

# Barriers to Teacher Use of Technology for Teaching

Dan Ferreira Ed.D.

Sophia University: Center for Language Education Research



## Abstract

The purpose of this qualitative action research study was to explore the perceptions and experiences of English as a foreign language (EFL) university teachers in Eastern Japan to overcome barriers to integrate information and communication technology (ICT) in their daily teaching practice. The problem addressed was universities in Japan are pressured to align their curriculums with government initiatives that demand ICT integration, but governmental guidelines for faculty development have not been developed. The research setting was a liberal arts college in Eastern Japan and purposeful sampling was used to attain a sample of 12 EFL university teachers. Cultural-historical activity theory (CHAT) served as the theoretical framework. The MAXQDA 12 software was used to identify codes, patterns, and themes across the data. The three major themes were: (a) no computer, no projector, and no Internet were faculty barriers to ICT integration, (b) difficult software for teaching purposes was a barrier to ICT integration, and (c) faculty contemplation of learning objectives/outcomes informed decisions to integrate ICT successfully. Recommendations for educational leadership included (a) to equip every classroom with an Internet connected computer/projector and to ensure these devices were maintained regularly, (b) to provide reliable Wi-Fi to improve adoption of ICT, (c) to create a theoretically-driven ICT training program tied to curriculum learning objectives, and (d) to hire educational technologists to provide “just-in-time” techno-pedagogical support.

## Introduction

Despite the rhetoric of the importance that technology has on the future of education—a vision shared by MEXT and JALT—the fact remains there has been no official national program for teacher development in ICT integration. The idea of a nationwide teacher-training program for technological integration has yet to be crystallized by MEXT, and a transparent timeline for such a program has not been provided (Fryer & Bovee, 2016; Kitade, 2015; MEXT, 2016). Without a national program for teacher training in ICT, it has been left to institutions or individual teachers to pursue professional development on their own. As a result, teachers in Japanese education have remained largely untrained in aligning the use of new media with learning objectives in their day-to-day teaching practice. At institutions that have lacked any faculty development in digital skills training, instructors continue to bear the burden of integrating new digital media with pedagogical and content knowledge without being able to explain how that integration affects learning outcomes (Amiel et al., 2016; CHAT model was instrumental for uncovering several, interrelated contradictions related to new and old innovations, the curriculum, and teachers' views of the situated learning context Arenas, 2015; Daher & Lazarevic, 2014; Fryer & Bovee, 2016). The CHAT framework is grounded in the holistic understanding that the successful construction of knowledge is the result of all the factors in an activity system concurrently and synergistically working together to achieve a final objective (Engestrom, 2015). The model was instrumental for uncovering several, interrelated contradictions related to new and old innovations, the curriculum, and teachers' views of the situated learning context (Karasavvidis, 2009).

## Theoretical Framework

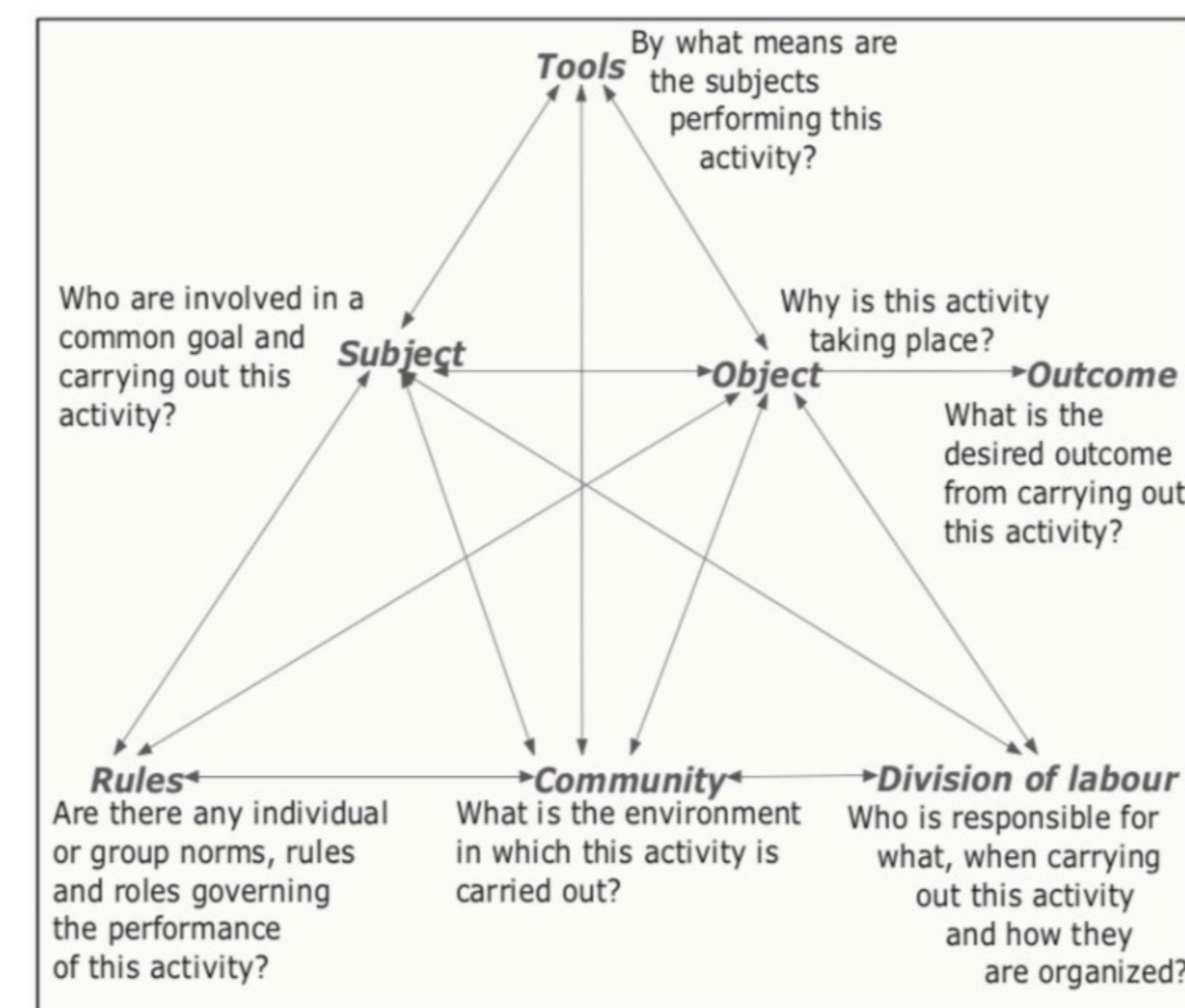


Figure 1. Engestrom's triadic activity systems framework. Adapted from “A conceptual framework based on Activity Theory for mobile CSCL,” by G. Zurita and M. Nussbaum, 2007, *British Journal of Educational Technology*,

The Cultural-Historical Activity Theory (CHAT) Framework

## Research Questions

- RQ1. What were the perceptions and experiences of EFL liberal arts college teachers in Eastern Japan and their perceived barriers to ICT integration at a liberal arts college in Eastern Japan?
- RQ2. What were the perceptions and experiences of EFL liberal arts college teachers in Eastern Japan and their decisions to integrate ICT successfully at a liberal arts college in Eastern Japan?

## Methods

### Participants

- Participants were 12 English as a foreign language teachers who were recruited from liberal arts college in Eastern Japan.
- The national representation of participants were: four Japanese, three American, three British, one Canadian, and one Australian.
- Participants were comprised of both male and female teachers and ages ranged from late-30s to mid-60s.
- 10 participants were Masters level, and two had doctorates.
- 10 had between >10 years of teaching experience, 2 >20, and 2 >30.

### Materials & Procedure

- A qualitative action research approach was deemed appropriate because the approach is ideal for generating detailed descriptions of teachers' perceptions and experiences of the phenomenon in question (i.e. barriers and successes of integrating ICT for teaching purposes).
- Participants were recruited from a pool of 34 EFL teachers in an English teaching department at a liberal arts college.
- There two stages to the study:
  - First stage: a 15-minute introduction to the theoretical framework and instructions on how to carry out their choice of tech for a teaching activity
  - Second stage: a 45-minute semi-structured post-intervention interview at a locale of the participant's choosing using a 13-question field-tested interview protocol based on the research problem.
- Data sources: participant's lesson designs and reflective journals, the staff handbook, transcriptions of audio-recorded interviews, and researcher memos.
- MAXQDA 12 was used to derive codes, patterns, and themes from all the data.

## Findings & Implications

Three major themes emerged from the study\*:

### RQ1-related:

- No computer access, no projector, and no Internet in the non-computer classroom were faculty barriers to ICT integration.
- **Implication #1:** lack of ICT availability blocked faculty from implementing e-learning activities and negatively impacted their overall satisfaction of using digital media for EFL learning.
- **Implication #2:** it also hampered instructors from further developing their pedagogical use of ICT to make that part of their EFL instruction more relevant, effective, and engaging.
- **Implication #3:** lack of ICT availability has done little to contribute to innovative teaching practice with technology on an individual instructor-level and as a community of practitioners within the department.
- **Implication #4:** a weak college Wi-Fi bandwidth not only prevented the learners from using mobile technology for collaborative activities that required everyone to be working at the same pace, but also forced teachers to adopt a more teacher-centric pedagogy to ICT integration as a result.
- Software too difficult for teaching purposes was a faculty barrier to ICT integration.

**Implication #1:** the importance of implementing a formal feedback system to respond to the ICT needs of faculty and to provide “just-in-time” ICT support on an individual instructor level and in the form of faculty development workshops that trained instructors how to use new software they were unable to learn how to use for teaching purposes on their own

**Implication #2:** this displayed evidence of the failure on the part of the heads of the English department to communicate with the curriculum developers and educational technology leaders to design an effective training program to assist teaching faculty to adapt the use of new software to meet learning objectives

**Implication #3:** the need for management to include faculty in selecting digital tools to meet the learning objectives of the curriculum

**Implication #4:** contributed to already existing empirical literature that found top-down decisions of mandating the use of new software without involving faculty in the decision-making process alienated the instructors from sharing their pedagogical knowledge of technology use which resulted in a loss of tool agency and also negatively impacted their willingness to use unfamiliar digital media for teaching purposes

**Implication #5:** lack of needs-based training prevented teachers from optimizing the use of learning management systems (LMSs), like Moodle or Google Classroom, from assessing and monitoring students' learning performances efficiently and from exploring the affordances of LMSs to provide individualized learning management such as differentiated learning

### RQ2-related:

- Faculty contemplation of learning objectives and learning outcomes informed decisions to integrate ICT successfully.
- **Implication #1:** the need for faculty to base decisions to integrate ICT successfully on how well the learners achieved the learning objectives
- **Implication #2:** the usefulness of the cultural-historical activity theory (CHAT) framework as a cognitive tool to help instructors align ICT use with learning objectives and achieve successful learning outcomes
- **Implication #3:** The CHAT framework helped faculty identify and resolve tensions in the use of technology to achieve learning objectives with a view to improving techno-pedagogical decisions to use digital media in the future
- **Implication #4:** the need for collaboration and discussion between practitioners in pedagogical planning, such as that afforded by this action research study, to help faculty make informed decisions to integrate ICT successfully
- **Implication #5:** study findings contributed to the potential for better understanding how faculty resolution of contradictions in the planned use of ICT to achieve learning objectives leads to successful learning outcomes

\*Minor theme = a simple majority  
Major theme = 75% or more

Dan Ferreira, Ed.D., is a contract lecturer at Sophia University in downtown Tokyo and is a Google Certified Trainer and an Apple Teacher. He has been an educator for close to two decades and has served as an English language teacher and an instructional tech coach at several public and private universities in the Greater Tokyo region. Dr. Ferreira holds a doctorate in education with a specialization in e-Learning from Northcentral University, San Diego, California. His dissertation topic was on the barriers and successes of teacher use of instructional communication technology for teaching purposes. He currently serves as an adviser on the Technical Advisory Committee which provides professional technical assistance and advice to the Japan Association of Language Teachers (JALT) -- the largest English language teaching organization in Japan. <portuguesegrashopper@gmail.com>

## Discussion

### Recommendations for Practice

#### Theme 1:

- the college's technical support staff to equip every non-computer classroom with a computer connected to the Internet and a projector and to ensure these devices are operational at the start of class
- the college to provide reliable and easily accessible Wi-Fi connectivity with sufficient bandwidth to every teacher and student across campus to improve the likelihood of teacher adoption of ICT in teaching practice

#### Theme 2 & 3:

- create an extensive, theoretically-driven ICT training program with clear benchmarks tied to curriculum learning objectives that include formative and summative assessment of participant teacher proficiency
- hire a team of educational technologists responsible for establishing a formal feedback system to respond to the ICT needs of faculty and to provide “just-in-time” techno-pedagogical support, and to conduct hands-on, experimental, and collaborative training workshops to nurture pedagogical discussions between teacher participants on how to best integrate ICT to achieve enhanced learning outcomes

### Recommendations for Future Research

- to conduct a mixed method study to examine and operationalize variables of the technological pedagogical and content knowledge (TPACK) framework to compare instructors' use of technology before, during, and after faculty development training in ICT integration
- to conduct a longitudinal qualitative narrative study of contract lecturers to investigate how sociocultural teaching and learning contexts of different English departments influence their perceptions and experiences of barriers and successes of integrating ICT in Japan
- a qualitative multiple case study of theme 3 with the perceptions and experiences of teachers in disciplines other than EFL in universities across Japan to compare the findings of this study in order to contribute to a holistic pedagogical training approach in ICT integration and learning objectives

### References

- Amiel, T., Kubota, L. C., & Wives, W. W. (2016). A systemic model for differentiating school technology integration. *Research in Learning Technology*, 24(1), 1-15. doi:10.3402/rlt.v24.31856
- Garrett, N. (1998). Where do research and practice meet? Developing a discipline. *ReCALL*, 10(01), 7-12.
- Daher, T., & Lazarevic, B. (2014). Emerging instructional technologies: Exploring the extent of faculty use of web 2.0 tools at a Midwestern community college. *TechTrends*, 58, 42-50.
- Engestrom, Y. (2015). *Learning by expanding: An Activity-Theoretical Approach to Developmental Research*. New York, NY: Cambridge University Press.
- Fryer, L. K., & Bovee, H. N. (2016). Supporting students' motivation for e-learning: Teachers matter on and offline. *The Internet and Higher Education*, 30(2016), 21-29. doi:10.1016/j.iheduc.2016.03.003
- Karasavvidis, I. (2009). Activity theory as a conceptual framework for understanding teacher approaches to information and communication technologies. *Computers & Education*, 53(2), 436-444.
- Kitade, K. (2015). Second language teacher development through CALL practice: The emergence of teachers' agency. *CALICO Journal*, 32(3), 396-425. doi:10.1558/cj.v32i3.26637

MEXT. (2016). *Overview of the Ministry of Education, Culture, Sports, Science and Technology*. (Government Report). Ministry of Education, Culture, Sports, Science and Technology—Japan: Tokyo.