playlists of useful videos and then sharing them over social media. When there was a gap in knowledge, local group members connected outside of their own areas to find people who had the knowledge and quickly hosted new events online (GEG Asia-Pacific Connect, 2022). These kinds of examples show how PLNs are a community, and a community that supports its members.

There are many different reasons why teachers have difficulty integrating technology. A community, such as a PLN can help the teachers overcome some of the barriers to integrating technology. By giving them a collaborative space to learn within where they can lead, participate, and then bring that information back to their local contexts, they will have more successful and positive experiences. This will, in turn, allow them to participate more and share new information themselves. In the future as we continue to move forward in the field, we would argue that PLNs will become more and more important and that participation within them is important continual development of one's own professional practice.

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