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TECHNOLOGY, TEACHING, TEACHER EDUCATION, AND TEACHER LEARNING

Background

The unprecedented growth of Information and Communication Technologies (ICT) is redefining not only how students learn, but also how teachers teach. Self-directed learning outside of school, particularly with the support of mobile devices, has never been more possible. On the other hand, school-based technology integration is maintaining its critical role in the place where students spend most of their learning time each week. Teachers, as pedagogical decision-makers, are on the front line of technology integration in any school system: pivotal players in fulfilling ICT’s potential to engage students in meaningful learning, promote multiliteracies among them, and develop their critical thinking skills. Teacher preparation and standards often require that teachers integrate ICT to promote students’ engagement in learning and maximize learning effects (Council of Chief State School Officers, 2011; International Society for Technology in Education, 2007).

Language teaching is no exception. For example, the American Council on the Teaching of Foreign Languages (ACTFL) highlights in its Program Standards for the Preparation of Foreign Language Teachers that “programs of foreign language teacher preparation must demonstrate that they include ‘opportunities for candidates to experience technology-enhanced instruction and to use technology in their own teaching’” (ACTFL, 2013, p. 2).

Technology integration, however, comes with conditions (Zhao & Frank, 2003; Zhao et al., 2002). Research has consistently found that a myriad of factors may affect ICT integration in education. Ertmer (1999) named these factors first-order and second-order barriers/enablers. The first-order factors are extrinsic to teachers, and include the educational system, policy initiatives, curriculum mandates, individual school policies (e.g., heavy workloads or lack of time for innovation), leadership, and the availability of resources (e.g., appropriate software and instructional materials), as well as technical, administrative and peer support. The second-order factors are intrinsic to teachers: their cognitive systems (e.g., knowledge, beliefs, and perceptions) or “mental lives” (Borg, 2006, p. 1). These two broad categories of factors work together to drive teachers’ pedagogical decisions on technology integration.

Despite the clear affordances of digital technologies for language teaching and frequent calls for teachers to integrate technology into their teaching (e.g., ACTFL, 2013; Egbert et al. 2009), teachers’ actual practice with respect to technology use appears to be limited (Hubbard, 2008). This unexpected outcome, in light of heightened investment in educational technology, seems partly attributable to a failure to understand teachers. Empirically, scholars still know little about what technologies language teachers
use, how they use them, or what factors influence their use (or non-use) of these technologies – to say nothing of how and how well teachers are prepared and supported in this area.

This volume brings together original research studies and reviews specifically to address this gap in the literature regarding second/foreign language teachers, teaching, teacher education, and teacher learning in the digital era. Specifically, the 14 original chapters report on a range of issues related to language teacher cognition (e.g., beliefs, identity, and knowledge base) and technology use, as well as how teacher education and teacher learning impinge on technology integration. Taken together, the research presented provides an up-to-date, in-depth inquiry into language teachers’ perceptions of technology integration, the factors that have shaped these perceptions, the influence of these perceptions on their pedagogical (non-)use of technology, and the role of technology in the preparation and professional learning of language teachers.

ORGANIZATION OF THE BOOK

The current volume places the teacher at the center of its examination of language education in the digital era. In particular, it aims to build an innovative knowledge base about technologies, second/foreign language teaching, and language teacher education and teacher learning. To achieve this goal, the book’s collection of original theoretical and empirical studies covers three major areas: 1) the status quo and standards of technology in language teacher education, 2) language teachers’ perceptions and uses of technology, and 3) technology in language teacher preparation and learning.

Section 1: The Status Quo and Standards of Technology

This section focuses on technology and language teacher education in its broad social and educational context, and includes three chapters. Chapters 1 and 2 examine and synthesize our current understanding of technology in foreign language teacher education in the different contexts of the United States and China, respectively. Chapter 3 then compares the technology standards of Chinese as a second language teachers in China against those applied to world language teacher education in the United States.

Chapter 1, “Technology Instruction in Language Teacher Education Programs,” by Yining Zhang and Matthew Deroo, offers a comprehensive overview of technology instruction in world language teacher education programs in the United States. Though many national and international educational entities highlight the importance of technology training and propose various guidelines for language teacher education, the prior literature has had very little to say about how pre-service teachers are prepared in actual practice. Using document analysis of the syllabi of the U.S.’s top ten world language teacher education programs, Zhang and Deroo found major variations in the technology training that was provided, which can be divided into three main types, with nine categories of learning activities – prominently including attendance at educational technology conferences. Zhang and Deroo further identified four themes that summarize the prevailing objectives of technology instruction: 1) understanding issues about technology, teaching, and learning, 2) integrating technology into teaching, 3) developing positive attitudes and greater confidence towards technology, and 4) documenting professional growth and reflection. The authors argue in favor of adding digital portfolios to technology-related courses to help situate technology training in authentic scenarios.
Chapter 2, “EFL Teachers’ Knowledge of Technology in China: Issues and Challenges,” by Yanjiang Teng, systematically reviews English as a foreign language (EFL) teachers’ knowledge of technology across different school levels in China. This chapter first provides an overview of ICT use in education; technology-related EFL curriculum reforms; and the development of teachers’ technology training in China during the last several decades. It goes on to review what kind of technology knowledge is needed for EFL pre- and in-service teachers, and points out the need for more professional development targeted at integrating technology into pedagogy for EFL teachers, in order to meet the pedagogical needs of EFL teachers in China. By way of conclusion, this chapter identifies three major challenges that Chinese EFL teachers face when integrating technology into their instruction: 1) insufficient technology knowledge; 2) lack of resources in rural areas; and 3) limited support for EFL teachers’ technological and pedagogical needs, and makes a series of specific recommendations based on these findings.

Chapter 3, “Technology Standards for Chinese Language Teacher Education” by Wenxia Wang and Liling Feng, reviews and compares the technology standards of Chinese-language teacher education in China against those of world language teacher education in the U.S., using the framework of Technological, Pedagogical, and Content Knowledge (TPACK, see Mishra & Koehler, 2006). TPACK postulates that teachers’ technology knowledge should be interactive and integrated with pedagogical content knowledge, and standards promulgated by the International Society for Technology in Education include all TPACK components and require U.S. teachers to be able to apply TPACK in their teaching. But in the next stage, licensing and re-certification, the Interstate New Teacher Assessment and Support Consortium (InTASC) does not specifically include technological knowledge among its core standards. Nor does the last stage or the stage of advanced professional certification by the National Board for Professional Teaching Standards has direct coverage of technological content; instead, technology is treated as an integral part of teachers’ knowledge. Using TPACK as the guiding framework for comparison, Wang and Feng find that technology is included in the standards of world/Chinese-language teacher education in both China and the United States. On the other hand, the Chinese standards are comparatively brief and mainly focus on technology knowledge as a single distinct component that does not link to other elements the American standards are more aligned with TPACK and highlight the connections between technology knowledge and pedagogical and content knowledge. Wang and Feng call for more detailed technology standards to guide Chinese-language teacher education in China.

Section 2: Language Teachers’ Perceptions and Uses of Technology

Whether or not language teachers use technology, what types of technologies they use, and how they use them are subject to the influence of various factors extrinsic and intrinsic to teachers. Around these issues, the five chapters that make up Section 2 examine how first- and second-order factors (Ertmer, 1999) drive language teachers’ actual use of technology. Chapters 4 and 5 investigate the reasons that teachers use or do not use technology, with the former focusing on the uptake of ICT by Chinese-language teachers in the United States, and the latter on the use of mobile technology by English-language teachers in China. Chapter 5 also links these teachers’ use of technology to TPACK. Chapters 6, 7, and 8 are case studies documenting which technologies teachers use and how they use them to meet their pedagogical needs. Chapter 7 focuses on Spanish-language teachers’ and students’ experience in a hybrid environment. Both these groups of respondents identified challenges during this implementation. Chapter 8 portrays the challenges of designing an effective flipped lesson for teaching Japanese pronunciation to English native speakers, and Chapter 9 examines Thai English teachers’ views of technology integration in Thailand.
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Together, these three chapters present a consistent picture of the requirements and challenges of the technology integration process in second/foreign language education.

Chapter 4, “Language Teachers’ Perceptions of External and Internal Factors in Their Instructional (Non-) Use of Technology,” by Haixia Liu, Chin-Hsi Lin, Dongbo Zhang, and Binbin Zheng, examines the reasons behind teachers’ use or non-use of ICT in language classes. Drawing upon two frameworks that identify factors affecting technology use in general – the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) – Liu, Lin, Zhang, and Zheng examine how internal and external factors affect pre-service K-12 Chinese-language teachers’ use of technology in the U.S. Based on the results of a questionnaire and group discussions among 47 teachers who were completing their certification while teaching full-time in K-12 schools, the authors report that many first-order barriers have been greatly reduced in most schools (see Ertmer et al., 2012). On the other hand, the authors identify five external barriers to Chinese-language teachers’ use of technology, including a) lack of technology, b) difficulty in accessing the available technology, c) lack of technical support, d) lack of proper assessment, and e) negative parental attitude, as well as two main internal barriers: negative attitudes originating from teachers’ pedagogical beliefs, and lack of technology-related knowledge, which are only likely to be remedied by ongoing professional development.

Chapter 5, “Identifying Contributors to Improved Mobile-Based TPACK Competency of Elementary School Teachers in China,” by Zhong Sun, Jiaxin You, Zheng Qu, Wei Song, and Liming Luo, reports on a study of more than 500 EFL teachers in a mobile-based learning environment in China that examined these teachers’ self-efficacy, technology acceptance (including perceived usefulness and perceived ease of use), and TPACK. Using structural equation modeling, the authors determined that teachers’ self-efficacy has an indirect significant positive effect on TPACK, mediated by technology knowledge and technological pedagogical knowledge; that teachers’ perceptions of technology’s usefulness significantly predicted their TPACK through technological pedagogical knowledge; and their perceptions of ease of use significantly predicted TPACK through mobile-based technology knowledge. Younger teachers with higher educational attainment also tended to have higher TPACK. Based on these findings, the authors suggest improvement in EFL teachers’ TPACK could be achieved via more professional development aimed at building confidence in technology use and technology integration into instruction.

Chapter 6, “Teaching Foreign Languages in the Twenty-First Century: Lessons from Spanish Hybrid Education,” by Sarah Gretter and Ager Gondra, examines the experiences of language teachers teaching and students learning in hybrid environments, based on an instructor survey and student course evaluations, respectively. The online component of these courses featured an online lab that provided students with abundant learning resources as well as opportunities to continue using Spanish outside the classroom, such as language exercises and interactive blog-based activities. Student feedback was very positive, especially with regard to greater engagement, enhanced opportunities, and rich resources for learning Spanish. The instructors, meanwhile, indicated the benefits of the online lab for both students’ course preview and reinforcement through independent learning, and reported that the availability of rich online resources had freed them up from looking for such materials, thus allowing more time to prepare their classroom teaching and refine pedagogical approaches. The teachers also liked that the technology allowed for easy monitoring of students’ progress. On the other hand, both students and teachers reported challenges associated with the hybrid environment. There were also gaps between the teachers’ and the students’ perceptions: for example, in contrast to the instructors’ view of the benefit of online lesson previewing, some students found it a major challenge to complete some online assignments (as part of their lesson previewing) without the lesson having been taught at all by the instructor.
Also, many students simply ignored the online resources. The authors recommend that the rationale of technology use be clearly defined, and that better guidance and support be provided to teachers. In addition, the perception gaps between the instructors and their students suggest that teachers may need to be strategic, flexible, and adaptive users of technology, rather than constrained by the technology that is available to them.

The learning of Japanese pronunciation by American students is very challenging due to a lack of effective pedagogical approaches, teaching resources, and in-class instruction time. Chapter 7, “Implementing a Flipped Classroom in Teaching Second Language Pronunciation: Challenges, Solutions, and Expectations,” by Kazuhiro Yonemoto, Asami Tsuda, and Hisako Hayashi, reports on a flipped classroom called eNunciate! designed and implemented by the authors to address these problems. The flipped-classroom concept can extend students’ learning outside of class, thus improving the quality and effectiveness of the lessons. Bringing together Japanese-language instructors, linguists, instructional designers, and programmers, the project included animations created from ultrasound images to visually show the movement inside speakers’ mouths, and instant-feedback quizzes, as well as instruction in Japanese phonetics and phonology. The results showed a high acceptance of this project among the instructors, who were given video tutorials on how to implement the flipped lesson. The design also increased instructors’ confidence in giving feedback on students’ pronunciation. Students reported increased awareness of their Japanese pronunciation, while the connection between in-class and online instruction also increased their satisfaction and improved their pronunciations. Based on these findings, Yonemoto, Tsuda, and Hayashi highlight the importance of connecting online and in-class learning and provide recommendations for designing and implementing flipped learning.

Chapter 8, “Divergent Teacher Viewpoints on Technology Integration in the Language Classroom,” by Andy Halvorsen, was based on a three-month observation of and face-to-face interviews with three high-school teachers of EFL in Thailand. Specifically, the chapter focuses on teacher self-identification and social networking site (SNS) participation, and these factors’ impacts on the teachers’ use of SNSs as tools for facilitating language learning and instruction. Guided by grounded theory and the constant comparative method (Corbin & Strauss, 2008), the author coded and analyzed the transcribed teacher interviews and classroom observation notes. Five code groups were generated based on the interviews: personal SNS use, instructional SNS use, cultural context, institutional context, and identity development (e.g., views of the self and on personal privacy). These codes were then examined against classroom observation codes to make sense of relationships among teacher beliefs, perceptions, self-identification, and classroom use of SNSs. The three teachers, who were purposefully selected to represent a range of experiences, presented divergent viewpoints related to SNSs and their classroom integration, reflecting their diverse positions and beliefs about these sites; their personal orientations toward the future or past; and a nexus of cultural and institutional factors (e.g., Internet connectivity in the classroom and curricular mandates). These findings shed considerable light on the complex interplay between contextual factors, teachers’ self-identification as users of technology, their perceptions of technology in education, and their use of educational technology to build and shape classroom practices.

Section 3: Technology in Language Teacher Preparation and Learning

In contrast to the previous two sections’ focus on language teachers’ perceptions of technology and practice of technological use, this final section concentrates on their preparation, professional development, and learning with regard to technology. It consists of five empirical studies that examine technology in
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both pre-service and in-service teacher education. Drawing upon different theoretical and methodologi-
cal perspectives, these five chapters present a wide range of possibilities for better preparing language
teachers for next-generation education.

Chapter 9 documents a technology-enhanced English-language teaching course in France, aimed
at enabling teachers to assess the potentials of technology and design tasks that involve it. Chapter 10
proposes a new type of English-teacher preparation course for Taiwan, based on online field experi-
ence. Chapter 11 proposes a teacher training program for Chinese-language teachers in Taiwan, using
TPACK to assess their perceptions and knowledge. Chapter 12 investigates how a methods course with
technology training for Spanish teachers impacted their teaching. Chapter 13 examines mentoring of
Spanish-course teaching assistants in the use of online tools, and Chapter 14 looks at social-media use
in pre- and in-service teacher training.

In Chapter 9, “Learning to Teach for Next-Generation Education: A Careful Blend of Action and
Reflection,” Muriel Grosbois and Cedric Sarre examine the effects of a technology-enhanced English-
language teaching course at the Paris-Sorbonne University. The French Ministry for Education requires
language teachers to have ICT skills, including computer-assisted language learning. When designing
a course to respond to these requirements for certification, Grosbois and Sarre set three objectives that
pre-service teachers needed to achieve: 1) to be able to assess the potentials and limits of technology for
language learning, 2) to be able to handle basic technological tools, and 3) to be able to design appro-
priate tasks involving technology. Over the two-year period of design and implementation, survey results
suggested that the course met pre-service teachers’ needs and expectations, and their course projects
reflected the skills they had acquired and the confidence they had gained with respect to English-class
technology integration. The study’s findings are consistent with TPACK. Grosbois and Sarre show that,
through a combination of action and reflection, pre-service teachers are likely to adapt to change and to
develop the technology skills they need for 21st-century language teaching.

In Chapter 10, “Mentoring Pre-Service EFL Teachers for Technology Integration: A Cloud-Based
Internship Project,” Mei-Hui Liu argues for the importance of field experience in training pre-service
teachers to teach with technology, and that a major drawback of existing technology training is its narrow
focus on the acquisition of technological skills, rather than on linking technological skills to pedagogy.
Liu therefore designed a language-teaching methods class that incorporated a required online internship
project designed to strengthen the link between technological skills learned in the course and specific
teaching practices. Following their 10-month internship projects, 20 Taiwanese undergraduate partici-
pants showed significant progress. Multiple sources of qualitative data indicated that these pre-service
teachers appreciated the inclusion of this online internship project in their training, had learned a wide
range of technological skills, and were able to apply them. In addition, the participants showed increases
in both their technological confidence and their attainment in technology skills. Some of the participants,
however, noted challenges, including uncertainty about how to choose an appropriate teaching approach
to meet their pedagogical needs. The author identifies several areas in need of improvement, and suggests
that the inclusion of micro-teaching activities and more role models might help to strengthen pre-service
teachers’ pedagogical knowledge. Together with the broadly similar project by Grosbois and Sarre, this
chapter points to the importance and effectiveness of online field experience and how it might be used
to prepare pre-service teachers for technology-enhanced language teaching.

Chapter 11, “A TL-TPACK Model of CSL Pre-Service Teachers’ Competencies in Online Instruction
and Learners’ Learning Proficiency,” by Hsiu-Jen Cheng, is a case study of a Chinese-language teacher
education program. Amid an increasing demand for Chinese instructors in the world, and the growing
potential for technology use in Chinese-language learning, it is essential to examine an effective way to promote Chinese language teachers’ technological knowledge. Having reviewed technology and Chinese teacher education in Taiwan, Cheng suggests that there has been insufficient training in instructional technology in that country, and proposes a new program based on TPACK and involving five research-oriented training strategies: practicum, technology-integrated course design, advisors, peer collaboration, and reflection. In the semester-long implementation of this training program, 11 pre-service teachers made notable progress, especially through its online practicum (with American learners of Chinese) and reflection components. Moreover, the survey results suggested that the training had improved the participant teachers’ pedagogical knowledge (PK), technological content knowledge (TCK), and TPACK, but that while TCK and PK improved significantly, TPACK performance remained low. These results indicate the need for further strengthening of pre-service teachers’ PCK performance, especially through ongoing professional development.

Chapter 12, “The Technology Segment of a Methods Course: Its Impact in Relation to Teaching Realities and Imagined Future Needs,” by Jason D. Hendryx, is a case study of middle- and high-school Spanish teachers who were either on the verge of completing or had recently completed a modern languages education program in a U.S. college of education. A survey consisting of a small number of open-ended questions asked how a methods course the teachers had taken, which had technology training embedded, might have impacted on their teaching; what technologies they actually used and for what purposes; what essential characteristics future modern language educators should possess; and how the methods course they took could be improved. The methods course in question adopted the approach of “3Ds”: directional (“the language being conveyed by the technology relevant to the students”), developmental (“teachers not allowing the limits of the technology […] to take away from the richness of the language being taught”), and decisive (teachers regulating “the pace of the technology” to “enhance their overall teaching effectiveness”). While the participant teachers appeared to have embraced the tenets of the 3D approach, they did not seem to remember them when the course content shifted to technology training: all tended to prioritize traditional tools (e.g., PowerPoint and online videos) or technologies that were immediately available to them (e.g., SMART boards and projectors), and rarely used emerging technologies that would allow students to work collaboratively or interactively. While no teacher seemed to give a direct indication of the impact of their training on their pattern of technology use, their imagined qualities and traits of modern language teachers showed that they were all aware of the critical import of technology in language learning, and the importance of keeping abreast of new technological developments and changing teaching environments. This chapter’s findings shed light on the gap that has often been found between pre-service teacher preparation and teachers’ actual teaching using technology (or teaching in general), and further points at the importance of professional development that takes into consideration teachers’ opinions and evolving needs.

In Chapter 13, “Mentoring Teacher Candidates to Use Online Tools,” Grisel M. Garcia Perez reports on a study that examined how the teaching assistants (TAs) of the Spanish program at the University of British Columbia’s Okanagan Campus (UBCO) became effective users of technology through participation in a learning community. Guided by Wenger’s (1998) work on community of practice, the training of the TAs was divided into several stages in which they attended workshops on how to use learning management system (LMS) as well as an online learning center (OLC) to handle course materials and provide students with individualized feedback. They also took a course in Spanish applied linguistics, in which they had opportunities to discuss issues arising from their use of technology to support student learning. During the 10-weeks training period, the TAs were asked to keep personal
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logs to document their perceptions of using the LMS and OLC and the support they had received from the learning community. Based on analysis of these logs, all the TAs had experienced considerable positive learning effects. Particularly noteworthy was the TAs’ increasingly active use of technology; in other words, there was a “feedback mechanism” embodied in the training that allowed the TAs to adjust how the technology should be used. Despite these positive effects, the author – who participated in the project as a trainer – noted a number of challenges. For example, due to budgetary limitations, the TAs worked for a relatively low number of hours, and this seemed to have placed constraints on their levels of interest in the professional development activities that were studied. In addition, the unavailability of certain technologies in physical classrooms seemed to have prevented the TAs from working closely with course instructors to bridge gaps between classroom instruction and online learning outside of the classroom. These findings contribute strongly to our understanding of the importance of TA training and collaboration between TAs and instructors in technology-assisted language learning in university-based foreign language programs.

Chapter 14, “Social Media and Foreign Language Teacher Education: Beliefs and Practices,” by Jiahang Li, examines pre- and in-service foreign-language teachers’ social media use during a teacher training program in U.S. Following a thorough review of the literature on the use of social media in teaching, Li points out the relative scarcity of research on teachers’ beliefs and practices regarding the uses of social media in the field of foreign-language teacher education. Adopting a qualitative case-study design, the author interviewed an instructor from a teacher program three times during the summer of 2013, and triangulated the interview data via online observation and teaching material data. The instructor’s teacher program was designed to improve the standards-based teaching experience of elementary-level Chinese-language teachers. Li found that, despite not purposefully including social media in her course design, the participant instructor spontaneously used YouTube, Facebook, and a Chinese social media site called QQ to engage learners, access and share information, connect formal and informal learning, and build a learning community. This may have been related to the instructor’s positive beliefs about the use of social media for preparing foreign language teachers. Based on these findings, Li concludes that when teachers’ beliefs about technology align well with their actual teaching practices, their instructional goals will be more likely to be achieved. Conversely, teachers’ beliefs can be reinforced by their teaching practices. This chapter suggests that considerable further research is needed to explore the relationship between foreign-language educators’ beliefs about technology and their teaching practices; and that more specific/targeted instructional plans are needed when integrating social media into foreign-language teacher education.

REFERENCES


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