Embedded academic language and learning support via an e-learning tool

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This paper reports findings from a study of the efficacy of an e-learning tool to deliver a program of academic language and learning (ALL) support for external students at Charles Darwin University (CDU). This ALL program was delivered using the Wimba virtual learning environment on the “Blackboard” e-learning platform. Wimba provides a live synchronous classroom where students can interact with their lecturer and fellow students. Live classes were recorded and archived for students’ online asynchronous access. Specifically, the study assessed the effects of the embedded ALL program on student learning outcomes measured by their academic performance and their self-report of their online experience. For the purposes of comparison, the outcomes of external students in synchronous Wimba, asynchronous Wimba and no Wimba groups were compared with those of internal (face-to-face) students who received no ALL support. Findings of this study showed that the external students who received online synchronous ALL support had significantly better outcomes than those who received ALL support via the archived recording. The mean assessment marks of the external synchronous group were 11 percent higher than the other groups. The findings also suggest that through live virtual interaction with others, the external students felt more confident and more connected to other students and the lecturers involved. These findings have important implications for the design of e-learning processes and delivery of embedded ALL support for external students’ study skills using e-learning platforms.

Key Words: academic language and learning; embedded academic skills; interactivity; academic skills in an online medium.

1. Introduction

Charles Darwin University (CDU), located in the Northern Territory, has a highly diverse student demographic profile which includes large proportions of students from non-traditional, low socio-economic-status backgrounds; Indigenous students in remote areas; first generation students; mature-aged students who may not have had formal education for some years; and speakers of languages other than English (LOTE) domestic students who may not have achieved adequate academic language competency.

Almost 62 percent of these students are studying externally, while the average percentage of external students studying in Australian universities is just 12 percent (Department of Education, Employment and Workplace Relations, 2010). Meeting the academic language and learning (ALL) support needs of this increasingly heterogeneous student population poses many challenges due to their varying academic backgrounds, life experiences, and geographical remoteness.
To address these challenges, the CDU School of Academic Language and Learning (SALL) has been trialling a variety of different pedagogical strategies (including virtual classrooms) to better engage and more effectively support this diverse student population. One of these strategies introduced in 2008, is the Wimba virtual e-learning environment, which allows synchronous online collaboration whereby students can exchange ideas with each other and the lecturer and this in turn may enable students to feel part of a community of learners progressing towards common goals. This paper reports the findings of a study investigating the benefits of the inclusion of this e-learning resource within an existing course unit at CDU.

2. Background

Student evaluation surveys at the conclusion of previous ALL workshops indicated that both on campus and external students found the ALL support helpful to their learning and understanding of the expectations of tertiary study. External students expressed particularly strong appreciation for the real-time contact with CDU lecturers and other students. These findings indicated the need for a more systematic investigation of the feasibility and effectiveness of providing ALL support via the Wimba medium.

Currently, the CDU Academic Language and Learning Success Program (ALLSP) offer a suite of 21 academic skills workshops, which are rotated throughout semester. They are offered with generic content on campus and online. The synchronous online workshops are recorded and archived for asynchronous access. Approximately 10-15 multi-disciplinary students attend each workshop, and the lecturer’s aim is to engage them with instruction and activities pertinent to the specific skill being taught. Since 2009, ALLSP has also offered customised embedded workshops that are integrated as part of the curriculum in select units. Workshop attendance is not mandatory but students are encouraged to attend online. Like Stevenson and Kokkinn (2007), CDU has found that while this mode of delivery is time consuming for all involved, the positive outcomes it can produce for students and lecturers appear to make it worthwhile.

The aim of the CDU ALL workshops is to support students to become independent, effective learners. As well as group learning in workshops, students have the option of individual ALL support appointments to discuss their particular academic study challenges. These individual consultations are complemented by the availability of a range of online study skill resources on the ALL website. As 62 percent of CDU’s students study externally, all academic skills support needs to be replicated online. It was decided, therefore, that the use of an e-learning environment as a means of ALL support should be tested.

3. Literature review

The provision of ALL support in Australian universities has evolved since the 1980s when it was mainly of a counselling nature. It then became “educational training”, and from there progressed to “study skills” support, delivered mainly by counsellors (Stevenson & Kokkinn, 2007). This was prior to the services being administered by academics when it became better recognised as an integral component of academic study. By 2007, most ALL services were situated in this early model but it was often “… time consuming for all involved and was only successful when the academic staff had the motivation and time to commit to the approach” (Stevenson & Kokkinn, 2007, p. 49).

More recently, there has been a trend towards the integration of ALL within the curricula of various disciplines. Purser, Donohue, Skillen, Peake, and Deane (2008) used the term “integrated” to refer to ALL interventions incorporated within a discipline’s curriculum. They analysed specific units’ language and literacy demands, and produced assessment criteria and learning materials customised to meet those demands. They found that this approach generated dialogue and collaboration between the ALL lecturers and the discipline lecturers, and had a significant influence on policy regarding the teaching of ALL. Participants found the program worthwhile, although the researchers did not specify outcomes for students’ learning.
Huijser, Kimmins, and Galligan (2008) also argue that students learn more effectively if academic skills are integrated into discipline specific courses and programs as opposed to being offered as isolated remedial courses with generic content. These authors suggest that on a continuum of learning enhancement strategies, “embedding academic skills development into discipline-specific curricula would be placed on the ideal end of the continuum” (p. 1). They particularly highlight that one of the main obstacles to the development of embedding academic skills is the institutional positioning of learning advisors on the fringes of universities.

De Fazio (2008) has advocated the value of having the content lecturer present in ALL learning workshops. She refers to this as “trialogic engagement” between the students, content lecturer and ALL lecturer, and suggests this interaction is essential, particularly in the online environment with its associated challenges. She concludes, “the occasions of triadic interaction … provide a powerful way to address teaching and learning issues specific to online distance learner needs in the area of academic written discourse” (p. 238).

De Fazio and Crock (2008) studied the effectiveness of an online writing tutorial provided to students studying via Open Universities Australia. It was a generic program for multi-disciplinary students from seven universities. They found that students perceived an improvement in their academic writing, and their assignment marks demonstrated that their perceptions were accurate.

Mallory, Ramage, Snow, and Coyle (2009) demonstrated the merits of the e-learning Wimba Voice Chat system to reinforce learning by enhancing aural, oral and visual channels of communication. This system enables the community building aspects of voice interaction with classmates in real-time to be used as a means of creating trust and communication among peers, which in turn reinforces information retention. They compared this form of interaction with text-only methods, such as on a discussion board, and found there were drawbacks associated with the loss of face-to-face interaction, but their study did not take the next step and assess its efficacy as a learning/teaching tool.

Augar, Raitman, and Zhou (2004, p. 301) suggest that the creation of virtual learning communities (VLC) can help online learners “overcome feelings of isolation, reduce student attrition rates and enhance their learning experience”. Their definition of VLC includes four interconnected elements, which include social context, technology, a shared learning goal and competent facilitation. The domain of social context is one, which has engaged the interest of many researchers, who have argued that social presence is required for engaged learning to take place. Social presence has been variously described as “the degree to which a person is perceived as ‘real’ in a mediated communication” (Cobb, 2009; Richardson & Swan 2003; Kear, 2007) and also the “degree of salience of the other person in the interaction and the consequent salience of interpersonal relationships” (Richardson & Swan, 2003; Cobb, 2009; Kear, 2007). Richardson and Swan (2003) and Kear (2010) have concluded that students with high overall perceptions of social presence scored high in terms of perceived learning and perceived satisfaction with the instructor.

By contrast, asynchronous communication can impact on social presence due to the lack of immediacy; students who experience a time lag between sending a message and getting a response report that this type of communication is “cold and impersonal” and prevents them from “participating confidently and openly in online learning” (Kear, 2010, p. 1).

It is clear that the capacity to ask questions, make statements, get feedback and express agreement and disagreement is crucial to the establishment of effective online learning communities where the social aspects of learning are acknowledged.

4. Methodology
The study’s aim was to investigate the challenges and potential benefits of embedding ALL support via an online medium in an existing CDU unit, with the support being delivered via the Wimba e-learning environment. It was anticipated that the group, which participated in the ALL support via Wimba, would be more likely to attain higher assignment marks in comparison to
students in groups that did not take part in the Wimba support classes. Additionally, it was anticipated that the students would find the online learning experience effective and rewarding.

5. Study Design

5.1. Participants

A total of 86 students enrolled in a health sciences unit were recruited to participate in the study: 29 internal students and 57 external. Of the external students, some chose not to participate in the ALL workshops, some elected to attend the live Wimba sessions, while others chose to listen to the asynchronous archived recordings. The four study groups are described in figure 1 below.

![Figure 1. Characteristics of the four study groups.](image)

The type of the ALL support available to and utilised by students in each of the study groups was as follows:

- Group 1 comprised external students who elected to participate in the synchronous Wimba sessions.
- Group 2 comprised external students who were unable to participate at the times of the synchronous Wimba classes and therefore chose to engage with the archived Wimba sessions asynchronously.
- Group 3 comprised external students who did not participate in either the synchronous or asynchronous sessions.
- Group 4 comprised internal (i.e. on campus) students who were not offered specific ALL support

While participation in the study was voluntary, all external students were encouraged to participate by being offered 7 percent for participation if they attended at least 80 percent of the ALL workshops.

It was decided to use a mixed methods study methodology as the researchers were interested in both quantitative and qualitative outcomes, namely both the students' perceptions of their skills as well as their actual assessment outcomes. As it appeared there is little published research testing the efficacy of embedded ALL learning online, a comparison was made of assessment outcomes pre and post the ALL intervention. The research team wanted to investigate the students’ experience of studying externally and their impression of Wimba as a medium for learning. The researchers sought to determine whether using an online medium such as Wimba, delivered both academic improvements and satisfied students’ experience of the modality.

Each of the four groups thus experienced a different mix of interactivity and learning, in that some student groups learnt in a more passive environment than others. For example, group 1, the students in the synchronous group, were learning as part of an interactive group; group 2,
the asynchronous cohort had opportunities for learning academic skills, but had no interaction; group 3, the external group accessed no ALL support; and group 4, the internal group, did not receive specific academic skills support, but attended discipline tutorials.

Table 1. Study timeline.

<table>
<thead>
<tr>
<th>Schedule</th>
<th>Study component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk 3</td>
<td>Survey 1</td>
<td>Students were asked to answer the first online questionnaire. This sought to determine the level of confidence they had in their academic writing skills. Additionally, external students were asked about their experience of studying in external mode. The researchers posed questions relating to isolation, flexibility and communication.</td>
</tr>
<tr>
<td>Wk 4</td>
<td>Assignment 1</td>
<td>All groups submitted Assignment 1, which was a short academic essay. The grades for this first assignment provided the pre-intervention assessment of academic essay writing skills.</td>
</tr>
<tr>
<td>Wks 5,6,7,8</td>
<td>Intervention</td>
<td>Four one-hour workshops were delivered live via the Wimba online medium. These were recorded and archived.</td>
</tr>
<tr>
<td>Wk 9</td>
<td>Assignment 2</td>
<td>The post-intervention assessment was the grade from their final essay.</td>
</tr>
<tr>
<td>Wk 9</td>
<td>Survey 2</td>
<td>An online questionnaire was administered after students had submitted Assignment 2, and before they had received their results. Again, it sought to determine their confidence levels. External students were again posed additional questions, which sought to ascertain their impression of studying in an online classroom.</td>
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</table>

5.2. Intervention

Four one-hour workshops were delivered via the Wimba online room from week 5. Prior to the commencement of the first online session, students were sent details about how to access the Wimba online room. In addition, an online orientation was given to students at the start of the session. Once logged into the Wimba online classroom, students were able to ask questions, discuss issues either by the using the voice tools or by typing their responses.

The content was determined in consultation between the discipline lecturer and the ALL lecturer. The discipline lecturer was able to identify the academic essay writing skills that he noticed were lacking in his students. It was agreed that the discipline lecturer would attend the online workshops. His role was to address any queries students had regarding discipline content. In this way, students had access to both the discipline lecturer and the ALL lecturer who was the presenter of the workshops.

The skills presented were:

1. Week five: *Analysing the essay question and planning the essay*. This workshop focused on understanding the Assignment 2 task, then planning an outline for the essay.
2. Week six: *Essay Structure and Format*. This workshop discussed the structure of an essay, namely introduction, body and conclusion. It also examined the structure of a paragraph, namely topic sentence, supporting sentences and linking sentences.
3. Week seven: *Critical Analysis*. This workshop focused on the difference between descriptive writing and analytical writing. Students learned to critically evaluate the difference by noticing the wording in each sentence, and the use of comparative phrases and linking words. There were interactive exercises throughout wherein students practised recognizing the two styles of writing.
4. Week eight: *APA referencing style*. Students learned the mechanics of using the APA referencing style and format. There were numerous interactive exercises throughout requiring students to correct referencing errors.

Attendance at each workshop, both synchronous and asynchronous, averaged 44 students per workshop. The number of logins determines attendance numbers at the asynchronous recorded version of the workshop. The total number of students who attended one or more workshops was 54. Forty eight received full participation points (attending 3 or more sessions). Four students attended only two sessions and two students only one session. This attendance reflects a 69 percent “full” participation rate for the external group.

**5.3. Measures**

Following are the measures which were used to collect data for analysis.

**5.3.1. Qualitative data**

Data was gathered via two online survey questionnaires. The research team designed and administered the first survey in week 3 of semester before students were required to do an assessment, to elicit their perception of competency in relation to essay writing tasks. This survey was extended for external students to include questions about isolation, flexibility and communication.

Survey 2 repeated the same questions regarding students’ confidence and perceptions of their skills to ascertain if these had changed since the first survey. Additionally, it asked external students about learning academic skills in an online medium. Specifically, it elicited their confidence levels in contributing to discussions; whether they felt it was a safe and effective place to learn; and if they felt connected to the university and other students. This was administered in week nine after they had submitted Assignment 2 but before they had received their marks, leaving them free to express their opinion, without it being influenced by the marker’s assessment.

**5.3.2. Quantitative data**

In order to establish whether the Wimba intervention was efficacious in increasing the academic competencies of students and their consequent success rates, students’ marks from assessments pre and post intervention were used. The two assessments were as follows.

**Assignment 1**

*In an 800-1,000 word essay, weighted at 20%, students were asked to compare and contrast the points of view of two articles. They had to note the differences, and support their perspective with evidence. The academic skills required for this assignment were correct interpretation of the task, appropriate essay format and structure, the use of critical analysis and correct use of APA referencing style.*

**Assignment 2**

*This assignment involved a 2000 word essay requiring critical reflection, weighted at 40 percent. It required the same skill sets as Assignment 1, ensuring that the assessment criteria were the same for both assignments. Assignment 2 was submitted in week nine after the intervention was complete.*

Both Assignments 1 and 2 required the same set of academic essay writing skills; that is, the ability to interpret the task correctly, structure and format an essay, use an analytical approach, and the correct use of the APA referencing style. However, in Assignment 2, critical thinking and overall response to the question was given additional weighting. Assignment 1 served as a diagnostic/base line from which the research team measured students’ academic writing skills, as listed above. Assignment 1 was submitted before the intervention.
The marks from both assessments were then compared with the assessment marks from the non-participant external cohort as well as the internal control group.

6. Results
6.1. Assignment assessment results

The pre- and post-ALL intervention assessment results of each of the four study groups were examined to determine the extent to which the online Wimba intervention for external students was associated with any improvement in these student learning outcomes.

The first step of the analysis was to investigate whether there was any significant difference between the study groups in terms of their mean pre-intervention assessment grades. In Figure 2 below, the shaded bars represent the mean pre-intervention assessment grade on Assignment 1 of each group together with their 95% confidence interval (CI). Because all of the CIs associated with each group’s scores overlap it can be concluded that there was no significant difference between the groups in terms of their mean pre-intervention assessment scores.

![Figure 2. Mean grades for Assignment 1 by group membership. Error bars are 95% confidence intervals.](image)

The next step of the analysis was to investigate whether there was any significant difference between the study groups in terms of their mean post-intervention assessment grades. In Figure 3, the bars represent the mean post-intervention assessment grade of each group together with their 95% confidence interval (CI). In this figure it can be seen that while Group 1 (External synchronous ALL) had the highest mean post-intervention grades, this was only significantly different to the mean grades of groups 3 and 4 (i.e. their CIs did not overlap).

![Figure 3. Mean grades for Assignment 2 by group membership. Error bars are 95% confidence intervals.](image)
Because the students’ post-intervention assessments would also have been influenced by their pre-intervention grades, an analysis of covariance (ANCOVA) was used to enable comparison of the post intervention assessment grades while also taking into account (that is adjusting for) the baseline assessment grades. Figure 4 below shows the mean post-intervention scores for each group after this adjustment was made.

**Figure 4.** Adjusted mean grades for Assignment 2 by group membership. Error bars are 95% confidence intervals.

Figure 4 shows that external students who participated in synchronous ALL (Group 1) still had the highest mean post-intervention grades after adjustment for their baseline pre-intervention assessment grades and that this was significantly different to the mean grades of Group 2 (External students who participated in asynchronous Wimba), Group 3 (External students who
did not access Wimba) and Group 4 (Internal comparison group who received no ALL support). The size of this difference was significant at the p = 0.05 level (i.e. their 95% CIs did not overlap).

6.2. Survey Results

The external students who were surveyed about their experience of using Wimba felt quite positive about it (Table 2) and commented that it replicated to some degree a classroom experience where they were able to gain a fuller understanding of the tasks and academic expectations.

Table 2. External students’ experience of using the Wimba medium.

<table>
<thead>
<tr>
<th>Students’ reports of their experience of using the Wimba medium</th>
<th>Positive responses</th>
<th>Negative responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey 2 (Likert scale)</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>Open questions</td>
<td>79%</td>
<td>21%</td>
</tr>
</tbody>
</table>

The open, that is, undirected questions, were of particular interest to the researchers. Seventy three percent of the positive responses spoke of their positive reaction to having the contact and communication with other students and the lecturers. The other positive responses were about the content of the workshops.

Specifically, the second survey asked two open questions. In one, students were asked to “suggest (if applicable) up to 3 positive experiences about learning academic skills in a Wimba classroom”. Their responses showed that they appreciated being able to communicate with others and develop their learning skills by doing so.

Typical examples of students’ comments to the open questions in the survey were:

- Wimba gave me a chance to clarify my ideas;
- I feel like I am in a classroom rather than at the other end of the country;
- I feel I can ask questions and I get answers straight away;
- Very interactive; I learn so much more this way;
- Excellent that somebody actually explains what is required instead of just reading it and not fully understanding;
- Gauge my level of knowledge against other students, and
- Learn what queries other students have.

Most of the negative responses to the open questions were to do with technology; specifically, their connectivity. Some students found that they were unable to access the audio tool and were required to type out their questions. Examples of their responses include:

- It was hard to say what I wanted to because I had to type everything.
- Not everyone is confident in asking questions.
- Internet connection difficulties
- Sometimes students’ levels of knowledge are broader than others, and they spend too much time on one subject.
- Cover some topics too slowly.

The results from this survey support Tinto’s (1997) discussions about collaborative learning strategies. He found that students learn by interacting in the classroom, and voicing their ideas. He defined the classroom as “the crossroads where the social and academic meet” (p. 1). Similarly, Cross (1998) states that “the current wave of interest in learning communities is not, I think, just nostalgia for the human touch, or just research about the efficacy of small-group learning, but a fundamental revolution in epistemology” (p. 7).
7. Findings

The findings of this study demonstrate the differential benefit which students gained from the various modes in which ALL support was available and utilised by internal and external students. After adjustment for their original baseline assessment grades, the post-test assessment grades of the four study groups showed that Group 1 (external students who received synchronous ALL support) had made the greatest gains. Their mean Assignment 2 grades (77%) were significantly higher than those of Group 2 (69%), Group 3 (67%) and Group 4 (66%), respectively.

While the mean post-assessment grades of Group 2 (external students who accessed asynchronous support) were larger than those of Group 3 and Group 4 (69% vs 67% and 66% respectively) these differences were not large enough to be significant at the p=.05 level. The feedback from students and the fact that the Group 1 students produced 24 pages of texting ‘conversations’ during these on-line workshops, in addition to their live voice communications suggests that their active engagement with the learning activities, with each other, and with the lecturers was the key factor in their having made the most significant gains.

8. Implications for ALL educators

8.1. Challenges

The study identified several challenges to implementing successful online ALL delivery. These are discussed below.

8.1.1. Technical issues

Where there is a large percentage of students studying online it is imperative that ALL lecturers become skilled at using online tools, and need to be aware that there is always the possibility of technical problems during the transmission when in an e-learning environment. Students may have challenges with bandwidth issues, and some may lack computer literacy.

8.1.2. Time zones

An additional issue when teaching students from across the country, in a cyberspace room, is the difference in time zone between the university and the external students. This cohort often choose external studies because they work, and therefore are not available to study until early evening. To overcome this, lecturers may have to work beyond the normal close of business.

8.1.3. Participant numbers

Another challenge is the small number of students who choose to participate when lecturers cannot make attendance mandatory, nor offer a mark for attendance. On the other hand, if the whole cohort were to attend, there is the challenge of managing a large class in an online environment.

8.1.4. Relationship with discipline lecturer

To carry out embedded academic support online, the ALL lecturer needs to develop a good relationship with the discipline lecturer. They need to collaborate and discuss any potential disputation before the program. The relationship needs to be such that the discipline lecturer is willing to attend the workshops, and is willing to sacrifice students’ tutorial time to the teaching of academic skills.

8.2. Opportunities

8.2.1. Learning through interaction

The findings of this study suggest that external students learn in an online medium by interacting with others, just as they do in a face-to-face classroom. Educators may do well to ensure there is a strong component of interactivity in their learning materials when teaching in
an online medium. If lecturers were to create a safe and nurturing environment, students would be encouraged to voice their comments and questions. Learning in this manner appears to be more effective than when students are studying on their own asynchronously.

8.2.2. Opportunity for external students

Students appear to enjoy participating when they have the opportunity to interact. They also have the opportunity to learn academic skills which may not be the case if there were no occasion for e-learning.

8.2.3. Improvement in assessment tasks

A benefit to the discipline lecturer that flows from incorporating ALL into the curriculum for external students is that he/she may receive essays of a higher standard.

8.2.4. ALL lecturer reaches more students.

The ALL lecturer has the satisfaction of knowing that he/she has reached many more students with the e-learning tool than he/she would have otherwise. Also, teaching a group in this way may well reduce the demand for individual ALL consultations and the number of queries referred to the subject lecturer.

9. Conclusion

The findings of the Charles Darwin University study on the efficacy of using an e-learning environment to teach ALL skills to external students confirms the benefits of using aural, oral and visual senses to discuss and synthesize information, reinforcing the theory proposed by Mallory et al. (2009).

It is evident from the findings that students who engage in synchronous online learning benefit from the “live” interaction, which offers students the opportunity to interact with each other and the lecturers (both the content lecturer and the ALL specialist lecturer). The quantitative results together with the qualitative feedback suggest that students gain useful academic skills in the online synchronous ALL workshops as well as experiencing a sense of participating in a learning community. This social presence breaks down feelings of isolation and enhances students’ capacity to learn in an environment, which to some degree replicates face-to-face learning in the classroom. The study also highlights the value of students getting instant feedback and being able to ask questions; students’ appreciation of the presence of other students who may be dealing with similar challenges is also apparent from their comments. The findings suggest successful learning outcomes may be achieved by students if real time communication is used in the learning environment.

It is also apparent that asynchronous engagement does not deliver the same outcomes as students do not have the same opportunity to actively question, respond to and learn from their lecturers and fellow students. This finding reinforces Salmon’s assessment (2005, p. 214) that “teaching online has almost nothing to do with computers and everything to do with time, motivation, knowledge and the new agency of cyber-experience, as well as good appropriate teaching.”

The study also showed that a trialogic engagement, or three-way interaction, as suggested by De Fazio (2008), might be replicated and achieved in an online medium. The presence of the content lecturer in the online classroom has the effect of reinforcing the importance of well-developed academic skills together with a demonstrated understanding of the content area.

In summary, this study has shown that students who study exclusively online benefit from well-developed and resourced synchronous online teaching. Further, the dialogue between lecturers and students in the live classroom allows for richer and more engaging learning experiences.
References


