

Language students and their technologies: Charting the evolution 2006–2011

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Abstract

This paper has two key objectives. Firstly, it seeks to record the technologies in current use by learners of a range of languages at an Australian university in 2011. Data was collected via a large-scale survey of 587 foreign language students across ten languages at The University of Queensland, Brisbane, Australia. Notably the data differentiates between those technologies that students used inside and outside of formal classrooms as well as recording particular technologies and applications that students perceived as beneficial to their language learning. Secondly, this study aims to compare and contrast its findings with those from two previous studies that collected data on students' use of technologies five years earlier, in 2006, in the UK and Canada. The intention is to chart major developments and changes that have occurred during the intervening five-year period, between 2006 and 2011. The data reported in two studies, one by Conole (2008) and one by Peters, Weinberg and Sarma (2008) are used as points of reference for the comparison with the present study.

The findings of the current study point to the autonomy and independence of the language learners in this cohort and the re-emergence of CALL tools, both for in-class and out-of-class learning activities. According to this data set, learners appear to have become more autonomous and independent and much more able to shape and resource their personal language learning experience in a blended learning setting. The students also demonstrate a measure of sophistication in their use of online tools, such that they are able to work around known limitations and constraints. In other words, the students have a keen awareness of the affordances of the technologies they are using.

Keywords: CALL tools, online dictionaries, learner autonomy, VLE, mobile learning

Introduction

This article begins by introducing briefly two studies that were used as points of reference for the present work (Conole, 2008; Peters *et al.*, 2008). Data were collected for these studies in 2006. Two studies were used instead of one because they were a little different in intent and canvassed students from different geographical regions. In combination we found them to be suitably complementary. Taken together, they

allowed us, to a reasonable degree, to identify outliers and confirm particular trends at the time. The two studies provide a snapshot of language students' technology preferences and use of technologies at a point in time, and for the current study a point of reference for comparison. In the current study, our primary aim was to chart key developments and changes in language students' technology use over an intervening 5-year period. A secondary aim was to gain some insights into the extent to which some technologies have become 'normalized' (Bax, 2003), established or emerging from the perspective of language students' reported usage. For the authors, this is less of a hard-edged, bipolar distinction than a continuum with technologies moving along a track from original inception to everyday use (See Gartner, <http://www.gartner.com/it/page.jsp?id=2124315>).

To achieve these goals we needed to discriminate between technologies and tools that are often grouped together. Recent commentary in Computer Assisted Language Learning (CALL) and in education more generally, tends to refer to broad, undifferentiated trends in technology development over quite a lengthy period, for example, the emergence of Web 2.0 technologies "over the last decade" (Warschauer, 2011: 36), or *Telecollaboration 2.0* (Guth & Helm, 2010).

These labels are helpful in describing broad trends, but they lack specificity. Web 2.0 for instance is intended to cover a whole range of loosely related 'new' technologies such as wikis and blogs, audio/video conferencing, mobile technologies, virtual worlds and so forth. It places these technologies in the same box. This may be useful for some purposes, but such collective terms can sometimes tend to obscure, or gloss over important differences among the particular set of technologies they encompass. In this paper we required more specificity – to be able to distinguish blogs from wikis for example – especially as particular technologies are introduced at specific times and then mature and evolve at different rates. In this way, we hoped we would be able to give a more granular or discriminating comparison between technology use in 2006 and 2011. We wanted to acquire more of a sense of the life cycle of particular technologies, and where possible related pedagogies too (e.g., WebQuests), and to monitor these technologies and applications and *how* they were used in 2006, and then again in 2011.

We believe this kind of comparison is helpful in a context where new technologies and applications are being introduced on such an intensive, almost continuous basis, and where currently broad-brush, all-inclusive terms such as Web 2.0 are being used to describe them. Also, we wanted to identify or distinguish between the technologies that were becoming more 'normalized' (Bax, 2003), and those which were not, and perhaps those technologies that were falling out of favour. We also wished to appreciate more fully the trends around emerging and traditional technologies from the perspective of language students.

The technology landscape for language learners in 2006

To help us understand the technology landscape in 2006 as a basis for comparison for our 2011 study, a UK-based research study (Conole, 2008) and a Canadian one (Peters, Weinberg & Sarma, 2008) were used as points of reference. Both of these studies collected data on language learners' use of technologies in 2006. The following discussion distills their findings in order to build a picture of the traditional and

emerging technologies at that time. Further, while the processes and products of language teaching and learning twist and evolve, the learner voice can easily be overlooked and yet, like Conole, we believe it is increasingly critical to understand the role of the learners, their priorities and, of course, in the context of this paper their approach to and use of new technologies.

In her 2008 article entitled, 'Listening to the learner voice: The ever changing landscape of technology use for language students', Gráinne Conole indicated the state-of-play for technologies in education as well as future promises and potential. Referring to her 2006 data collection, Conole (2008) said: "[T]he data was gathered at a time when the full impact of Web 2.0 technologies was only just emerging..." (*op. cit.*: 125). She cited works that suggested that possibilities offered by social networking tools were significantly influencing learning and further that 'rich immersive environments such as 'Second Life' are exciting educators in terms of the possibilities they offer for learning' (*op. cit.*: 124). The sense one has at this time was more of the potential of Web 2.0 technologies rather than proven through practice.

The Conole article was derived from a larger JISC-funded UK study of student experiences of technologies across a range of disciplines (see Conole, de Latt, Dillion & Darby, 2006). The languages education component of the study involved data from 92 survey responses, 47 audio logs and 3 interviews. Her 2008 article reported on two in-depth case studies and selected audio log data, and commented on general trends in the wider data set.

The case study data is noteworthy and relevant for the present study not only because it provides a detailed description of the technologies in use (tools with tasks) for language learners, but also because it provides a snapshot at a particular moment in time (see Table 1). In the data, the PDA and the mobile phone are mentioned in a general way together with a small number of Web 2.0 technologies such as blogs and podcasts, but wikis or any 'apps' that might later have been singled out under the umbrella of the mobile or cell phone or tablet computers were not a feature. However, numerous technologies were used to facilitate interactions and activity around work. For example, email (articles for a presentation), MSN (collaborating on a project), blogs (making notes on a project), BlackBoard (downloading course material), even Web radio (Music to help concentration), and numerous others. Purely social use was comparatively limited in terms of the range of technologies in use. Only three communication technologies were mentioned: QQ (MSN-type system for communicating with friends), Skype (communicate with parents) and phone (to keep in touch with Turkish friends).

The range of technologies in use was extremely broad and ranged widely from well-established technologies and tools (e.g., phone, Word) to relatively new technologies *at that time* (e.g., Skype, podcasts). Language-specific technologies were very much in the minority. The only language applications mentioned, and this was seldom, were phonetics, concordancing and lexical software (e.g., Wordsmith), and an online dictionary (for checking words and finding new vocabulary).

The second study we used as a point of reference was conducted by Peters *et al.*, (2008). The actual date of data collection was given as 2006 (*op. cit.*: 875). This study involved a survey of 71 students enrolled in French language departments across five Canadian universities. In the findings from this work, language specific technologies

Table 1 *Technologies discussed in the Conole (2008) paper*

Technology	Comments/Usage
Blackboard (VLE_	Access and download course materials & check course related information and administration
Blogs	Making notes on a project; 'Student use of blogs varied; some used blogs as a means of keeping up-to-date with new developments, others used them as a reflective diary' (p.135)
Email	Articles for presentation; communication with tutors
Discussion forums	'surprisingly little mention of discussion forums' (p. 135).
Internet search engines	Primarily to source text-based materials and search for images, podcasts
Mobile phones	Calling or texting friends and peers
MSN (QQ etc)	Collaborating on a project; keeping in touch with friends & family
Online dictionary	To check words
Phone	Keep in touch with friends
Podcasts	'from English language teaching sites' (p. 133)
PowerPoint & Word	To write assignments, take notes and prepare and give presentations. Also some grammar, dictionary and spell checking for foreign students particularly
Teachers TV	Video clips of teachers in the classroom
Text messaging	Used but mentioned as more expensive
Skype	For keeping in touch with friends & family
Web radio	Music to help concentration
Wordsmith (lexical) & concordance software	For text analysis

and technological activities featured more often. The technologies and activities that pertained specifically to language learning included online dictionaries and grammars, translation software, vocabulary, grammar, listening and pronunciation exercises and language games.

Data were collected in order to understand language students' reported frequency of use of technological activities in class, the technological activities they preferred and those that they perceived as most useful. With acknowledgement that student responses varied across the five universities, the average mean of all student responses is presented in Table 2.¹

Together, these student responses tell an interesting story of the trends and tendencies that French language students reported toward various technological activities in 2006. Frequency of use data were collected via a Likert scale on the basis of daily, weekly, twice monthly, once a semester or never. According to Peters *et al.*, where frequencies were low, consideration should be given to the fact that classes might only be held twice weekly. The authors also reported a direct link between

¹ Table 2 has been created using data from the final summary columns in Tables 1, 2 and 3 from Peters *et al.*'s original paper (2008: 882–886). We displayed their data in this way to make more visible comparisons with our own data.

Table 2 *Technologies discussed in the (Peters et al., 2008) paper*

Technological Activity	Frequency of Use Average Mean	Preferences Average Mean	Perceived Usefulness Average Mean
Consulting online dictionaries, grammars	3.03	4.20	4.29
Consulting your language course's website (VLE)	2.79	3.93	3.83
Typing your homework	2.75	3.68	3.76
Using translation software	2.55	3.64	3.58
Chatting in French	2.48	4.40	4.17
Emailing in French	2.41	3.99	3.95
Vocabulary exercises	2.33	3.66	4.16
Oral response exercises	2.29	3.27	3.73
Listening to audio files	2.23	3.86	3.70
Listening exercises	2.22	3.50	3.93
Reading texts on the computer	2.21	2.89	3.49
Listening to music	2.19	4.36	3.81
Pronunciation exercises	2.16	3.57	3.83
Online grammar exercises	2.06	3.53	4.21
Blogs	2.00	3.26	2.93
Searching the web for information	1.89	3.38	3.58
Reading newspapers on the web	1.87	3.51	3.86
Viewing video files	1.84	4.32	3.82
Online quizzes	1.83	3.68	4.00
Discussion forum	1.80	3.44	3.35
Listening to media broadcasts on the web	1.69	3.92	3.95
Collaborative writing	1.53	3.00	3.13
Language games	1.52	3.89	3.95
Doing a PowerPoint presentation	1.31	3.25	3.43
WebQuests	1.00	3.12	2.86

preference and usefulness. That is, disliked activities were not found very useful and the most liked activities were ranked as most useful (*op. cit.*: 888). One exception, listening to music, was highly preferred but not considered particularly useful. Additionally, online grammar exercises were less preferred but perceived as very useful.

Students consulted online dictionaries and grammars most regularly and also preferred these activities and perceived them as useful, making them the most significant technology in this study. Students also showed a strong preference and perception of usefulness for chatting in French. There were also relatively similar preference and perceived usefulness ratings for emailing in French and consulting the course VLE site. Translation software, however, was 'neither liked nor disliked, nor found useful or useless' (*op. cit.*: 889). Viewing video files was a relatively low frequency activity, one that was highly preferred by students but only perceived as somewhat useful (on a par with listening to music). The authors explained that 'listening to French music and video files were very popular with students regardless

of their institution and linguistic levels' and that they are 'usually easy and fun, and reflect what the iPod generation of students do in everyday life' (*op. cit.*: 890).

The authors described discussion forums, WebQuests and blogs as emerging technologies and applications. These 'newer forms of technologies' experienced low usage, preferences and perceived usefulness by students. Lack of teacher training and students' relative unfamiliarity with these technologies were given as possible explanations. Blogs were understood as having 'learning potential' but relatively 'untried' at that time (*op. cit.*: 892). Although wikis were not specifically mentioned, 'collaborative writing was infrequent and ranked very low by students on their preference and perceived usefulness scales. This was attributed to students' concerns over loss of control of the quality of their work through collaborative group work. Overall, students preferred individual technological activities to collaborative ones.

The Conole study and that of Peters *et al.* differed across a number of dimensions – geographical region, scale of the study, number of universities involved, contexts, language focus – but they were also similar in two respects that are central for this paper: they both chose to use well-established CALL conceptual frameworks to structure their discussion; and they both aimed to describe and capture technologies in use in language learning in 2006. In the current study we were keen to see how the 'landscape' may have changed in the intervening period, especially with a view to new additions, such as the use of mobile "apps" used both inside and outside the classroom, and to see how "Web 2.0 technologies" had taken hold (or not) in language learning and teaching since the time of Conole's earlier observation. Presumably, newer technologies jostle for position alongside more established technologies (see Levy & Stockwell 2006, chapter 10) until arguably some semblance of stability is reached, or a state of normalization, as described by Bax (2003).

Finally, we were also intrigued by a recent review of second language learning and Web 2.0 by Wang and Vásquez (2012). This review highlights the extensive research being conducted under the auspices of new and emerging technologies and details some of the assumptions being made about which technologies are most worthy of investigation. Their review found, for example, that blogs and wikis are by far the most studied of Web 2.0 tools. We wondered whether the researchers' focus aligned with the technologies currently in use, as recorded in the current study, or if there was a time lag, as appeared to be a possibility. Now, before turning to our results and discussion, the methodology for our study is described.

Methodology

In this study, data were collected on foreign language students' reported use of technologies to support their language learning (inside class, outside class, or both). Further to this, students ranked the top three technologies they perceived as most beneficial to their language learning.

1.1 Sample

Undergraduate foreign language students enrolled at The University of Queensland were surveyed about their technology use as language learners in mid 2011. It is important to note that the setting for the study was a blended one in that all students

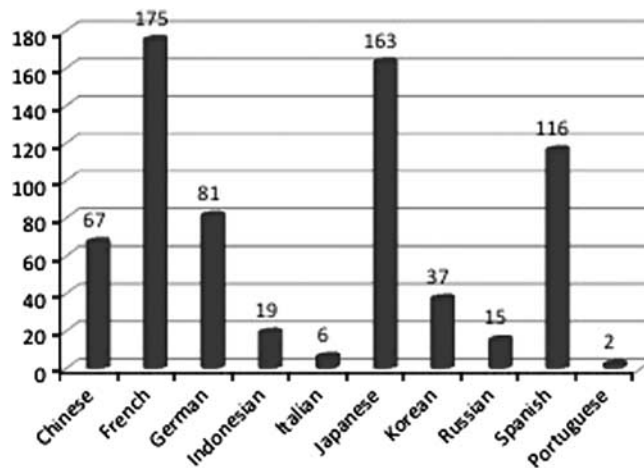


Figure 1. Languages studied across the sample

questioned were, at the time of the survey, studying a formal language course provided by the university.

An email invitation to participate in the study was sent to 2,114 students with a unique link to an online survey. Overall, 590 language students completed the online survey with three respondents being eliminated, on the basis of being post-graduate students. The remaining 587 students represented a response rate of 28%.

The languages studied by students were Chinese, French, German, Indonesian, Italian, Japanese, Korean, Russian, Spanish and Portuguese (see Figure 1) with some students studying more than one language. Most students were 17 to 21 years old (76%, $n = 447$). Domestic students made up the majority of the sample (85%, $n = 499$) with only 88 (15%) international students completing the survey. The majority of students were in the first or second year of study ($n = 222$, 37.8% and $n = 199$, 33.9% respectively). First and second year students were deliberately recruited as the larger survey was designed to canvass language learners' perceptions about their transitional experiences from school to university.

1.2 Instrument and analysis

The data reported in this paper were collected from a section of the survey called 'Technologies and blended learning'. In this section, students were asked to identify the technologies they used to support their language studies. They were also asked to differentiate between the technologies they used inside and outside of their language classrooms or could select 'both'. Next, they were asked to rank the three technologies they believed were most beneficial to their language studies outside class. A list of 20 technologies was offered along with an option for 'Other, please state'. This list was generated earlier in 2011 from a group of 35 undergraduate foreign language students who were representative of the sample. It should be noted that VLEs were not included in the list but rather, technology tools often associated with VLEs such as wikis, blogs and discussion forums were included.

Results and discussion

Table 3 provides a descriptive summary of students' reported technology use and rankings. With reference to total use, the technologies are ordered from highest used (online dictionaries) to least used (other). In addition to total use, students' patterns of technology use inside and outside of formal classroom learning are detailed alongside the aggregated total number of times that students ranked each technology either 1, 2 or 3.

The results displayed in Table 3 have been divided into three groups: Group A comprises technologies used by over 50% of students, Group B are those used by 30–49% of students and those used by less than 30% of students. Whilst these divisions are for simply for convenience, they give a sense of the extent of usage and assist with the following discussion of findings.

The following sections describe: (4.1) observations around students' use of technologies as recorded in our 2011 study; (4.2) observations around disciplinary versus non-discipline-specific technologies in this study and as compared to the prior studies; (4.3) observations around students' use of institutionally provisioned technologies compared to non-institutionally provisioned technologies, and (4.4) overall changes in patterns of students' technology use from 2006 to 2011.

1.3 Students' technology use in 2011

At first glance, the data presented in Table 3 portray some fairly emphatic results, especially in terms of the extent of out-of-class technology use and the perceived value of a range of technology tools for language learning, such as the online dictionary. Technology use outside the classroom is clearly based on students' own personal preferences, and is largely shaped by the learners' own choice of technologies. In many cases the technology in focus is used substantially more out of class than in. Such a result indicates a high degree of access to the technologies in question, a competence and capability in using them effectively for the task at hand and, in addition, ease of access, presumably through ownership. One might also draw the conclusion that the patterns of use among students of this particular cohort indicate a strong sense of autonomy and independence.

Overall, there are eight technologies that 50% or more of students used in their language studies (Group A). Online dictionaries and Web-based translators were used most (82–85%) including inside and outside of class. These were rated as most beneficial for language learning by 316 and 248 students respectively. YouTube was also well used (by nearly 69% of students) and made a strong appearance both inside and outside the classroom. Next, social networking sites, mobile applications (apps), conjugation websites, mp3 devices and online language games were used by 50–60% of students. It was perhaps unsurprising that social networking sites, mp3 devices and online language games were used predominantly outside of class, given that they are more conducive to out-of-class settings. It is notable that mobile apps are beginning to have more of a presence inside classes (total of 130 students) and certainly they are being employed extensively outside of class (total of 322 students). Conjugation websites were reportedly used to the same extent as mobile apps

Table 3 *Students' use of technologies and rankings of perceived benefit (n = 587)*

	Technologies	Student Use (n = 587)	Only inside class	Only outside class	Both inside & outside class	Ranked 1, 2 or 3 as most beneficial
A – Over 50%	Online dictionaries	501 (85.34%)	14	316	171	316
	Web-based translators	484 (82.45%)	10	339	135	248
	YouTube, online movies	402 (68.48%)	40	230	132	149
	Social networking sites	336 (57.24%)	4	303	29	92
	Mobile phone applications	331 (56.39%)	9	201	121	134
	Conjugation websites	330 (56.22%)	14	224	92	176
	Mp3 device	309 (52.64%)	16	257	36	89
	Online language games	294 (50.08%)	26	209	59	80
B – 30 – 49%	Online flashcards	255 (43.44%)	20	194	41	71
	Podcasts	238 (40.55%)	20	190	28	49
	Instant messaging (e.g. MSN, Messenger)	229 (39.01%)	6	200	23	28
	Discussion forums	227 (38.67%)	27	172	28	48
	Skype	204 (34.75%)	1	193	10	47
	Wikis	189 (32.19%)	29	142	18	12
	Blogs	188 (32.03%)	23	146	19	18
	iTunesU	159 (27.09%)	9	131	19	7
C – Less than 30%	Chat rooms	154 (26.24%)	6	138	10	18
	Micro-blogging (e.g. Twitter)	152 (25.89%)	4	139	9	14
	Video conferencing	131 (23.32%)	23	92	16	7
	Virtual Worlds	125 (21.29%)	12	101	12	2
	Other	43 (7.33%)	3	19	21	25

(by 56% of students); however, they were the third highest ranked technology (176 students) followed by YouTube (149 students) and mobile apps (134 students).

The technologies in Groups B and C were ranked by fewer than 50 students (or less than 8.5%) as beneficial to their language learning with the exception of online flashcards (ranked by over 70 students). Of particular interest in Group B were instant messaging, blogs and wikis. Instant messaging was used by nearly 40% of students with over 200 students using them outside of class. Nevertheless, only 28 students ranked them in the top three technologies. It was also notable that wikis and blogs were used by around 32% of students and only ranked as beneficial by 12 and 18 students respectively. Similarly in Group C, Chat rooms were used by quite high numbers of students, especially outside of class (138 students), but only ranked as beneficial by 18 students. Two other technologies were noteworthy in Group C. Video conferencing, a reasonably well-established technology, was used by just over 23% of students but only perceived as beneficial by 7 students. Virtual worlds, a technology environment that continues to receive a lot of attention in language education, especially in published research studies, was used by just over 21% of students, but only ranked as beneficial here by two students.

1.4 Disciplinary versus non-discipline-specific technologies

Conole noted in her study that ‘there was surprisingly little mention of subject-specific software’ (2008: 136). However, more analogous with the Peters *et al.* study, a quick look at Group A technologies reveals that students in our study used a good number of discipline-specific technologies and also perceived these tools as beneficial for their out-of-class learning. One could argue that many of these technologies, such as online dictionaries, web-based translators, conjugation websites and online language games are akin to a language learner’s toolkit, encompassing the basic necessities for learning languages. In Group B, online flashcards would also be included as a fundamental tool. While vocabulary, grammar, pronunciation etc. may be introduced in class time, acquiring language requires students to use memory and other learning strategies as well as significant periods of out-of-class time for practice and repetition. The technologies that assist with these approaches should not be underestimated for their value to language learners, particularly at beginner to intermediate levels when basic vocabulary and grammatical forms comprise the initial building blocks to further language development.

Enriching this language learners’ toolkit are a number of technologies that were not originally developed specifically for language learning but nonetheless offer exceptional opportunities to access language-specific resources and to listen to, watch and interact with the foreign languages. Here we are referring to online video, audio and downloadable mobile apps. Similarly, in Group B, podcasts are used in comparable ways. Using these technologies, language learners can access language resources that cater to their various languages, learner levels, styles and interests. The fact that these resources are easily located, often free (or minimal cost) and can be self-accessed, is reflected in the number of students who use these technologies ‘only outside of class’ and ‘both inside and outside of class’.

Students’ technology use also reflected the support roles that technologies can usefully play in assisting with the discrete domains of language learning

(Levy & Stockwell, 2006: 20). These include language skills such as speaking, listening, reading and writing and language areas such as pronunciation, grammar, vocabulary and discourse. It is worth noting that in the Group A technologies, only social networking sites offered significant communication potential. However, in Group B, there were more communication technologies such as instant messaging, discussion forums, Skype, wikis and blogs. One explanation for communication technologies being less used and perceived as less beneficial is that students in this sample were predominantly first and second year undergraduates. While some of these students were studying at more advanced levels, there was a higher representation of beginner to intermediate levels. Possibly this meant most students were less confident in communicating online in their target language because of perceived and real language limitations.

1.5 Institutionally provisioned versus non-institutionally provisioned technologies

It is interesting to note that students reported relatively low usage of technologies that are often built into, or made available via Virtual Learning Environments (VLE). These centrally provisioned technologies, such as podcasts, discussion forums, wikis, blogs and video conferencing, were reportedly used by 40% or less of students (Groups B and C). In contrast, Group A technologies tended to be those that students personally select and use on their own devices rather than through institutional VLE or other centrally provisioned technologies. A likely explanation for students' higher usage of non-institutionally provisioned technologies resides in the fact that Group A technologies can be more specifically tailored or personalized for language learning. Now, more than ever before, there are many cost effective (or free) technologies available online or via downloads to personal devices that students can choose for themselves and that are better suited to the ways they learn languages. Conversely, institutionally provisioned technologies tend toward a 'one size fits all' solution that does not take account of disciplinary needs or difference (authors, 2009).

Another interesting pattern was the relative popularity of non-standard communication tools like social networking sites, instant messaging and Skype. It may well be, as Conole's (2008) study 'hinted', that students are 'beginning to move beyond VLEs as a central resource and that they use the VLE only when it meets specific, individual needs' (*op. cit.*: 136). In her study, students gave far more examples of communication technologies in use such as text messaging and chat. Conole took this as 'suggesting that students are creating their own social networks to support their learning, tailored to their particular needs and using the technologies that suit them rather than being constrained in topic and technology via discussion forums' (*ibid.*: 135). While in this study discussion forums were used by 38.67% of students, the communication technologies that dominated were those that students routinely used in their lives outside of university. As these communication technologies were predominantly used outside of class it also suggests that students were self-initiating their networks to meet their particular needs. Together, these usage patterns imply that, as signaled by Conole, students are showing a preference for their everyday communication and social networking technologies over VLE communication technologies. However, the integration of students' personal technologies and

technological choices into university learning, and assessment in particular, remains an area in need of more attention by institutions.

1.6 The evolution of the technology landscape for language learners 2006-2011

Comparing the data in our study with that of the Conole and Peters *et al.* studies reveals some distinctive and some more subtle changes across the technology landscape between 2006 and 2011. Some technologies and practices have become more normalized, others have been revamped, a few have disappeared, some have not experienced anticipated take-up whilst others have emerged and changed the possibilities for where, when and how students learn languages.

Compared to the earlier studies, and not surprisingly, technologies that are normalized for most students by 2011 include, for example, ‘typing your homework’, ‘reading texts on the computer’, ‘searching the web for information’, ‘listening to media broadcasts on the web’, ‘doing a PowerPoint presentation’ and even text messaging. The technologies that underpin these activities as well as programs such as email, word processors, web browsers and search engines broadly meet Bax’s (2003) criteria for normalization, that is, they are easy to access, accepted by administrators, reliable, supported and robust and accepted as normal practice – inside and outside of CALL classrooms. For many younger language learners in particular, these technological activities have almost always been part of their student lives and are thus relatively invisible.

On the other hand, some traditional language tools have been revamped and transformed in ways that have seen them converge with new technologies to enhance their capabilities. Here we are talking about language dictionaries, verb conjugators and even electronic translators. These technologies continue to be well used and well perceived by students across the five-year span. Apart from being fundamental language learning tools, these traditional technologies (originally in print format) are constantly evolving in their electronic format. Online dictionaries and verb conjugators are now integrating practice drills, games and exercises into their sites with automated feedback. In this way language tutor and the tool functions (Levy, 1997) are becoming more integrated. For example, the nciku website (nciku.com) offers Chinese language learners daily conversations (written and audio) and short videos that demonstrate words in context, a range of learning exercises with automated feedback such as vocabulary tests, Pinyin tests, fill in the blanks, theme word quizzes and flashcards. In these ways, the tool and the tutor are integrated into one language learning environment or one small and portable device (mobile technologies).

Mobile phones, mentioned by Conole in relation to texting and calling friends and peers, are now ubiquitous and have converged with other technologies to become a micro-computer in their own right. As ‘smart phones’ have become affordable to students due to pricing reductions for the devices and for mobile internet, the possibilities for how these devices can be used for language learning have increased exponentially since 2006.

However, over the intervening five-year period, not all technologies mentioned in the earlier studies have experienced such successful adoption rates by language learners and others have not experienced the anticipated take-up that was sometimes predicted. Language students are yet to be convinced of the value of technologies like

wikis, blogs and virtual worlds. This is not to say they were not used on occasion, but in our study results, at least, it cannot be said they were widely employed and certainly were not normalized in the sense of regular use. Perhaps the fact that these technologies require a set-up phase and/or training by a teacher affects their frequency of use: so many of the high frequency results in this study did not require teacher initiation or set-up; instead it was a case of easy set-up, ease-of-use and students working independently.

Some of the Group A technologies have had a significant impact in our lives over a relatively short timeframe. YouTube for example, was only released at the end of 2005 but experienced over two billion views a day by 2012. YouTube was the third most highly ranked technology for our students and it proved popular inside and outside of class with nearly 150 students ranking it as one of their three most beneficial technologies. Social networking sites (SNS) such as Facebook comprised another technology that has experienced unprecedented uptake. The translation app for Facebook was released in April 2008 for 'every major language on earth' (see <http://www.insidefacebook.com/2008/04/02/now-you-can-help-translate-facebook-into-any-language/>). This made it possible for foreign language students to configure their SNS interfaces for the language they were learning as well as tap into language and learner communities, stay in touch with friends who speak the language and access a range of media in the foreign language of their choice.

The prodigious uptake of mobile apps in recent years is also reflected in our data. Nearly 55% of our students use mobile apps to support their language learning and 134 ranked them in their top three beneficial technologies. The popularity and uptake of mobile apps represents a significant emerging technology that has impacted on language learning over the five years to 2011. These changes can be traced to the enhanced capabilities of mobile devices since 2007 and the release of Apple's Software Development Kit (SDK) in 2008 that marked the beginning of third party native apps that could be installed via download to mobile devices (Godwin-Jones, 2011). As mentioned, pricing and market saturation of mobile devices were also factors. Our study shows that language learners find value in using mobile apps. They enable learning time outside of class to be used more efficiently, they can be personalized and they require little preparation for use. However, from a pedagogical point of view these kinds of apps tend to be based on behaviourist algorithms. As Joseph and Uther (2009) said, 'it is all too easy for the designer of a mobile language learning application to opt for a behaviorist-oriented or programmed instruction approach'. So, do mobile apps just represent the adage 'Old wine in new bottles'? While there are indications that this may be so, a more systematic evaluation of commercially available language learning apps is required. Additionally, new apps are now appearing that support social networks (e.g., Busuu – see <http://www.busuu.com/enc/>).

Conclusions

While it is sensible to be cautious in drawing conclusions from one study, albeit with a data set of over 500 students, there are, we believe some important developments in reflecting upon the findings of this study. We will briefly highlight three of them.

Firstly, the technologies and tools that language learners now potentially have at their fingertips are varied and powerful. Students are using their own technologies both inside and especially outside the classroom to access language learning opportunities and to supplement face-to-face classes. They appear to be much less reliant upon the technologies and tools supplied by the institution via VLEs and somewhat resistant to their use within the management system or learning environment structure. Future research needs to evaluate very carefully exactly how and how much these VLE-supplied tools are used by language students, especially in circumstances where they are not specifically directed to use them by teachers. Increasingly, students are using their own technologies and tools of choice to support their study. The evidence suggests they are becoming more independent and autonomous, and more able to use their own technologies purposefully to meet their goals.

Secondly, we believe we need to pay more attention to the disciplinary needs of our students, especially with regard to language proficiency levels. For example, language learners in early stages of learning a language need to acquire and practise many new vocabulary items outside of class time, either through direct access or via extensive reading or listening in the second language, for example. While social constructivist approaches are most certainly appropriate as a framework for the creative production of a second language for communicative purposes, other capacities and skills need to be acquired, especially at the early levels. The evidence in this study strongly suggests that learners still find it most beneficial to use technology tools to acquire the basics, such as vocabulary, through repetition and practice. The mobile dictionary provides these kinds of resources via flashcards or similar. This kind of activity occurs not only out of class, but in class also when students use mobile technologies to immediately identify the meaning of an unknown word that they have heard or encountered in class.

Thirdly, the findings of this study suggest that we should exercise caution in constructing research agendas in CALL. There appears to be a gap or disconnect between what students are actually doing and where research directions in CALL are taking us. The findings of the recent review of second language learning and Web 2.0 by Wang and Vásquez (2012) highlight that blogs and wikis are by far the most studied of Web 2.0 tools. While there is inevitably a time lag between initial use and implementation and the corresponding research activity around it, we need to be careful that the research agenda does not depart too far from the actual practice. It is critical with limited resources that research findings are well-targeted and recommendations derived from research studies can usefully inform further practice. Given the results in this study, for example, perhaps we should be researching the use of online/mobile dictionaries in class, or how to seek to understand more precisely the conditions and circumstances of use of the many tools in play. In other words, current research needs to reflect current practice.

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