

An analysis of technology use in first-year language teaching at three Australian universities

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ABSTRACT

This paper reports on the results of a survey of language teachers at three Australian universities on their use of Technology-Enhanced Language Learning (TELL) in ab initio language classes. The survey provides a snapshot of attitudes to TELL and experience in using TELL resources in a range of delivery modes. The educators at these universities – two urban and one regional – employ TELL in face-to-face, blended and fully online teaching modes. Diverse and creative use of TELL is documented, and TELL is fully integrated into the programs using each institution's Learning Management System (LMS). The chief constraints on further expansion of TELL are the availability of technical support staff and insufficient time for TELL development because it is not a recognised part of institutional workload allocations. As the universities were chosen because of their high level of involvement in TELL, these constraints need to be recognised across the sector, and practical and effective strategies for responding to them need to be found.

Introduction

To set the scene for this paper, it is helpful initially to consider two perspectives: the first is described in a paper by Barr and Gillespie (2003), who considered the utilisation of computer-based learning environments at three different universities – Cambridge, Toronto and Ulster – in order to assess the pedagogical effectiveness of the three settings; the second is presented in a paper by Felix (2005), who, in a state-of-the-art review, discussed language learning online with a view to identifying best practice. In different ways, these two perspectives help to highlight key factors that impact upon the success of any TELL implementation; they also help provide the parameters for the findings of the particular study reported in this paper.

The Barr and Gillespie (2003) study is of particular interest because it makes a comparison at the level of a university and thereby, most helpfully, sets the discussion of language learning within a broader institutional context. This is important because in contemporary settings, institution-wide decisions on technology choice and implementation have a very significant impact on the TELL options available at the department or disciplinary level. Specifically, Barr and Gillespie (2003) compare the three universities under the headings of learning and teaching resources; communication; pedagogical strategies; and infrastructural strategies. As far as we know, this was the first study of its kind.

In all three institutions, the importance of integration was found to be paramount. Barr and Gillespie (2003) referred to 'infrastructural integration', covering computer and other resources, and a well-coordinated operational infrastructure. Alongside university-wide mechanisms of integration, they also considered integration at the local level, as it is more commonly understood in the literature on language learning and technology. In this sense, therefore, integration was understood at a macro and a micro level. Barr and Gillespie also explain that, even though the profile of each university was different (including the extent to which it was resourced), each environment was found to be functioning effectively. Barr and Gillespie (2003: 68) state:

Although each institution has integrated computer technology into language teaching and learning in different ways, a key element of each environment has been the establishment of a common computer-mediated infrastructure, enabling effective information dissemination, resource distribution,

communication and teaching and learning. No single common infrastructure would be suitable in all three; however, in each case, it was found that the environments created were valuable, especially in integrating elements of the teaching and learning process that would normally have remained apart.

The authors then conclude that 'adequate technical resources and a management that is keen to integrate computer technology into all aspects of university life is a key factor in their success' (Barr and Gillespie 2003: 68).

These findings from the Barr and Gillespie (2003) study are of interest in relation to the study reported here for two principal reasons. First, there is not one way, but many ways, of conceptualising the shape and form of a successful TELL environment. But in all cases, contextual factors are paramount, from the choice of a university-wide Learning Management System (LMS), through to the human and technical resources available to the language that is taught, the curricular and pedagogical goals, and the profile of the student cohorts. Therefore, it should not be surprising that environments differ from university to university. Second, however, within the particular university context, a common, well-integrated and properly resourced computer-mediated infrastructure is critical for success. So although the shape and structure of language learning environments may differ from institution to institution, within each university there is a coherence and a well-integrated structure for TELL.

The Felix paper is also most helpful for our purposes, as it discusses language learning online with a view to identifying best practice, which Felix defines as 'using the most appropriate tools to their best potential to achieve sound pedagogical processes and outcomes' (Felix 2005: 177). She distinguishes between two major forms of online learning: standalone online courses that strive to operate as virtual classrooms where the technology acts as both tutor and tool; and add-on activities to classroom teaching or distance education courses where the technology is used primarily as a tool and communication device.

While Felix also stresses the sound pedagogical values embedded in the different approaches that address the needs and interests of students and engage them in authentic, real-life tasks, she also points to the challenges. Based on an evaluation of the relevant literature, she lists the following major concerns: (1) problems that might arise through poor group dynamics; (2) the need for labour-intensive authentic assessment procedures; and (3) the added difficulty in achieving linguistic accuracy. She emphasises the considerable time implications those challenges pose on teachers. In discussing and reporting on the current study, therefore, we are aware of the importance of matching the tools appropriately to the tasks, pedagogical approaches and values, and the different forms that online language learning can take.

The Learned Academies Special Project: Phase 2

The study and results reported in this paper grew out of an Australian Research Council Linkage Learned Academies Special Project (LASP), which commenced in 2006 and was administered by the Australian Academy of the Humanities. The initial project, entitled, 'An audit survey and analysis of beginners' LOTE (Languages Other Than English) studies in Australian universities', sought to provide a detailed audit of beginners' language courses in Australian universities, ultimately limiting its field of view to ten universities. The original project considered in detail a whole range of issues relevant to beginners' language courses including current provision, best practice, ongoing needs and areas for further development. More specifically, issues to be explored included (1) range and type of beginners' courses on offer and resourcing; (2) teaching and learning practices and innovation; (3) student background, learning pathways, curriculum design and assessment practices; and (4) the use of current and new technologies. It is the last issue, referred to in the project and this paper as Technology-Assisted Language Learning (TELL), that is our principal focus here. This issue was covered in a preliminary way in Phase 1 of the LASP project and then in more detail in Phase 2.

In Phase 1 of the LASP project, it became clear that new technologies were being employed in a wide range of applications for *ab initio* language teaching. We found the range of TELL activity was considerable, though its scale and range varied markedly from institution to institution, not only in general terms, but also from language to language within the same university. Given the scale and breadth of current work, and its variability across institutions, we were motivated to undertake Phase 2 of the

project, principally in order to look in more detail at a small number of institutions using a case study approach.

In the LASP Phase 1 data, we could identify three universities that were highly active in the TELL domain across the languages. These universities also approached TELL in rather different ways and the authors believed an analysis of all three would provide a valuable overview of contemporary TELL practice in first-year Australian university language teaching. While this data and analysis could not be said to be representative of activity in the area across Australian universities, it does give insight into current practice at three of the most active universities. It was decided to formulate the second phase around a short survey that would be used to collect data from first-year language teachers at the three universities. Insufficient funding precluded a more detailed round of data collection.

In Phase 2, therefore, we aimed to map current use in the three universities – two urban universities and one rural – namely Macquarie University, Griffith University and the University of New England (UNE). Broadly speaking, our objective was to detail the technologies in use in relation to the language skills and areas in focus, eg MP3 used for listening tasks. Given the comments earlier on the importance of infrastructural integration (Barr and Gillespie 2003), a particular focus was directed towards the LMS chosen by each university to structure its teaching and learning resources. We also wished to investigate the degree to which each university language engaged in blended and/or online learning and the relationship between the materials developed and the course textbook. Other key issues to be explored were the approach to TELL materials development, the support systems to enable this work, significant blocks and success stories. Assessment and testing was also included. This report now continues with the results, analysis and conclusions.

Results and discussion

The participants

The participants in the study were 22 language teachers across the three universities. The years of experience in teaching the language ranged from less than one year to more than 30 years, with an average of 17 years, which was quite a high average. Given the focus in this survey, the participants were asked to self-assess their competence and confidence with new technologies (1, low; 5, high). The average across the group was high at 3.8, with 68% of respondents rating themselves 4 or higher, and with only one participant at 2 or lower. Given the three universities were chosen specifically for their innovative work in the TELL area, this result is perhaps not surprising, although at the same time it should not be forgotten that innovation requires a firm base with higher than average levels of staff expertise.

Table 1: The language distribution among the three universities (N = 22)

| | Macquarie | Griffith | UNE |
|------------|-----------|----------|-----|
| Chinese | × | × | × |
| Japanese | × | × | × |
| Italian | × | × | × |
| Spanish | × | × | |
| French | × | | × |
| German | × | | × |
| Indonesian | | × | × |
| Korean | | × | |
| Greek | × | | |
| Russian | × | | |
| Polish | × | | |
| Croatian | × | | |

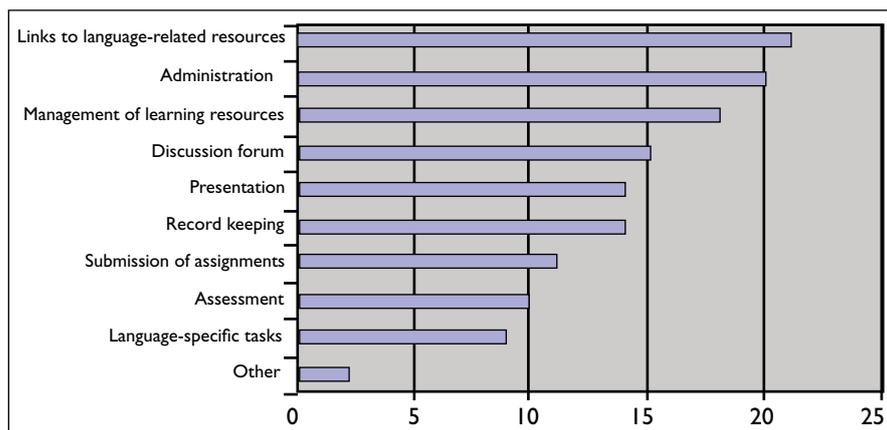
Table 1 shows the distribution of languages across the three universities, beginning with the languages taught in all three universities, then moving to those only taught in one.

The technologies and their application

The BlackBoard LMS dominated at all three universities, with 20 out of 22 respondents indicating this technology in use. WebCT followed with seven responses, and Moodle with four. Six respondents noted using BlackBoard and WebCT, denoting perhaps a period of transition.

Figure 1 details the specific ways in which the LMS was normally used. This question was intentionally presented as a broader, general question, and language learning was not specifically mentioned in the question itself. In the responses, the administrative, managerial and record-keeping functions are notable in their relatively high frequency of use. This is not surprising, given that an LMS, as its name suggests, is designed primarily for the management of learning. It is also not designed with field- or discipline-specific needs in mind and so the relatively infrequent use of language-specific tasks delivered through the system is, again, understandable. Arguably, this general pattern of use would be similar to other subject areas and disciplines within each university. The strengths and limitations of LMSs in this regard are beginning to be examined more closely (eg Steel 2009). In studies in the future, it would be advantageous to make a detailed listing, language by language, of the link addresses to language-related resources, and for these to be made widely available to language teachers and learners. This information could then be shared among language teachers of first year classes. The relatively high use of the discussion forum for language learning in the LMS is also notable in this data set.

Figure 1: Uses of the Learning Management System



The ways in which language learning materials were conceptualised and delivered were examined in terms of their relationship with face-to-face teaching and the course textbook. In the majority of cases (18/22), the TELL materials were designed to be used in tandem with face-to-face, on-campus teaching (ie blended learning). However, online-only learning was also evident (7/22) and some of the longer responses suggested this mode of learning was increasing. Similarly, most TELL materials were developed solely for use with the course textbook (15/22), with a smaller proportion designed for use only partly with the textbook (6/22). Only one respondent described materials that were not for use with the course text.

The high frequency of responses for blended learning, combining face-to-face teaching, TELL materials (managed and delivered through an LMS) and the textbook, suggests a structured learning approach that is realised through the joint forces of the classroom teacher, the computer and the course text. It is this combination that seems to be crucial in the data, not any single element alone. This pattern of response highlights the continuing importance of the course text and face-to-face teaching in language learning.

Figure 2: Language skills and areas where TELL materials have been developed

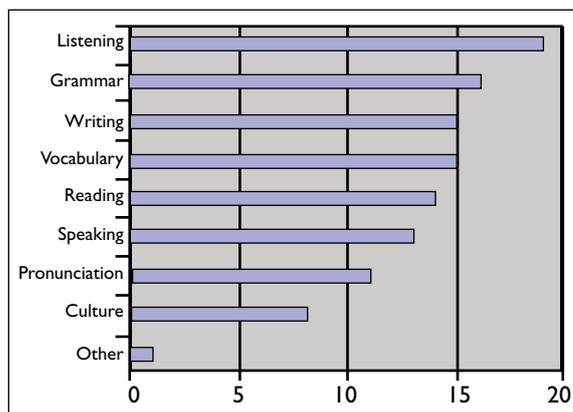
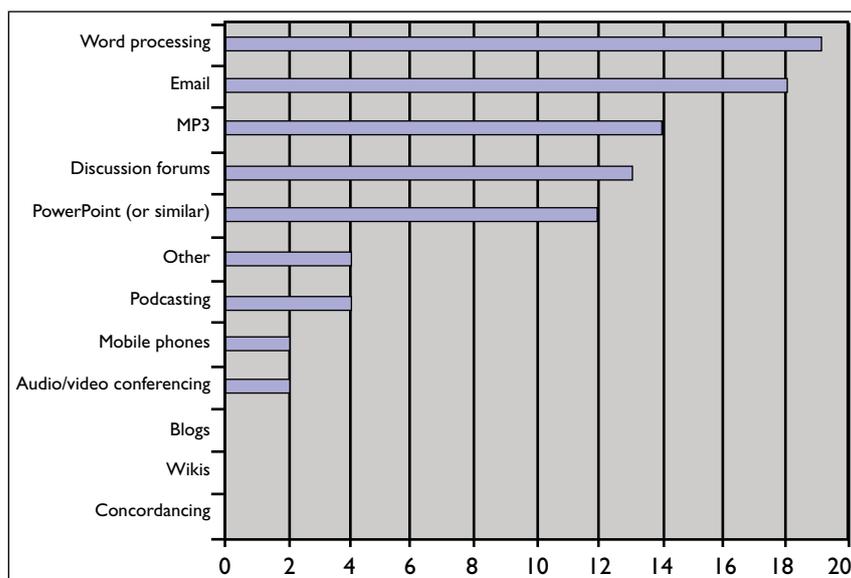


Figure 2 shows the distribution of technology use in relation to the language skills and areas. Compared to previous analyses along similar lines (for example, Levy 1997; Levy and Stockwell 2006), the prominence of listening as the most frequent skill cited is noteworthy and reflects the maturity now of the technologies that manage sound and speech. Technologies include the use of Wimba and MP3 files, programs such as Audacity to edit sound files, embedded audio or video files in other programs (for example, PowerPoint), and, to a lesser extent, podcasting via BlackBoard, YouTube activities and audio/video conferencing (see also Figure 3). More broadly, applications designed for practice across the skills and areas included a variety of online exercises and quizzes, again chiefly through BlackBoard. There were also a number of purpose-built programs or activities included, such as Kantaro and Genoro for Japanese (Macquarie University); synthetic stimulus-based speech sound identification and discrimination practice materials for Korean (Griffith University); iVocalize for synchronous spoken chat for Japanese, German and French (UNE); and Deutsch E-rklärt for grammar explanations with integrated vodcasts and activities for German (UNE). Deutsch E-rklärt was developed as a standalone product so that it could be incorporated into language programs across the country, regardless of the textbook being used. The strategy has been successful, as it has been taken up as an additional resource in a number of universities.

Figure 3: Technologies in use



It is perhaps not surprising that word processing and email still provide the backbone of technology use for language learning, as they do across the disciplines. Modern word-processors now are multi-functional and may be used to do much more than text processing: for example, they can easily incorporate audio and video files, comments, and links to language learning resources, thus extending the original functionality and making the application potentially more useful to the language learner. Discussion

forums, which provide for interaction via text, are also well in evidence: typically this functionality is provided by the LMS, eg BlackBoard (see Möllering 2004). Of greater note is perhaps the prevalence of MP3 technology as a medium for delivering listening material, a result that also confirms listening as a key focus for technology applications.

Development and use in practice

Six open-ended questions completed the survey and aimed to examine TELL materials from the point of view of the teacher's role in their development, their use for assessment purposes, levels of institutional support, and perceived strengths and drawbacks in their development and use.

It was clear from the findings that the materials-developer role was central for the language teacher (95%). Such a finding, yet again, emphasises the paramount importance of the language teacher in TELL, not only in orchestrating the delivery of the materials, but in creating them in the first place. This role is often overlooked or underestimated, with the focus on teachers often given to their role and the time they spend in face-to-face teaching in front of students. Further, the majority of respondents developed TELL materials alone, with little or no help from others (68%). Two responses are indicative:

Normally, this is done on my own. However, we do have a resident specialist who is able to provide advice and assistance as the need arises.

By myself, drawing on the experience of colleagues close to me. Specialist developers are sometimes hard to access, have no knowledge of the field (*[language removed]*), and spend their time telling me what to do (i.e. they don't do anything for me), or some combination of these.

Occasionally, advice was sought from colleagues or a School Multimedia Officer but this was the exception. Five participants mentioned the value of advice and support from a resident specialist developer, although they also noted the fragility of this position within the school. In a more detailed response to the question of support, respondents noted the lack of specific, targeted support within their universities and the problem of generic, low-level, university-wide training programs that were of little help in solving language-specific development problems.

Of the materials developed, just over half the participants said that they created materials for formative and summative assessment/testing purposes in first-year classes (54%). This material included self-assessment tests, quizzes in BlackBoard, auto-corrected short exercises, and tests specifically designed around language skills and areas. Online submission of test items was a feature in four responses. Also, a number of respondents mentioned using participation rates in the discussion forum as an assessable component for external students. A more detailed response showing the ways in which TELL is integrated into assessment follows:

[TELL materials are used] for homework, quizzes and assessments. Online assessments are mainly for external students (or internal students who missed the class test). They are limited in time and availability. They are partly self-corrected then reviewed for final marking. Web homework is made of auto-corrected short exercises. Attempts are not limited; however students have to do them before each following Monday. This work is part of the Web participation mark, i.e. students have their full mark when they obtain more than 85% and do the work on time. Quizzes and exercises are offered specifically for grammar, compulsory in first session but optional in session two.

When viewed as a whole, the respondents described a very wide range of TELL materials that they believed had been successful with first-year language learners (see also Levy 2009). Examples highlighted certain valued functions within the LMS, particularly the discussion forum, plus audio podcasts of recordings of lectures and classes, YouTube links, text-based chat, and third-party products such as DVDs in Chinese from China. They also highlighted the value of language-specific products such as Deutsch E-rklärt (<http://tlc.une.edu.au/deutsch-erklart>), to provide clear explanations of grammar; Wimba recordings (to provide short conversations and drills on grammar and pronunciation); and iVocalize (for external students to practise speaking and listening skills through real-time interactions with classmates and

instructors). Many respondents also took pains to describe aspects of their pedagogical rationale alongside the materials themselves, as in the following three responses:

Audio podcasts of recordings of lectures and classes – these allow external students to feel a sense of group membership; auditory learners do better listening in to teaching and practice, as well as reading it in the Study Notes provided; students can assess their own progress against that of the internal students as evidenced by their participation in class.

From the very beginning of the year, students have to write in French. The forum is organised in folders, with a ‘free conversation’ folder and other folders for suggested topics in line with their level.

The most successful materials are recordings (Wimba): which include the short conversations and drills containing basic structure of Polish grammar, pronunciation, recordings of an explanation of Polish grammar by a linguist. The recordings in the classroom are also interesting for the external students as they can compare their progress with previous students who were taught in the classroom.

Support for TELL materials development was provided by all the institutions, although it varied considerably in level and degree: for example, support was ‘Nil’ according to one respondent, while another said the ‘[Institution] is very supporting in developing TELL materials’. Support was made available in a number of ways, including the appointment of new specialist staff, solely dedicated to the development of online language teaching, in two instances; and an LMS hotline for specific queries, technical support, professional development and skills-specific training. Much of the support, though not all, was focused towards and organised around activities using the institutional LMS. This was not always the kind of support required, as shown in this response:

We have had some school-based tech support for the last year or so (on contract), which has been useful. However, the contract for this position has yet to be renewed. There are many other developer and other ‘support’ positions at faculty and central admin level, but I don’t find any of them as useful.

The two things I need are more time to do my own development, and local level tech support that actually *does* things for me (e.g. resolves little technical problems, shows me how to do little things when I need to do them, etc.).

In addition, some technical assistance and development funds were available on an intermittent basis.

As far as blocks to development were concerned, respondents considered insufficient time to be the primary obstacle (50%). Technical difficulties, especially with the LMS, funding and the requisite skills were also considered to be impediments. Further, participants emphasised that such development work was not officially recognised and that ‘Pressures to publish get in the way of allocating time to develop learning materials’. These issues, in a very similar order of priority, have been recognised for many years (see Levy 1997; Levy and Stockwell 2006). Further comments of note, which have not been recorded so strikingly in previous surveys of a similar kind, were the teachers’ willingness to try new technology and acceptance levels by students, a point we will return to in the conclusion.

Finally, participants described their primary reasons for using TELL materials with first-year language learners. In broad terms they mentioned their general value in improving teaching and learning, organising and managing teaching (especially in large first-year classes), and for keeping in regular contact with students. Participants also described the value of TELL materials in terms of additional language practice out of class, motivation, and their complementary function to supplement face-to-face teaching and the materials covered in the textbook. TELL was also seen as necessary in the modern world and as a way to connect with younger, more technologically switched on students. The following three examples are indicative:

It is an excellent tool to deliver teaching materials, to keep in touch with students, to assess them in the four skills and to inspire them with new ideas.

I think it’s really important to incorporate TELL to provide students with further study options and provide autonomous learning + students of this generation (I believe) *expect* the use of technology and are very familiar with it.

An excellent way to facilitate communication among students and with the coordinator, creating a sense of community among learners; an effective tool to reinforce learning; an efficient means to conduct business.

For external students, respondents particularly emphasised the value of TELL to enhance the distance learners' experience, learner autonomy and to create a virtual learning community.

Conclusion

There are valuable conclusions to be drawn on the basis of these results, even in a preliminary, small-scale study such as this one. Most importantly, more than 95% of the language teacher participants in this study are involved in the development of TELL materials. Historically, this role is not sufficiently supported or rewarded, especially given the considerable amounts of time involved (Levy and Stockwell 2006). In addition, by and large, participants work alone, even when specialist expertise is available. These issues need to be examined further. A more fine-grained study is needed to examine work practices more closely and to determine more precisely exactly what support is needed and when. This may involve focused, languages-specific teacher training for TELL materials development.

A more detailed study could address a number of issues. First, since most respondents reported working largely independently and without much technical support, this raises the question of whether the types of resources most commonly developed reflect need or opportunity. That is, does the tendency to develop certain types of learning objects (for example, Mp3 files for listening comprehension) reflect solely student need or is it that they are easier to produce by the individual academic at his or her desktop computer? Presumably it is a function of both. What we are able to say is that the range of resource types attests to the creativity of the language teachers. Still, it may be that learning resources are not keeping pace with the affordances of available technology and of those technologies coming on stream. Mobile learning was not widely used by our respondents, yet the Horizon Project 2009 identifies mobile technology as the technology most implicated in learning developments in the next year for North America and the next two to three years for Australia and New Zealand (Johnson, Levine and Smith 2008, 2009). Two of the institutions involved in this study have recently appointed a multimedia officer dedicated to language learning resource development, but in only one is that position firmly anchored in the staffing profile of the department. Resourcing remains an issue, as Barr and Gillespie indicated in 2003.

Second, it is unclear from our data to what extent learning and teaching strategies are being modified to take into account a new learning environment (see Felix 2005). As more TELL is used in blended learning, students need to develop into more autonomous learners yet they are not necessarily prepared for this by their previous educational experiences (see Dunne 2008).

Third, investment in developing TELL resources is limited to the individual institution. Given the large amounts of time involved in TELL materials development across the universities, we need to consider creatively how we can best share resources, support networks and products. As one respondent explained, we lack a 'comprehensive and systematic database, corpus, providing access to the existing material, [a] platform (shared) where additions and modifications can be made to the existing material'. The technology has the potential to enable the sharing, adaptation and distribution of TELL materials. If we are to reap the benefits of this potential, we must engineer accessible, flexible and effective ways to provide a venue for collaboration and exchange. In addition to the micro and macro level of integration for the subject and institution, a further level is desirable. A dissemination structure similar to that provided by the Australian Learning and Teaching Council with web pages devoted to individual languages would ensure that resources are available to a wider pool of language educators and their students. Individual institutions' investments would be enriched by access to these resources. This would be a significant development, since many language disciplines in Australia are relatively small, with between two and four members of full-time staff; funding is tight and is unlikely to improve in the immediate future. The proposed Network of Language Educators in Australia may be able to play a leadership role in this area.

Finally, our survey focused on the practices and attitudes of language educators. A follow-up survey of student attitudes to TELL would provide important information on the effectiveness and perceived

relevance of computer-mediated activities in language learning. To our knowledge little research has focused on this topic in relation to students who are enrolled in *ab initio* language courses. Conole (2008) interviewed students who were relatively advanced in their language learning; she emphasised the range of technologies now in play for language learning and that users are often more interested in developing and sharing their own content rather than accessing content generated by others. Felix (2001) surveyed beginner language students and found mixed responses to TELL. Today's students belong to the digital natives' generation and are assumed to be more technology-capable, although Comas-Quinn, Mardomingo and Valentine (2009) reported students as needing more support than expected. The big question remains how much their predilection for using interactive technologies such as FaceBook, MSN and Twitter for *social* purposes translates to effective use of the same or similar technologies for *learning* purposes, where, as we have seen, motivation and the structuring of learning over the longer term is regarded as crucial, at least by language teachers. Such issues need to be investigated in further TELL research studies in the future.

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References

- Barr, J. D., & Gillespie, J. H. (2003). Creating a computer-based language learning environment. *ReCALL Journal*, 15(1), 68–78.
- Comas-Quinn, A., Mardomingo, R., & Valentine, C. (2009). Mobile blogs in language learning: Making the most of informal and situated learning opportunities. *ReCALL Journal*, 21(1), 96–112.
- Conole, G. (2008). Listening to the learner voice: The ever-changing landscape of technology use for language students. *ReCALL Journal*, 20(2), 124–140.
- Dunne, K. (2008). Delivering subject choice and quality assurance in specialised disciplines: The University of New England's model of subject delivery at the University of Newcastle. *Australian Review of Applied Linguistics*, 31(2), 19.1–19.11.
- Felix, U. (2001). The Web's potential for language learning. *ReCALL Journal*, 13(1), 47–58.
- Felix, U. (2005). Best-practice language learning online: A state-of-the-art review. In A. Bandhauer, B. Boss, K. Dunne, T. Mehigan, M. Möllering & M. Veber (Eds.), *New directions in German studies: A context of intertextuality* (pp. 175–190). Otago: University of Otago.
- Johnson, L., Levine, A., & Smith, R. (2008). *The Horizon Report: 2008 Australia–New Zealand Edition*. Austin, Texas: The New Media Consortium.
<http://www.nmc.org/pdf/2008-Horizon-Report-ANZ.pdf>
- Johnson, L., Levine A., Smith R. (2009) *The 2009 Horizon Report*. Austin Texas: The New Media Consortium <http://www.nmc.org/pdf/2009-Horizon-Report.pdf>
- Levy, M. (1997). Computer-assisted language learning: *Context and conceptualisation*. Oxford, UK: Oxford University Press.
- Levy, M. (2009) Technologies in use for second language learning. *The Modern Language Journal*, 93:769–782.

- Levy, M., & Stockwell, G. (2006). *CALL dimensions: Options and issues in computer-assisted language learning*. Mahwah, NJ: Lawrence Erlbaum.
- Möllering, M. (2004). Neue Medien und ihre Integration in den DaF-Unterricht – aufgezeigt am Beispiel australischer Deutschlerner im tertiären Bereich [New media and their integration into teaching German as a Foreign Language – exemplified with Australian tertiary students of GFL]. In P. Bosenius & J. Donnerstag (Eds.), *Interaktive Medien und Fremdsprachenlernen* (pp. 131–142). Kolloquium Fremdsprachenunterricht, vol.17. Frankfurt: Lang.
- Steel, C. (2009). Reconciling university teaching beliefs to create learning designs for LMS environments. *Australasian Journal of Educational Technology*, 25(3), 399–420.