

Assessment and e-learning: Current issues and future trends

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This paper describes different ways in which digital technology can be used for language learning. It then identifies some key trends connecting assessment and technology in language learning and higher education: the use of automated systems to enhance traditional assessment practices; the use of Web 2.0 tools to facilitate new assessment practices; and, the increase in new skills and content areas in language learning which are a consequence of the rise in the use of technology. These are especially important in the creation of collaborative digital projects. The paper concludes by pointing out the implications of these trends for pedagogy and changing teacher roles.

Keywords: digital technology, assessment, Web 2.0 tools, collaborative projects, digital literacy

Introduction

The use of digital technology for educational purposes, including second and foreign language learning, is rapidly expanding. There are probably few higher education institutions that do not use some kind of Learning Management System (LMS) in which students can register for courses, check their curriculum, download materials, and take quizzes or tests online. Most students would expect to use a digital device to carry out an internet search when they write a paper or look for an appropriate website to practice a language skill. Many teachers, too, use these same online opportunities as their students to create and carry out their lessons. However, it is not clear whether digital technology is used to the same degree in assessing outcomes as it is in creating

learning opportunities. Twyman (2014) points out that there have been historical barriers to assessment including difficulties in 'simultaneously teaching and measuring' (p. 104); that is, it can be very challenging for teachers to carry out the twin roles of teaching and assessing. It is important; therefore, to see if there are affordances of technology for assessment that can be taken advantage of, especially as e-learning has the potential for almost instantaneous feedback and adjustment of learning tasks and activities.

In linking technology and assessment it appears that there are, at least, two main challenges facing language teachers. The first is that teachers need to learn 'technology fluency' (Godwin-Jones, 2015, p.11) in order to use digital tools for assessment in general; and the second challenge is that the use of technology in language learning is leading to a number of new skills and knowledge areas, such as digital collaboration, that need to be assessed. In order to shed light on these challenges the paper surveys three areas:

1. The use of technology for language learning.
2. The use of technology for traditional language assessment and for new forms of assessment.
3. New skills and knowledge resulting from the use of technology in higher education.

The paper concludes by identifying potential changes in pedagogy and teacher roles to take account of such trends in digital technology and assessment.

1. The use of technology for language learning

In this first part of the paper we briefly outline examples of ways in which technology is being used for language learning and refer to one recent published framework which outlines four different approaches to e-learning. We hope this will provide some background to technology use in language learning before we move on to examine technology and assessment.

Technology of various kinds has been used in language learning for many years and has gradually changed as technology itself has evolved. For example, many veteran language teachers will have memories of working in language laboratories with rows of students using headphones to listen to and repeat dialogues on tape. More recently, many teachers use virtual environments to teach students whom they never meet face to face. Yet other teachers will be encouraging their students to communicate, collaborate and create digital projects using various kinds of interactive Web 2.0 tools and applications. Examples include Google Docs (a collaborative text making application), Padlet (a collaborative notice board for brainstorming and sharing) and WordPress (a blogging and website creation software). Students themselves use laptops, tablets, and especially smartphones (Pegrum, 2014) to access all kinds of language learning applications from online dictionaries to speech recognition software and automated writing feedback.

In order to provide a brief guide to the use of technology for language learning we refer to Cowie and Sakui (2014) who provide a framework of four approaches based on a sample of expert teachers. This overview (Table 1) is a useful summary of the different kinds of technology, software tools and learning activities that experienced language teachers in different countries are using.

Table 1: A summary of four e-learning approaches (based on Cowie & Sakui, 2014)

APPROACH	Blended language practice	Blended Web 2.0 projects	Online	
FEATURE	Out-of-class			
Need for an LMS	Yes/No	Yes/No	Yes	Vital
Software tools	Web 2.0 E-books (language skills)	Web 2.0 (language skills)	Web 2.0 (collaborative tools)	Virtual classrooms
Teaching approach	Traditional	Audio-lingual Task- based	Content and Project-based	Online
In or out of class	Out	Both	Both	Out
Challenges	Choice of e-books and websites	Choice of software tools	Design of projects and choice of tools	Staff and materials development
Assessment	Traditional/ computerized	Traditional/ computerized	Rubrics	Computerized

The authors state that there is no hierarchy amongst the four types of e-learning and that there is much overlap between them. It seems that the out-of-class type is the easiest for an individual teacher to implement and that the online type needs the most institutional support. The blended language option includes many traditional language learning activities and can be viewed from a behaviorist perspective in that technology can help students practice repetitive basics of grammar and vocabulary development. The blended Web 2.0 project option is for teachers who have some expertise in using recent technology, and with its content-based feel can be seen as having its origins in constructivist approaches to learning with students working together to create various kinds of digital products. We believe that this framework is a useful benchmark for teachers and institutions to assess what kind of e-learning they are carrying out now or that they could offer in the future. The framework has limited information on assessment so we will move on to examine this in the next two sections; firstly, assessment in language learning and then in education in general.

2. The use of technology for traditional language assessment and for new forms of assessment

In this section we examine various recent trends in technology and assessment of language learning. First, we define what assessment is and then show how technology can be used for assessing learning, and in particular we highlight ways in which the affordances of digital technology are widening the opportunities for teachers to assess learning in different ways. These include the use of technology to enhance traditional assessment, to provide alternative assessments of language knowledge and skill development, and to provide information about other learning processes such as reflection and collaboration.

For the purposes of this paper we define assessment as the process of gathering information about student learning. This can include standardized language tests such as TOEIC or IELTS which give a moment in time view of a student's level of knowledge or skill and other measures of student progress such as teacher observations, essays, student voice recordings

and so on. Traditionally, there are two kinds of assessment – formative and summative – the former is to guide and support future learning and the latter is to assess what has been learnt during a course of study. However, in practice it is often very difficult to distinguish clearly between the two as both types can give useful information about future learning.

Digital technology has been used in traditional assessment methods for some time through the automated marking of computer tests and quizzes. As well as speeding up the process of marking this can give teachers valuable information about what students have (or have not) learned which they can use for grading and to plan future lessons (for a recent summary of other advantages of online testing, see Fageeh, 2015, pp. 43–45). As well as providing teachers with assessment opportunities many software tools are particularly suited for student self-assessment. This is especially useful for the more repetitive types of tasks and activities that are necessary to establish a basic knowledge of a language. These include automatic speech recognition for pronunciation modeling (e.g., www.englishcentral.com); automated marking and feedback on writing that give guidance on structure, grammar and vocabulary use (e.g., www.ets.org/criterion); and, grammar and vocabulary applications that assess a learner's level and provide regular review through spaced repetition flashcards and language games (e.g., www.wordengine.jp). Such tools have the potential to enhance student independence and learner autonomy by providing regular automated assessment and feedback.

In addition to enhancing traditional assessment more recent innovations have widened the kinds of assessments that teachers can carry out. Stannard and Basiel (2013), for example, advocate that individual teachers now have many more opportunities to experiment with technology to encourage and guide student learning through new kinds of assessments. The authors list a number of Web 2.0 tools which can be used to provide evidence of learning of various different skills: as an example, they suggest that Vocaroo (<http://vocaroo.com>), VoiceThread (<http://voicethread.com>) and MailVu (<http://mailvu.com>) are useful tools for audio recording of speaking skills. The advantages of these tools compared to cassette or tape recording is the ease with which students can download them for free, make repeated recordings and then share with their classmates and teacher alike. In this way such tools can enhance opportunities for self-reflection, peer-modelling and teacher assessment. Stannard and Basiel go on to list further Web 2.0 tools and websites that can be used for the assessment of other skills and competencies. They state that assessment has had a traditional focus on language mechanics such as written tests on vocabulary and structure and, as noted above, there are many modern tools to assess these areas; however, there is an increasing focus on communicative competence and that this is where technology can be very useful.

Communicative competence has been assessed using language portfolios which include a range of evidence of language skills. Examples of such portfolios include the European Language Portfolio (Council for Cultural Cooperation, 2000) and the US Linguafolio and Global Language Portfolio (Cummins, 2008). An e-Portfolio (Oakley, Pegrum and Johnston, 2014) is a digital version of these language portfolios which can include various kinds of student-made digital artefacts such as videos and blogs which can be stored and shared on a wiki or other kind of website. Cowie and Sakui (2014), above, refer to these artefacts as Web 2.0 projects and there are other terms such as 'web authoring' (Gray, Thompson, Sheard, Clerehan, & Hamilton, 2010a). By using Web 2.0 tools teachers have access to the products and processes of learning that were not previously possible and in doing so technology can support assessment that is 'constructively aligned' (Biggs & Tang, 2007) with teaching and

learning; that is, technology can help in the assessment of real world tasks and learning outcomes. For example, Stannard and Basiel (2013) suggest using the Tricider tool (<http://tricider.com/en/t>) which allows teachers to track the contribution of individual students to a collaborative brainstorming process, even if the students or teacher are not present in the classroom; something which was previously impossible or unheard of until such digital technology was introduced.

In sum, we can see that technology is being used for the assessment of language learning in many ways and can result in advantages over traditional alternatives. These range from a straightforward increase in test-marking speed and feedback to the provision of data for assessment targets such as communicative competence. We can see that digital technology such as Web 2.0 tools can be used to provide evidence for both traditional language learning targets such as grammar and vocabulary items and newer digital products that are created and shared collaboratively. In the next section we move on to see how the field of education, especially at the university level, has harnessed technology for other assessment purposes that language teachers might wish to incorporate in to their practice.

3. New skills and knowledge resulting from the use of technology in higher education

The third part of our paper refers to several recent reports that examine two different trends linking technology and assessment: measuring outcomes to better support learning (learning analytics); and, the assessment of alternative learning outcomes. We do not wish to lose sight of the assessment of traditional language skills, structures and vocabulary but we feel that these two trends are significant and that language teachers need to, at least, be aware of them as the use of technology spreads further.

3.1 *Measuring outcomes to better support learning (learning analytics)*

The New Media Consortium (NMC) is a group of educational technology experts working in 17 different countries who have been examining educational technology trends over a number of years. The NMC's 2015 higher education report (Johnson, Adams, Becker, Estrada, & Freeman, 2015) identified a number of trends that will probably be familiar to many language teachers. These include the redesigning of learning spaces to enable classrooms to be 'flipped' (students typically view online content outside of lessons and have more interaction in lesson time) and an increase in the practice of 'Bring Your Own Device' (BYOD) in which students use their own phones or tablets for 'gateways to personal learning... at a pace that is unique to each learner' (p. 36).

One further trend with particular relevance is an increasing emphasis in many countries on measuring learning outcomes using technology. This is the result of a number of factors such as governmental pressure for evidence of learning and technological advances in 'learning analytics' (US Department of Education, Office of Educational Technology, 2012) that mean institutions and teachers have access to data on e-learning that they have never had previously. Such data includes the number of visits students make to a learning site or application; the amount of time that is spent on each visit; the items of learning that cause most or least difficulty, and so on. This data can provide institutions with a tremendous amount of information about learners and learning that may help them better organize their courses, although this is a complex and difficult process (Rienties, 2014).

Increasingly, there are a number of institutional and commercial learning analytic tools that are being made available to provide data to teachers. For example, the higher education sector in Australia has a wide range of expertise in this use of technology; see the Australian Learning and Teaching Council Priority Project, 2009–2010 on the use of Web 2.0 tools in higher educational institutions (Gray *et al.*, 2010b) and the University of New South Wales website which has a large variety of assessment tools and staff development materials to support teachers in carrying out online learning (University of New South Wales, 2015). Another recent example is that of the Brightspace system (<http://www.brightspace.com/about>) used by Victoria University which, it is claimed, helps students keep track of all their courses and performance and provides interactive self-assessment.

The NMC 2015 report argues that such learning analytic tools have the potential to be used to personalize learning and increase formative assessment which can lead to improved teaching and more empowered students. Such a claim is also made by Twyman (2014) who states that a 'blend of real-time, data based recommendations and teacher insight into student needs and preferences may provide an ideal framework for personalized learning that actually improves student outcomes' (p. 101). West (2011) describes a number of digital projects in US high schools where, although there is no clear evidence that technology enhances learning outcomes, it is believed that technology can be used to personalize learning by measuring performance in 'nuanced and multi-faceted' ways (p. 8). One example that West describes is that of the New York City School of One where students have a daily 'playlist' of activities such as an online tutorial or video game. Student progress is tracked electronically and they move up a level once they have shown mastery of a skill (p. 3). Similar claims are made by the educational movements for '21st Century skills' (Kaufman, 2013) and 'New Pedagogies for Deep Learning' (Fullan & Langworthy, 2014), both of which emphasise how assessment and timely feedback using technology can support better student learning.

We acknowledge that these trends in the use of digital technology described above have been criticized for being overly optimistic about the potential benefits of technology on learning (Carroll, 2013; Selwyn, 2014) and also need to be balanced against the possible resistance of teachers to train for and become used to new assessment and feedback practices (Dornisch, 2013); but it is useful for teachers to know about such trends and to try to use them to their advantage whenever possible.

3.2 Assessment of alternative learning outcomes

We next examine examples of alternative learning outcomes that can be used in assessment: the link between the features of Web 2.0 tools and learning activities; assessment of collaboration; and, assessment of ethical issues involved in the creation of digital products. We are not claiming that these should be a high priority for language teachers but they are probably representative of the kinds of assessment practices that will gradually start to influence language teaching and e-learning in the near future.

Firstly, Terrell, Richardson and Hamilton (2011) describe a case study of the assessment of information management students whose course included the use of Web 2.0 tools such as wikis, blogs, and social media. The students were assessed using five criteria that the authors describe as representing the main features of Web 2.0 use; these are participation, communication, execution, persistence and reflection. These were then linked on the principles of constructive alignment mentioned above. Table 2 shows an example of how one

Table 2: Example of learning outcome, student activities and aligned assessment criteria (from Terrell, Richardson & Hamilton, 2011, p. 853)

Intended learning outcome	Sample student activities	Aligned assessment criteria
Use communication and team working skills to promote productive and cohesive relations among employees	Read and comment on each other's blogs. Share resources using social bookmarking tools such as <i>Delicious</i> and <i>Diigo</i>	Communication, Execution Reflection

In a study of online US-based students, Ching and Hsu (2011) used the concept mapping tool Webspiration (www.inspiration.com/WebspirationClassroom) as a way to theorize about the design of learning activities and to examine assessment. In particular they examine how to assess an individual's contribution to group work, which is a key feature of many Web 2.0 tools and a common practice in language classrooms. After students worked together to create concept maps they completed an online survey on the contributions that they and their peers had made to the collaborative process. The authors claim that the more sophisticated concept maps tended to be made by student groups who enjoyed team work the most and collaborated well together. This paper is a useful one as it shows possible links between the quality of group contributions and the quality of a collaborative Web 2.0 project.

Another insightful article is by Kimber and Wyatt-Smith (2010) which takes a wider look at technology and assessment in order to examine the following issues: 1) how to authenticate sources; 2) how to be creative when representing knowledge; and, 3) how to show empathy and ethics in academic work. In order to do this the authors produce a three-layered framework for assessing web authoring (Table 3).

Table 3: Assessment framework for using, creating and sharing knowledge online (from Kimber & Wyatt-Smith, 2010, p. 618)

Level One	Use existing knowledge, texts or materials	Create and share new knowledge, texts or materials
Level Two	Transmodal facility Ability to create new digital texts	
Level Three	E-proficiency e.g., ability to locate and retrieve information	
	E-credibility e.g., ability to establish accuracy and reliability of sources	
	E-design e.g., ability to identify potential of source materials	

This paper is of interest as it addresses ethical issues of assessment and digital literacy to which less attention tends to be paid within language learning (one notable exception is that by Dudeney, Hockly and Pegrum, 2013). Similarly, a report by Richardson, Hamilton, Gray, Waycott and Clehahan (2012) examines three ethical issues of academic integrity, copyright and privacy. Again, this is a slightly different focus compared to other research on **277**

language learning assessment. The authors surveyed 64 Australian academics about those three topics in connection with their use of Web 2.0 tools. According to the article there appear to be sophisticated levels of training and engagement in Web 2.0 tool authoring in the Australian higher education context. In contrast, issues such as students protecting their own work and using Creative Commons to share work are only just beginning to be addressed in second and foreign language learning contexts. However, if the use of collaborative digital projects continues to spread, as it probably will, it is important to be cognizant of these issues when assessing student work.

4. Summary of issues

The above brief survey has tried to draw together some of the findings in the literature on the spread of digital technology in education and language learning, and in particular to examine the topic of assessment. In this final section three issues that emerged from the survey are highlighted: the increasing number of digital tools available for assessment; changes in pedagogical approaches to make use of these tools; and, pressure on teachers to adapt and change their role in response to the spread of technology. We finish with an advisory note that language teachers need to be wary and critical in adapting technology into their teaching practice.

4.1 Tools for assessment

We have described an increasing number of opportunities for teachers to incorporate various LMSs and Web 2.0 tools into their teaching repertoires. These systems and tools can be used to assess individual skills or content knowledge (e.g., blog writing, audio recordings, and vocabulary flash card programs) and can be used to collect evidence of learning created within an e-Portfolio. They can be used to enhance the assessment of more traditional behaviorist type activities where students can practice the fundamentals of language skill development; for teachers the speed and ease of grading is a great advantage and individual students can receive personalized feedback which can increase their sense of autonomy. Such technology can also be harnessed for collaborative project work where language skills are developed in the process of creating digital artefacts. These online tools can be used during a lesson or for homework, on or off campus; but wherever or however they are used there is the potential for a teacher to use them for assessment purposes, and in particular to assess learning processes that were previously very difficult or not possible to measure, such as collaboration.

4.2 Changes in pedagogy

The move towards an increase in the use of technology – for teaching, learning and assessment – has resulted in changes in pedagogy in mainstream education away from transmission approaches towards other models such as those of Flipped Learning, Deep Learning and 21st Century skills. These new pedagogies emphasise collaborative projects, problem solving, and active learning, all of which can be supported by digital technology. Such models are also based on principles of constructive alignment between learning activities and tasks, learning outcomes and assessment tasks; again there is some evidence that technology can enhance such constructive alignment. We acknowledge that many language

teachers are already familiar with collaboration, projects and active learning as communicative tasks and activities often incorporate such principles already; however, they may be less familiar with how to use digital technology to promote such pedagogy.

Secondly, an ever greater focus on technology for creating digital projects such as slide-shares, videos and collaborative documents raises concerns of digital literacy such as copy-right and plagiarism, the use of Creative Commons for incorporating others' work into web authoring, and issues of privacy and academic integrity. These, too, are new aspects of assessment in second and foreign language education that will increasingly need to be taken into account.

4.3 Teacher roles will inevitably change

All these changes in technology, pedagogy, and assessment practices mean that teacher roles will change; or at least will be under some pressure to change. In a provocative paper, Godwin-Jones (2015) identifies a number of ways in which he recommends that future language teachers could adapt to technology. These are: 1) to learn to code in order to be able to evaluate and adapt new software; 2) to learn how to include mobile applications in lessons; 3) to learn how to use technology in context and be able to assess its applicability to one's own situation; and, 4) to use technology to participate in global learning opportunities. In brief, Godwin-Jones emphasises that teachers need to learn 'technology fluency' (p.11). They can do this in various ways such as by setting up their own web domain for the dissemination of e-Portfolios and the adaptation of a 'maker culture' in which participants create and share various kinds of products. Godwin-Jones sets a high bar with his ideal teacher being technologically literate, actively involved in researching and experimenting with new approaches, and committed to cross-cultural understanding; however, it is a useful set of aspirational goals to consider for future teacher development.

In contrast, we think it is important to point out that there are a number of critical voices that urge educators to be vigilant in the apparent rush towards the ever increasing use of technology in education. Selwyn (2014) is particularly prominent in advising teachers and institutions to be 'purposely pessimistic rather than unrealistically optimistic' (p. 19) in their approach to digital technology and to question whether new digital systems really do empower students and teachers or are just mechanisms of control and surveillance. Selwyn argues very persuasively that digital technology may offer only limited pedagogic value to staff and that students vary enormously in their ability to make best use of its affordances. He concludes with a number of suggested ways to 'tweak' our use of digital technology to overcome these objections including the need to challenge the way language is used with regard to technology so that it does not obscure what it can really achieve. We hope that in this paper we have been suitably guarded in our approach.

Conclusion

In conclusion, drawing from a number of research articles in the domains of digital technology, education, and second and foreign language learning this paper identifies three current issues in the use of technology for the assessment of language learning: 1) there are many software tools that teachers can use to enhance traditional forms of assessment and ones that widen the possibilities of collecting evidence to show learning; 2) the spread of digital technology has resulted in new knowledge areas and skills that teachers need

to be aware of and will need to learn how to assess. Digital technology seems especially suited to pedagogies which focus on collaborative projects and teachers need to be aware of concomitant issues of digital literacy such as privacy and plagiarism; and, 3) language teacher roles are changing and there may be great pressure for teachers to become more technologically fluent in the future but it is vital for them to carefully examine claims made for technology, learning and assessment.

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