TESOL Technology Standards

This document will form the basis for the introductory chapter of the volume. We have set it up in question-and-answer format to be as user-friendly as possible. The authors recognize that technology can be intimidating to many teachers. However, we strongly believe that appropriate use of technology in the hands of a trained teacher can be highly beneficial for language learners. Administrators and teacher educators should also be aware of these standards and use them to help in program design in their institutions.

We feel that an online component is especially needed with these standards. We see the online component including

- More vignettes, so that we eventually have items for each standard from the widest range of settings. These would be contributed by anyone, vetted, then placed online.
- A hyperlinked list of online resources. Here, too, we would encourage people to offer suggested additions that could be vetted and placed online.
- More detailed information for administrators about how they can implement these standards, including how to make decisions about equipment, training, and software; appropriate recognition for technology specialists; training needed for individual teachers and the technology specialists. Standards of particular relevance to administrators include 1.3, 1.4, 2.2, 2.3, 3.1, and 4.3.
- More hyperlinked information for those teaching completely online.
- Descriptions of types of access (one-computer classroom, class-lab, access only outside class) and links to information about suggested uses of technology in each.

These standards have been gleaned from practice and research and are focused on how English language teachers, teacher educators, and administrators can and should use technology. They build on work done in the past by the NETS (National Educational Technology Standards) Project in the International Society for Technology in Education (ISTE), but have a strong focus on specific pedagogy for English language teaching. They are designed to be applicable to teachers and students at a range of English proficiency levels in a wide range of settings in North America and elsewhere in the world.

Many of the standards mention “available” technology. We assume that the teachers and administrators who use this volume either have some access to technology or are planning to use technology in their setting. However, we do not assume that everyone has high-speed Internet access, a lab of fully equipped computers, or skilled technical support. The settings for the use of technology in this volume include face-to-face, completely online, and a mixture of both (hybrid). Technology is a moving target, so “new” equipment and software today are quickly outdated. In addition, users of technology for language teaching often have shifting levels of access, depending on where and what they are teaching. In all of the standards here, the focus is on language teaching and learning rather than on the technology itself. Since our focus is on learning, we feel that the principles of teaching in an online environment are not fundamentally

different from those employed in teaching in a face-to-face or hybrid setting. We have some performance indicators that are particularly germane to fully online teaching, and we anticipate a number of vignettes that will address that setting.

In the past 50-some years of computer use in language teaching, technology developments have not radically changed language teaching methodology. Communication and access to authentic information are much easier thanks to the Internet. Still, teachers used pen pals before they had access to keypals, and print magazines and newspapers before they had online news. Communicative language teaching certainly did not come about as a result of drill-and-practice software. Rather, a number of technology developments have encouraged a step backward in terms of language teaching methodology.

The main emphasis in these standards is on offering pedagogically solid ways of integrating and using technology in teaching methods. Bad teaching will not disappear with the addition of technology, no matter how advanced; good teaching will benefit from appropriate use of technology to help learners achieve their goals. Ultimate interpretation of the standards needs to be pedagogical, not technical.

WHAT IS TECHNOLOGY? HOW IS THE TERM USED IN THIS VOLUME?

In using the term *technology* as the focus of this standards document, we are referring to the use of systems that centrally involve computers, computer applications, and networks in all of their forms. These systems are not limited to the commonly recognized desktop and laptop: almost all electronic devices these days include an embedded computer of some sort (DVD players, data projectors, smart boards, etc.). We can anticipate increasing uses of mobile technologies in language learning applications (cell phones, PDAs, mp3 players, etc.) that similarly employ a computer at their core. Although we will use the term *technology* consistently throughout, we also acknowledge the importance of the term *CALL* (computer-assisted language learning) as a generic indicator for this field. In the domain of language teaching and learning over the past 25 years, including within TESOL, CALL has been the dominant referent used for implementations of electronic devices and systems for language teaching and learning. The CALL acronym is found not only in the name of the CALL Interest Section of TESOL but also in the appellations of a number of other organizations (EuroCALL, APACALL, PacCALL, JALTCALL, WorldCALL, CALICO) and in regional and international journals associated with those groups. We will therefore at times make reference to CALL and will also use terms such as *digital* and *electronic* on occasion.

WHO WILL USE THE STANDARDS, AND FOR WHAT PURPOSES?

Student and teacher standards are targeted at a variety of stakeholders and have been crafted to be relevant to both ESL and EFL settings. Further, these standards are designed for those who are involved in teaching that is completely face-to-face, completely online, or a mix of the two: the vignettes illustrate specific uses in each of these contexts. The overall objective is to provide guidance, not to set barriers or unrealistic expectations. We

recognize that in the best of settings implementation of these standards and those that follow may be a lengthy process. A teacher graduating from a professional program today will potentially be teaching another 40 years or more. Thus it is imperative to provide mechanisms for foundational as well as ongoing professional development in a way that is sustainable and supportive rather than punitive. It is important to note that within the teacher standards, we distinguish "basic" from "experienced" levels of technology knowledge and skill. While difficult to formalize, we do this to acknowledge both the need for an articulated common base and the advantages to the teacher and the employing institution for going well beyond that base.

The range of anticipated stakeholders for student and teacher standards and examples of the purposes for which they may use the standards are as follows.

Student Standards

Educational policy groups, including Ministries and Boards of Education

- to provide guidance and funding for institutional technology infrastructure and support personnel
- to provide mechanisms for adapting and refining standards for local contexts
- to provide systems for certifying when standards have been met

Professional organizations

- to advocate for the promulgation of student standards
- to provide or support the development of mechanisms for determining whether standards have been met
- to offer materials, courses and workshops to assist teachers and institutions in facilitating student achievement of the standards

Materials writers and publishers

- to develop textbooks and other materials, including software and websites, that support achievement of the standards
- to develop textbooks and other materials that incorporate activities and tasks that utilize the skills and knowledge in the standards

Teacher education programs

- to ensure that teacher candidates know about and understand the student standards
- to provide opportunities for teachers to see how standards can be implemented with their future students

Teacher educators in both pre-service and in-service settings, including CALL specialists and other ESOL teacher educators

- to aid teachers in understanding the role of student standards in language education
- to provide instruction in training students effectively in the use of technology
- to provide instruction in how to assess student technology skills and knowledge

Institutional administrators

- to realize the importance of developing technological literacy for language learning
- to ensure the institution has sufficient infrastructure for the successful realization of student standards
- to develop and monitor suitable implementation of technology in their language programs

Teachers

- to know what is expected of them in terms of knowledge, skills and curriculum implementation
- to prepare students in effective use of technology for language learning and for achieving digital literacy
- to assess students' technological skills and knowledge
- to provide activities and tasks that appropriately integrate the students' progress in meeting the standards in the pursuit of language learning objectives
- to serve as a springboard for ideas about creatively and effectively integrating technology into teaching

Students

- to know what is expected of them in terms of technology knowledge and skills
- to know what is expected in terms of appropriate patterns of technology use
- to evaluate course options when feasible to decide which ones best support standards development

Parents, parent organizations, and sponsors

- to determine whether objectives are being addressed
- to support students at home
- to evaluate language programs

Teacher Standards

Educational policy groups, including Ministries and Boards of Education

- to provide guidance and funding for institutional technology infrastructure and support personnel
- to provide mechanisms for adapting and refining standards for local contexts
- to provide systems for certifying when standards have been met
- to provide funding and other support for continuing teacher education

Professional organizations

- to advocate for the promulgation of the standards
- to cooperate with other organizations in the continuing development of consistent standards
- to provide or support the development of mechanisms for determining whether standards have been met, including teacher certification
- to offer materials, courses and workshops to assist teachers and institutions in facilitating achievement of the standards

Materials writers and publishers

- to develop textbooks and other materials, including software and websites, that support achievement of the standards
- to develop textbooks and other materials that incorporate activities and tasks that utilize the skills and knowledge in the standards
- to ensure appropriate support for technological applications requiring skills and knowledge beyond the basic standard targets.

Teacher education programs

- to incorporate all relevant standards into the teacher education curriculum
- to ensure that a technology infrastructure is in place so that teachers may have hands-on experiences with technology
- to ensure that current program faculty either meet or are being provided with support toward meeting the standards
- to actively seek technologically proficient faculty for future hires

Teacher educators in both pre-service and in-service settings, including CALL specialists and other ESOL teacher educators

- to diagnose teacher candidate skills and knowledge
- to develop pre-service courses & sequences
- to integrate technology appropriately into existing teacher education courses
- to ensure that teacher candidates have been introduced to and apprised of the importance of the standards
- to provide opportunities for teacher candidates to see how standards can be implemented

Institutional administrators

- to realize the importance of integrating technology in their teaching.
- to develop and monitor suitable implementation of technology in their language programs
- to set qualification standards when employing new staff
- to set reasonable goals when training existing staff

Teachers

- to realize the need for integrating technology in their teaching
- to know what is expected of them in terms of knowledge, skills and curriculum implementation
- to understand the need for continual learning throughout their professional careers
- to challenge themselves to reach a higher level of proficiency in using technology in their teaching (“expert” skill)

Students
- to recognize what to expect from institutions
- to recognize what to expect from teachers

Parents, parent organizations, and sponsors
- to determine whether standards are being met
- to advocate for school support of standards
- to evaluate language programs

HOW WERE THESE STANDARDS DEVELOPED, AND HOW ARE THEY DIFFERENT FROM OTHER STANDARDS RELATED TO STUDENTS, TEACHERS, AND TECHNOLOGY?

The Technology Standards Task Force began by looking at the material developed by Sophie Ioannou-Georgiou and the Ad Hoc Committee on the Technology Standards as part of the initial proposal to the Standards Committee to get guidance about the direction and scope of the project. We used TESOL's *ESL Standards for Pre-K – 12 Students*, *Standards for Adult Education ESL Programs*, and the recent *PreK-12 English Language Proficiency Standards* to help us in deciding the format and features to include. For content, we looked at the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS). These are widely used in the United States in primary and secondary education. We examined NETS for Students, NETS for Teachers, NETS for Administrators, NETS for English, and NETS for Foreign Languages to see if there were basic concepts that would also be useful for our somewhat different purposes. We also looked at the Information and Computer Technology for Language Teachers (ICT4LT) "Can Do" lists (http://www.ict4lt.org/en/index.htm) for technology-specific competencies for teachers.

We also drew upon articles by Phil Hubbard (Critical Issues: Professional Development in Egbert & Hanson-Smith, *CALL Environments 2nd ed.*; Why call CALL "CALL"? by Levy & Hubbard in *CALL Journal 18*.3, 2005; and The Scope of CALL Education by Hubbard and Levy in Hubbard & Levy, *Teacher Education in CALL*) and Greg Kessler (Technology Standards in Foreign Language and ESL Education in Ross's *Developing Competency: A Standards-Based Approach to Technology Integration*).

The Task Force pulled out some basic competencies from the NETS standards, with a focus on NETS for Students and NETS for Teachers as a framework to begin with. We added, edited, and deleted, using our experience as and with teachers at a range of levels from primary to university and continuing education, and our experience with students from preschool to university and continuing education. A series of online and face-to-face discussions allowed us to put together the current standards.

These are different from the existing TESOL Standards in several major ways:
- We include standards for both students and teachers in one volume. They are closely interrelated, so should appear together.

- We include standards for students and teachers at all levels in one volume. Where there are substantive differences, such as between approaches designed specifically for young children and those designed for adults, we note these. The vignettes are designed to clarify the distinctions, as well.
- The standards are designed to work for an international audience. As such, they are set out in ways that acknowledge the variation in technology infrastructure between high Internet speed, high-resource and low Internet speed, low-resource environments.
- We distinguish between baseline expectations of teachers and expectations for those who have more technology expertise. Many teachers are called upon to serve as formal or informal technology coordinators for their schools. Such teachers should meet the higher level of expectation and should be appropriately compensated for their demonstrated higher level of skill.

WHY ARE THE STANDARDS NEEDED?

The rationale guiding the need for General Standards is the fact that they level the playing field and can guide teachers towards more effective practice. Additional justification for the necessity of technology standards is that they will give prominence to technology issues, will help educators realise the potential benefits of technology, and will prompt them to learn to use it in their teaching. It is also equally important for administrators and policy makers to realise the significant role of technology and to support the learning process by providing the necessary structure, support, and infrastructure for the use of technology. It is also hoped that the existence of Standards will help clarify the difference between simple use of technology (i.e., as another visual aid or as another drill machine in audiolingual style fashion) and quality use of technology (e.g., as in developing critical thinking and autonomous learning and maximising beneficial interactions).

Technology Standards may also help in minimising the digital divide that exists between countries but also *within* countries. In the United States, for example, Hispanic children are less likely to have home use of computers and the Internet (U.S. Census Bureau, 2001). Only 43% of Black children and 37% of Hispanic children live in computer households, compared to 77% of White non-Hispanics and 72% of Asians. The existence of technology standards in ESL can, hopefully, help minimise this gap by encouraging adequate access to technology and development of appropriate skills during school hours.

Another kind of divide, and the one that will take the place of the original digital divide as access to technology increases, exists in the difference in the kind of technology education offered to the students (Warschauer, 2003)—that is, not in unequal access to technology but unequal ways that computers are used. This is, perhaps, a familiar experience for many of us. The TPS Chair, for example, has personally verified the claims made in the literature. She recently worked with one of the most well- equipped primary schools in Cyprus. The school has a networked computer lab with printers and data projector, one of the richest software libraries on the island, and an Internet

connection which covers all the computers of the lab and all the computers in the school, which are also linked on the same LAN (one computer in each classroom). Despite all of the available technology, many classroom teachers never used the computers at all. Some used them to prepare their work and handouts, and two teachers sometimes used the computer lab. The most surprising discovery came when working with the school leavers (6^{th} formers, 12-year-olds). The majority of the children could not perform basic tasks such as how to type, how to deal with pop-ups when switching on the computer, or how to save on a floppy disk. Similar problems were encountered in many other primary schools visited by the TPS Chair, and we believe that this is not a situation unique to these schools or to the country in question. These findings further establish the need for teacher training.

It has also been discussed in the previous section that although technology has a great deal to offer for the development of our students, much depends on how teachers use it in their classrooms. Wengliski (1998), for example, found a negative relationship between the frequency of use of school computers and school achievement, which indicates a less than ideal implementation of computers. Pelgrum and Plomp's study (2002) offers further support to Wengliski's findings. It is imperative, therefore, that teachers have guidance in their implementation of technology; something which may be offered through a set of Technology Standards.

Apart from helping towards quality use of computers, Technology Standards are also necessary towards helping educators and policy makers make the first step in technology implementation: actually using computers. A sad fact, also discussed in the previous section, is that in many schools teachers simply do not use the technology even when it is made available to them (Cuban, 2001). The existence of Technology Standards may prove to be the force which will encourage teachers to use technology.

To sum up, Technology Standards can be an opportunity for the EFL/ESL community to clarify expectations regarding the integration of technology in teaching and learning. They can assign technology the 'official' recognition of its importance in our field. As Davison (in press) points out, the application of Technology Standards in ELT has the following benefits:

a) the establishment of a shared set of expectations or practices for IT in ELT.
b) the articulation of a clear set of stages for the development of teacher IT competence which might be used as a guide for professional development programs or for independent learning
c) the explicit recognition of achievement or progress in the development of IT competencies among teachers or organisations.

Although there are other Standards documents available, which have been developed by TESOL and other organisations, these do not fully cover the needs of the profession. In TESOL's existing Standards, for example, technology is made conspicuous by its absence. This fact has been established by the TPS members themselves, by other

TESOL members who need guidance in technology use and have reported not finding it in TESOL Standards**,** and by others in the literature (e.g., Davison, in press).

Davison (ibid) also ascertained the absence of Technology Standards suitable for ELT teachers in Australian and European Standards documents, whereas the TPS has ascertained the same absence in U.S. Standards documents, such as the Los Angeles Instructional Technology Plan, the National Educational Technology Standards for Teachers, the Kentucky State Standards, or the Technology Education Standards of the Arizona Department of Education. Even in cases where special effort is made to link Technology Standards to specific subjects, there seems to be little or no reference to Second or Foreign Languages. The EFL/ESL teacher, however, does not simply need Standards on general computer use and competencies, but Standards guiding towards how computers should be used specifically in the EFL/ESL classroom environment.

On the other hand, in cases where Standards are written for specific subjects in mind, there is a lack of reference to technology. Nevertheless, the TPS proposes that the developments made by other organisations be used to their full potential. This can be done by uploading the Technology Standards that will be developed by TESOL and linking to the NETS and other Standards so that interested parties may obtain more information and ideas, if so required.

It must be emphasised that most of the Standards initiatives which exist are U.S.-based, and TESOL should realise the potential influence that it has for and the support that it can offer to its international members. In many countries there are no Standards available, let alone Technology Standards. The development of Technology Standards by TESOL can, therefore, prove very helpful to our international colleagues.

Finally, the existence of Technology Standards will help teachers realise the emphasis that is placed on technological literacy and the importance it carries for the students' future welfare and competitiveness at the workplace.

HOW SHOULD THE STANDARDS BE APPLIED?

The technology standards are intended to be used by a wide range of audiences that vary from ESL classrooms in primary schools, specialized ESP courses at the postsecondary level, and functional literacy classes for immigrant students. As a result of this breadth of users, these standards cannot be viewed as a standalone document that can readily be applied equally across contexts for the purposes of assessment. Rather, these standards form the first part of a jointly constructed process of assessment. In the first phase, educators in their local contexts can consult these standards in order to understand the breadth and depth of knowledge and skills that are associated with technology integration and use in language learning and teaching. In this way, the standards serve as a set of parameters for helping educators develop an assessment plan that works for their particular local contexts, as each context will undoubtedly have unique resources and

constraints. Throughout the document, we have included thorough vignettes that help illustrate this process of adaptation to local contexts.

Performance-based assessment. Most of the standards in this document are performance-based, as many uses of technology in the classroom lend themselves well to observational assessment. Performance indicators of this sort are found throughout both the student and teacher standards and are often marked by verbs such as "perform, use, operate, document, participate and identify." Whenever possible, we have attempted to write the standards so that the outcomes are directly observable and can assess what students and teachers actually **do**.

In other instances, assessing what teachers and students **know** is less straightforward and often relies either on indirect forms of performance assessment, or on more elaborately constructed performance assessment tasks than might be readily observable in a typical classroom setting. In other words, meeting these technology standards takes place both inside and outside of the classroom. For example, one of the performance indicators for Teacher Goal 1, Standard 3 stipulates that the teacher should "explore the possibilities inherent in emerging technologies with a critical eye." Such a performance indicator might require local educators to request that teachers provide an oral or written critical evaluation of three different emerging technologies that are being considered for adoption by the institution. In sum, we view performance-based assessment as having the following components:

- teachers and students can demonstrate the standards in different contexts of use, ranging from teaching and learning in the classroom to planning, implementing, and evaluating in out-of-classroom tasks;
- teachers can often be assessed on the basis of what their students do (for example, "Ensures that students understand how to use the technology to meet instructional goals" can be assessed by observing the students' ability to complete the task effectively and efficiently);
- the performance indicators we list provide examples of how standards can be met but do not provide an exhaustive list;
- the quality of teacher and student performance with technology is contingent on multiple factors, including teacher/student competence/skills/knowledge as well as levels of access to hardware, Internet, training, and technology support;
- some of the performance indicators can serve as a checklist only for purposes of self-assessment in identifying areas of strength and weakness; otherwise, educators must qualify the performance indicators based on their own local context in order to assess the quality of teacher and student performance

Needs analysis. Viewing assessment as a jointly constructed process also makes sense for strengthening an institution's overall integration of technology by helping stakeholders become aware of areas in need of growth. For example, in a needs analysis, teachers and students can use these standards as a self-assessment rubric to get a sense of where their experience with technology is strong and where it is in need of strengthening. A teacher might find, for example, that she readily meets the first standard of Goal 1

(knowledge and skills with basic concepts and operational competence), but that she knows less about specific details of using technology in legal and ethical ways (Standard 4), such as the local legal requirements regarding fair use, copyright, and accessibility. It is then the joint responsibility of the teachers and stakeholders to address this gap in teacher knowledge.

Multiple variables. A final point concerning the use of these standards for assessment purposes must be addressed: the sheer number of variables that influence how technology is or can be used in a given setting. Stakeholders, teachers, and students need to be aware of where they fall on multiple continua: level of access to hardware, level of access to the Internet, type and stability of Internet access, level of access to technology support, level of access to an educational community supportive of technology integration. Throughout the Standards, we have attempted to provide tangible examples of this range of variables. For example, in Goal 2, Standard 1 for teachers—"identifies appropriate technology environments to meet specific learning/teaching goals"—we suggest examples such as a lab, a one-computer class, online, and independent use. In short, there is not a one-size-fits-all way to interpret the standards, although we believe that these technology standards, in their entirety, serve as a sound and well-balanced model toward which stakeholders, teachers, and students should strive as they build technology into their local language teaching and learning contexts.

WHAT RESEARCH AND THEORETICAL BASIS INFORMS THE STANDARDS?

Three points support the need for Technology Standards:

a) The theory that technology has to be incorporated into teaching pedagogy so that students will effectively acquire a second language as well as evolving electronic literacy skills

> Teaching our students language in its traditional media is no longer enough. Traditional literacies are now only part of the skills a learner is required to develop in order to function efficiently in today's society. Increasingly in our everyday lives, as well as in our professional lives, we need the skills of electronic literacy (Warschauer et al., 2000).
>
> Chapelle and Jamieson (forthcoming) argue for an expanded view of English language teaching pedagogy, which ought to now also include the computer [and technology] as an integral part, in addition to the learner, the English language, and the teacher.
>
> Articulating three assumptions relevant to language learning, 1) guidance in learning a language is necessary, 2) English manifests itself in many varieties, and 3) teachers provide guidance and structure, Chapelle and Jamieson point out that CALL may be able to provide opportunities to add to already-used teaching strategies in significant ways in part because of its twin role, i.e., CALL can be

used to help with skills development (reading, writing, listening, speaking) and to aid with language proficiency development by providing learners with the opportunity to practice these skills, which is, as recent research suggests, how language is learned (Lightbown & Spada, 2006).

Integration figures prominently in the current discussion of CALL(e.g., Levy & Stockwell, 2006; Bax, 2003) and even though aspects of the notion of integration are being debated, that CALL can and should be used effectively in language learning is not under debate, which underscores the importance of knowledge of CALL. It is, therefore, imperative that we integrate the use of information and communication technologies in our teaching so that students become proficient not only in communication within the traditional media but also within the framework of modern communication technologies (Lee, 2002; inter alia).

The use of technology in ESL/EFL teaching and learning can also encourage the development of strategies necessary for modern survival: communication, collaboration, and information gathering and retrieval. It is well-accepted that preparing students for the information society should be one of the fundamental aims of today's education (U.S. Department of Education, 2000; OECD, 2000; European Commission, 2001). Ultimately, such skilled individuals will benefit not only themselves but also their country of residence. Australia, for example, has already recognised the great importance to the country's economy of training individuals to work in an online environment (Australian National Office for the Information Economy, 1998, cited in Davison, in press).

Hubbard and Levy (2006) emphasize that CALL must be viewed beyond classroom linkages including "research and development of a wide range of products including online courses, programs, tutors, and tools" (p. 9) as well as the re-purposing of off-the-shelf software. The common theme here is that technology is used for language learning purposes.

b) Research which shows that there are important benefits to be gained from the use of technology in language learning and teaching

That CALL should indeed be integrated into language teaching is supported by numerous studies looking at the effect of CALL on language learning. A recent research synthesis by Grgurovic and Chapelle (2007) looking at 200 experimental and quasi-experimental studies between 1970 and 2006 revealed that a) computer instruction is slightly better than "traditional" instruction (even) under the most rigorous methodological conditions and that b) "improvement is detected for CALL groups more often than not" (slide 24). Consequently, it is imperative that teachers be able to make decisions about the role of CALL in their pedagogy. However, only teachers with sufficient knowledge about CALL can make that decision wisely.

There is also evidence which indicates important benefits of technology in language learning and teaching. These are found mainly in a) improved motivation and development of positive attitudes towards learning and the target language (Pennington, 1996; Warschauer, 1996; Meunier, 1997; Ioannou-Georgiou & Michaelides, 2001), b) improved learning outcomes (Brandl, 2002; Ioannou-Georgiou, 2001, 2003a, 2003b), and c) improved retention rates (Tyrer, 1997; Ioannou-Georgiou & Michaelides, 2001).

Access to linguistic and cultural materials, opportunities for communication, provision of feedback, and learner motivation are additional applications of CALL that have been studied. Zhao's (2003) research synthesis outlines research efforts in these areas and calls for further research on comprehensive curriculum development, effective use of technology, classroom uses of technology, and empirical studies on how technology is used in schools.

c) Research which shows that technology in learning is not being used to its full potential and that one of the main reasons for this is inadequate teacher training.

There are, therefore, significant benefits to language learning that can be achieved through the use of new technologies in addition to enabling the students obtaining basic survival skills for modern society and the workplace. It is, however, questionable as to whether these potential benefits are actually brought to the students. Cuban (2001) gives evidence that computers are very much underused in today's classrooms. Both in general education and in language learning, Cuban (ibid) states that computers are mostly used for teacher preparation and mainly for word processing. Even in cases where computers are not used as expensive typewriters, and teachers use them in instruction, traditional instruction processes prevail, and the technology's potential for developing critical thinking skills and learner autonomy remains largely unrealised.

Cuban gives proof that this is not due to limited access to technology. Rather, he suggests that it might be due to the *way* teachers use the technology, thus implicating teachers' inadequate training in the area of pedagogical uses of technology. However, teacher training also must include learner training. In other words, teachers who use CALL need to be trained in teaching learners on how to use CALL programs, an issue recently discussed by Hubbard (2006).

This need for increased training and proficiency in the use of technology is echoed by Kessler (2006), who points out that "[t]eachers need to become more proficient in their understanding of CALL methodology, practices, history, and possibility" (p. 35). Along the same lines, Chapelle and Hegelheimer (2006) argue that "the resources offered by today's technologies for language learners and teachers provide valuable opportunity to rethink and perhaps reinvent what constitutes the knowledge base for L2 teachers …(p. 314).

> Thus, with the weight of responsibility falling on the teachers and their work, the existence of Standards may play a positive role. Standards can help teachers and teacher preparation programs move forward and guide them in increasing the quality use of new technologies during instruction in ways which realise technology's potential.

HOW IS THE INFORMATION IN THIS VOLUME ORGANIZED?

This introduction sets the stage for the standards. It provides a rationale and an overview for the rest of the volume. Following the introduction, we present the standards in two major sections: Technology Standards for ESL/EFL Learners and Technology Standards for ESL/EFL Teachers. In the Learner section, there are three overarching goals, each with two to five standards, for a total of eleven standards. The Teacher section includes four overarching goals, each with three to five standards, for a total of 15 standards.

Both the learner standards and the teacher standards include performance indicators and vignettes. Many of the performance indicators use examples. This is done to avoid using technical language or referring to specific brand names of hardware and software in the standards themselves. Making the performance indicators and standards more generic in terms of technology also recognizes the fact that technology changes rapidly, and specific products may no longer exist in a year or two.

The performance indicators in the student section are generally written to be applicable to a range of settings, whether high-access or low-resource; ESL or EFL; face-to-face, hybrid, or fully online; child or adult; and general English or English for specific purposes, including academic English. A few specify a particular setting, such as with young learners or fully online.

All of the standards in the Teacher section have performance indicators that all teachers should be able to meet. Some of the standards have additional performance indicators for teachers described as "experienced." This means having a high level of technology ability, knowledge, and access. These can be seen as aspirational rather than required. Those teachers who serve as technology specialists should be able to meet these standards in settings with extensive high-speed access to technology.

The vignettes in both the Student and the Teacher sections are planned to cover a range of settings, including young learners, teens, adults, EFL, ESL, intensive English programs, adult workplace English, English for specific purposes (academic and professional), one-computer classroom, class-lab, and fully online. Some of the vignettes will also show administrators and teacher educators making decisions related to technology use. The online companion to this volume can offer more vignettes, since it will not be constrained by space.

A glossary defines the specialized terms used in this volume, and an appendix addresses current research and offers resources for relevant research.

An online companion to this volume includes additional information, resources, vignettes, and a form for interested TESOLers to use to comment on the standards and to submit additional resources and vignettes. This will enable the standards to be kept current more easily.

HOW WILL THESE STANDARDS BENEFIT THE TESOL PROFESSION?

TESOL is always encouraging its members towards professional development. Many colleagues are still struggling with the use of technology and would find it helpful if they were guided in their efforts through the existence of standards. Technology standards are also of benefit to teacher educators in designing curricula to prepare the next generation of teachers and to administrators to ensure that they are moving in the right direction institutionally in their use of technology for teaching and learning.

Where technology is concerned, there is no turning back. Every current or future stage of English language teaching will include technology in one form or another. As a leader in the field of English language teaching worldwide, TESOL cannot ignore technology or assume that teachers, teacher educators, administrators, and students have all the help they need in making decisions about the optimal use of technology in language learning.

These standards offer a focus on good language teaching with technology, not on technology itself. This approach keeps teaching and learning at the heart of what happens in our work, with technology as a means to better enable students to achieve their goals. These standards will serve as a guide as TESOL strives to enable the best possible language learning environments.

TESOL Technology Standards for Students

Goal 1: Students demonstrate foundational skills and knowledge in technology for a multilingual world.

Standard 1: Students can use basic operating system and browser functions.

Performance indicators

- Students can perform basic computing functions (e.g., turning the computer on and off; opening, closing and resizing software windows; saving, editing and organizing files and folders; copying, cutting and pasting elements within a document; launching and exiting software applications and similar universal tasks; recognize file types)
- Students can perform basic browser functions (e.g., recognize hyperlinks, navigate forward and back, type in an address, use bookmarks, recognize the format of a URL)
- Students can recognize the format of an email address
- Students know how to reboot the computer
- Students recognize when they are and are not online
- Students can use accessibility options as needed (e.g., zoom for visually impaired students, TTY for deaf students, Braille keyboard)

Standard 2: Students are able to use available input and output devices (e.g., keyboard, mouse, printer, headset, microphone, media player)

Performance indicators

- Understand the layout of a standard English keyboard
- Know how to change the keyboard layout between different languages as needed
- Students understand where available media, devices, and other peripherals go (e.g., CDs go into slots or CD drives, jump drives go into USB ports, cables connect only where they fit and work, etc.)
- Students can operate available peripherals at a basic level

Standard 3: Students exercise appropriate caution when using online sources and when engaging in electronic communication.

Performance indicators

- Students are cautious when opening attachments and clicking on links in email messages.
- Students have security software running on their own computers and kept current (e.g., antivirus and firewall software).
- Underage students do not provide personal contact information except as directed by the teacher; adult students exercise caution.
- Students exercise caution in computer-mediated communication (e.g., don't leave the webcam on all the time; protect personal details).
- Students realize that any information or content that they place online can be part of a permanent record. [Vignette from the news]
- Students realize that false and potentially malicious information exists online.

Standard 4: Students demonstrate strategic competence as users of technology.

Performance indicators

- Students can perform basic troubleshooting operations (e.g., check for power, see if the monitor is turned off, reboot safely, check the volume on media)
- Students can search for a file
- Students can access a help menu, where available
- Students know when to ask for technical help
- Underage students turn off the monitor and call an adult when they have found offensive or inappropriate material; adult students realize that they may need to turn off the computer

Goal 2. Students use technology in socially and culturally-appropriate ways

Standard 1: Students understand that communication conventions differ across cultures, communities, and contexts.

Performance indicators

- Students understand that there are similarities and differences in local and global communication
- Students understand that there are multiple ways that computer-mediated communication can be (mis)interpreted (e.g., register, turn-taking, expected length and content of messages, rhetorical versus non-rhetorical use) [Vignette]
- Students are sensitive to their use of communication conventions, according to the context (e.g., not using all caps; waiting for lag time in synchronous communication; turn-taking cues; spelling)
- Students conform to current social conventions when using technology in communication (e.g., social conventions in the classroom may restrict cell phone use)
- Students consider that there may be cultural variables at play in interpreting and responding to a message

Standard 2: Students demonstrate respect for others in their use of private and public information.

Performance indicators

- Students understand that public information in one community may be considered private in other communities
- Students understand that images may carry different connotations in different communities (pigs as symbols of prosperity vs unclean animals)
- Students use communications and digital media tools ethically and responsibly (they don't secretly videotape others and post on YouTube)
- Students practice responsible and ethical use of technology systems, information, and software. (they don't make and distribute illegal copies; they don't hack into computer systems; they document sources as appropriate)
- Students accommodate different communication styles online

Goal 3. Students use technology-based tools as aids in the development of their language learning competence as part of formal instruction and for further learning.

Standard 1: Students effectively use available technology-based productivity tools

Performance indicators

- Students use technology-based productivity tools as aids in production (e.g., word-processing, presentation software, and web-design software; associated applications such as spell-checkers and thesauri; templates for preparing presentations, newsletters, and reports) (option in a vignette) Students use technology tools, where available, to assist in brainstorming and creating graphic organizers)
- Students use technology-based productivity tools as aids in comprehension (e.g., translators, electronic dictionaries)
- Students use technology-based productivity tools collaboratively and individually in order to enhance their language learning competence.

Standard 2: Students appropriately use available technology-based language skill-building tools

Performance indicators

- Students employ age and proficiency-appropriate vocabulary and pragmatics/body language during collaborative work that uses technology (Vignette – webcam from hell).
- Students know when to ask for help in order to achieve their language learning objectives.
- Students use language software as available and appropriate to enhance specific skill areas (e.g., vocabulary, grammar, and pronunciation practice software).
- Students use Internet resources as available and appropriate to enhance their language learning (e.g., web-based listening exercises, online sentence jumbles).

Standard 3: Students appropriately use available technology-based tools for communication and collaboration

Performance indicators

- Students communicate in appropriate ways with those from other cultures and communities
- Students actively encourage others to fully participate in conversations in a language-learning context
- Students use technology tools as a means of collaborating with others for language learning (e.g., comment function in word-processors, Wiki, electronic whiteboard, CMC tools)
- Students use computer resources to communicate ideas effectively to peers or a wider audience. (e.g., blogs, podcasting, movie making tools)
- Students use available technology individually or collaboratively to create content to share with peers or a wider audience, online or offline.

- Students use instructional authoring tools individually or collaboratively to create exercises or activities for their peers or a wider audience, online or offline (e.g., Hot Potatoes, Quia, quiz functions in course management systems).

Standard 4: Students use available technology-based research tools appropriately

Performance indicators

- Students employ technology to locate and collect information from a variety of sources.
- Students employ strategies to evaluate online information (vignette using technology tools).
- Students document source material appropriately.
- Students understand how to use technology tools to organize information from research (e.g., moving information around in the word-processor, using a database or spreadsheet).

Standard 5: Students recognize the value of technology to support autonomy, lifelong learning, collaboration, personal pursuits, and productivity.

Performance indicators

- Students select the most appropriate available technology for independent learning
- Students demonstrate the ability to set language learning goals and objectives that employ technology
- Students can use technology to monitor their progress (e.g., record-keeping within programs, electronic portfolios)
- Students see the value of technology in maintaining communication and having access to authentic material

TESOL Technology Standards for Teacher

Goal 1. To acquire and maintain foundational skills and knowledge in technology for professional purposes

Standard 1: Teachers will demonstrate knowledge and skills in basic technological concepts and operational competence, meeting or exceeding TESOL technology standards for students in whatever situation they teach.

Performance Indicators

- Perform basic computing functions in order to accomplish instructional and organizational goals (e.g., using a mouse and keyboard; opening, closing and resizing software windows; saving, editing and organizing files and folders; copying, cutting and pasting elements within a document; launching and exiting software applications and similar universal tasks)
- Prepare instructional materials for students using word processing software, presentation software or web-design software.
- Exercise appropriate caution when using online sources and when engaging in electronic communication

Standard 2: Teachers will demonstrate an understanding of a wide range of technology supports for language learning and options for using them in a given setting.

Performance Indicators

- Identifies appropriate technologies to support a range of instructional objectives
- Uses evaluation tools to analyze appropriateness of specific technology options
- Shares information about available technology with colleagues
- Knows how to use online technology to deliver instructional or support material.
- Locates and can adapt a variety of digital resources

Standard 3: Teachers will actively strive to expand their skill and knowledge base to evaluate, adopt, and adapt emerging technologies throughout their careers.

Performance Indicators

- Utilizes technology tools to expand upon a conventional activity
- Keeps up with information through a variety of sources (such as books, journals, listservs, conventions)
- Participates in a relevant community of practice
- Explores the possibilities inherent in emerging technologies with a critical eye

Standard 4: Teachers use technology in legal and ethical ways.

Performance Indicators

- Protects student privacy (In the vignette: avoid putting student email addresses, biodata, photos inappropriately online; fully informs students about public sharing of blogs and websites; uses password-protected sites when possible)
- Respects student ownership of their own work (vignette: does not freely share student work inappropriately; does not require students to post their work publicly)
- Shows awareness and understanding when approaching culturally sensitive topics and offers students alternatives
- Conforms to local legal requirements regarding accessibility
- Conforms to local legal requirements regarding fair use and copyright
- Follows local guidelines regarding use of human subjects for research
- Seeks help in identifying and implementing solutions related to the above

Goal 2. To integrate pedagogical knowledge and skills with technology to enhance language teaching and learning

Standard 1: Teachers will identify and evaluate technological resources and environments for suitability to their teaching context.

Performance Indicators

- Identifies the technological resources (e.g., hardware, communication technologies, digital material, courseware) and limitations of the current teaching environment
- Identifies appropriate technology environments (e.g., lab, one-computer class, online, independent use) to meet specific learning/teaching goals
- Evaluates technology environments for alignment with the goals of the class
- Evaluates technological resources for alignment with needs and abilities of the students (vignette: SmartBoard; identifies tools in a CMS that would be useful etc.)

Standard 2: Teachers will coherently integrate technology into their pedagogical approaches.

Performance Indicators

- Understand their own teaching styles
- Review personal pedagogical approaches in order to use technology to support current teaching styles
- Understand the potential and limitations in technology
- Embed technology into teaching rather than making it an add-on
- Engage regularly in professional development related to technology use
- Evaluate their use of technology in teaching

Experienced level of technology use

- Can address the limitations in technology
- Support peers in their professional development with technology (informally may be unpaid; formal should be paid)

Standard 3: Teachers will design and manage language learning activities and tasks using technology appropriately to meet curricular goals and objectives.

Performance Indicators

- Demonstrate familiarity with a variety of technology-based options
- Choose a technology environment that is aligned with the goals of the class
- Choose technology that is aligned with needs and abilities of the students (Vignette: language learning focused software versus productivity tools versus content tools)
- Demonstrate awareness of students' level of digital competence
- Ensure that students understand how to use the technology to meet instructional goals

Experienced level of technology use

- Adapts technology-based activities to align with the goals of the class and needs and abilities of the students
- Creates an appropriate technology environment to meet specific teaching/learning goals
- Operates with an understanding of the underlying structure of the technology in use
- Can draw on a wide range of functions in technological resources
- Identifies more than one approach to achieve an objective (vignette: has a backup plan for when the tech isn't working)

Standard 4: Teachers will use relevant research findings to inform the planning of language learning activities and tasks.

Performance Indicators

- Demonstrates familiarity with suggestions for classroom practice that result from research
- Uses a variety of avenues for getting information about research, such as communities of practice, conferences, etc.
- Understands the temporal nature of research findings (technology changes over time, so older research may not be applicable to current settings)
- Demonstrates awareness of multiple research sources and perspectives that inform technology use
- Discerns which findings are most appropriate for their situation
- Shares relevant research findings with others
- Recognizes the context and limitations of research and does not apply findings inappropriately

Experienced level of technology use

- Well-versed in relevant research findings
- Identifies gaps in current research
- Helps others recognize the context and limitations of research
- Produces and disseminates research related to technology use

Goal 3. To apply technology in record-keeping, feedback, and assessment

Standard 1: Teachers evaluate and implement relevant technology to aid in effective learner assessment.

Performance Indicators

- Be familiar with a variety of forms of assessment that employ technology
- Employ appropriate record-keeping tools and techniques (e.g., software-based classroom management function, electronic gradebook, reports to stakeholders) [Vignette re personal preferences]

Experienced level of technology use

- Use computer-based diagnostic, formative, and summative testing where feasible
- Use technology to illustrate learner progress (e.g., graphic representations of scores over time, revision history)
- Provide feedback through exchange of digital files (e.g., review tools in writing; annotated comments in speaking)

Standard 2: Teachers use technological resources to collect and analyze information in order to enhance language instruction and learning.

Performance Indicators

- Be familiar with research-based principles related to technology-enhanced assessment
- Use technology-enhanced assessment results to plan instruction
- Interpret computer-based test scores for stakeholders (e.g., TOEFL, other standardized tests)
- Elicit student feedback in order to improve teacher use of technology

Experienced level of technology use

- Apply research findings related to technology-enhanced assessment
- Collect student output for analysis (e.g., concordancer to analyze lexical complexity, chat logs)
- Use digital resources to document teaching for further analysis (e.g., digital recording of lectures and class interactions, digital logs of interactions)

Standard 3: Teachers evaluate the effectiveness of specific student uses of technology to enhance teaching and learning.

Performance Indicators

- Use appropriate procedures for evaluating student use of technology (e.g., rubrics, checklists, matrices – these may look at enjoyment)
- Elicit student feedback in order to improve student use of technology [possible vignette to explain that it should be ongoing]

Experienced level of technology use

- Develop and share procedures for evaluating student use of technology
- Examine student outcomes that result from use of technology
  [vignette – outcome => more complex language seen from logs]

Goal 4. To use technology to improve communication, collaboration, and efficiency

Standard 1: Teachers will use communication technologies to maintain effective contact and collaboration with peers, students, administration, and other stakeholders.

Performance Indicators

- Draws on resources (lesson plans & teaching ideas) for language teachers that are posted online
- Implements lesson plans obtained from other teachers via the Internet
- Belongs to online communities (such as listservs, blogs, wikis, podcasts, etc.) with language teachers
- Shares email address with students and peers

Experienced level of technology use

- Maintains an electronic forum (such as webpage or blog) to post information for students about the class
- Views and comments on students' electronic work (such as electronic portfolios, project work, websites, etc.)
- Advises administration on the use of online technology to improve communication
- Shares instructional material digitally

Standard 2: Teachers will regularly reflect on the intersection of professional practice and technological developments so that they can make informed decisions regarding the use of technology to support language learning and communication.

Performance Indicators

- Takes advantage of professional development related to technology integration e.g., conferences, journals, mailing lists, communities of practice)
- Selects technology resources that promote appropriate language use
- Demonstrates awareness of multiple sources and perspectives that inform technology use
- Discerns which findings are most appropriate for their situation

Experienced level of technology use

- Stays informed about how to use new technologies (e.g., podcasts for listening and speaking, blogs for writing and reading)
- Integrates technology in innovative ways (vignette: teacher who doesn't just use one pre-packaged option)
- Engages in research (including classroom-based) and shares the results

- Advises decision-makers about appropriate technology resources and environments

Standard 3: Teachers will apply technology to improve efficiency in class preparation, grading, and maintaining records.

Performance Indicators

- Uses electronic resources to find additional materials for lesson planning and classroom use
- Understands various methods of providing electronic feedback on student work (e.g., email, Insert comments)
- Has a system to collect, organize, and retrieve material and student data

Experienced level of technology use

- Maintains a resource that allows students to locate and retrieve material
- Uses electronic methods as appropriate for formative and summative assessment
- Encourages students to use electronic methods to document their own progress