# Resource Development and Use in ALESS: An Evidence-Based Approach to Students' Reception and Use of the *ALESS Collection* and *Companion*

Guy D. MIDDLETON

## Abstract

This short essay describes the development of self-accessible resources for students in the ALESS (Active Learning of English for Science Students) Program at the University of Tokyo. After introducing a range of these resources, it focuses on the *ALESS Collection* magazine and *ALESS Companion* reference booklet as key props in the scaffolding of autonomous learning, exploring the reasons for and manner of their development. Taking an evidence-based approach, I then present the results of small-scale action research into students' reception and use of these resources before providing suggestions for how they could be developed to maximise benefit. It is hoped that the essay will provide a record of resource development in a new program, be useful to future new ALESS faculty, and promote a more evidence-based approach to development in education.

Keywords: resources, development, autonomous learning, action research, evidence-based practice, reception

## Introduction

In developing education programs, resources (as distinct from classroom materials) for students to use as part of their learning tend to be created at first by planning and predicting specific requirements of the course and the needs of students. Subsequent development takes place in light of experience, when existing resources can be made more suitable and new material created to meet fresh or hitherto unforeseen needs. Resources

develop then in both planned and *ad hoc* ways, inspired by the experience and perceptions of faculty, student feedback, as well as the views of management. At the same time, their development is affected by such factors as pedagogical, institutional, and management aims, perceptions of need, availability of funding/space/time/willingness, or other resources. This short paper discusses resource development in the ALESS (Active Learning of English for Science Students) Program at the University of Tokyo and examines two paper-based resources in particular.

## The ALESS Program

The ALESS Program, which began in spring 2008, introduces freshman science students at the University of Tokyo to writing IMRD (introduction > methods > results > discussion) formal experimental research papers in English. This type of paper, especially in English, plays a key role in global scientific research and communication and familiarizing students with it is clearly important in developing scientific literacy as well as language skills (Sollaci and Pereira 2004; Tardy 2004; Wu 2011). The short paper that students write is loosely based on the *Brief Communications* and *Brevia* papers appearing in the interdisciplinary journals *Nature* and *Science*. These often follow a recognisable IMRD format and have a suitably formal scientific register (Allen and Middleton 2010).

Students' writing work on the program is based around the planning and undertaking of a research project—a small-scale original experiment—which is carried out individually or in small groups. Both the experiment plan and the paper are developed incrementally in a process-based manner that uses modelling, peer feedback, and revision to guide students through the one-semester class. The work takes place in an active, student-centred atmosphere of guided discovery and independent research, with classes delivered in English using English-only materials. The pedagogical rationale of ALESS owes something to a variety of identifiable language (and general) teaching methodologies, including: active, autonomous, discovery-based, experiential, genre, project- and task-based learning. Pedagogical aims are vested not only in the final product, or the familiarization of students with the IMRD structure and formal scientific

register in English, but also in the wider goals of fostering autonomy and responsibility, collaborative and communicative learning, critical thinking and reflection, and the idea of active participation in a research community—the provision of an apprenticeship to the scientific community.

## ALESS Resources: Komaba Writers' Studio and the ALESS Lab

ALESS began, as programs often do, with few student resources: there were a set of original worksheets, developed by the course founders, for new teachers to prepare classes from, and an embryonic writing center in a bare office room, staffed by a few trained graduate student teaching assistants (TAs). This situation has changed dramatically since 2008, with the maturing of the program and its aims. At the time of writing, in autumn 2012, the ALESS Program has developed a host of resources that students can access as directed by faculty or on their own.

The writing center has become Komaba Writers' Studio (KWS), a busy place occupying a state-of-the-art room where student-TA interviews and help-sessions are held (e.g. on coping with an English language environment, using software such as Excel and Word), and where students can drop by to consult various 'help' resources, all of which are intended to support them during their immersion in the ALESS experience. The development of KWS can be seen both as a response to student need for more individual feedback and support with composition than is possible for ALESS faculty (who teach around 100+ students per semester) to give and as part of a deliberate policy on the part of management. This policy is underpinned by the desire to foster a collaborative and collegial approach to developing writing skills, making consultation about text work normal, developmental, and transformative, rather than simply remedial (Robinson 2009). KWS, which operates primarily in Japanese and is staffed by graduate student teaching assistants (TAs), can work as a psychological and practical support for students, itself a space for joint teaching and learning (and not only in the mechanics of writing), as well as an important site for graduate students to engage in tutoring undergraduate students through constructive dialogue (Jones 2001; Tobin 2010).

On the experiment side, ALESS students can also now make use of a dedicated science lab managed by an active research scientist and staffed by graduate science student TAs. In the lab they can seek help and advice (in Japanese) on planning and carrying out the experiment and interpreting results, borrow equipment, and even perform their ALESS experiments. The lab has been developed as a fair response to students' needs, since initially there were no facilities to enable any formal consultation about the experiment and no provision of equipment or experiment space; early ALESS students were very much thrown into being as imaginative and resourceful as possible. Although faculty and peers acted as checks and guides in experiment development through a planning process (which developed over time in class), it was widely felt necessary to offer students more and better formal support. With the co-operation of the university, a space in the main teaching building at Komaba campus was made available to set up the ALESS Lab, with a budget for staff and equipment provided. In the 2011–2012 winter semester, there were almost two thousand student consultations, which demonstrates the need that the lab meets.

These two 'service' resources, KWS and the ALESS Lab, have become, over time, key supports in the delivery of the ALESS Program; both are freely accessible to all students, approximately 1000 per semester, on a drop-in and appointment basis, and offer them support in all aspects of their work. In addition, other resources are available through KWS and the lab, which are discussed below.

## Additional Resources and Delivery Language

Teaching and learning in ALESS are clearly recognized to take place in and out of the classroom, as a form of active, experiential learning (Marsick 1990; Moore 2010; Qualters 2010). Students may 'learn' in the ALESS Lab/KWS, and at 'home' (anywhere else outside the classroom), which is fitting for a program that seeks to promote the autonomous learning within a research community that ALESS encourages (Cotterall 1995). Although the ALESS Program is an English language program (part of the Department of English Language at the University of Tokyo), and classes are delivered in English with English language mate-

rials (Figure 1), support services are advertised, delivered, and accessed primarily in Japanese; at 'home' students will work (reading, writing) in English but may be thinking (though it may differ by task) in Japanese (or other native language) (Centeno-Cortes and Jimenez-Jimenez 2004; Wang and Wen 2002). Despite this, self-access resources may still play a potentially significant role in scaffolding students' practical project work and acquisition of scientific literacies in English, and indeed are intended to do so (Fang 2005; Hodson 2008; Laugsch 2000; Wallace 2004). The use of Japanese as a metalanguage for transacting particular in-class tasks is also often allowed with this end in mind—many of the skills practiced are intellectual or interpersonal, rather than straightforwardly language acquisition tasks.

**ALESS class**
Delivered in English (some use of Japanese metalanguage may be permitted among students to carry out some in-class 'English' tasks)

**ALESS Lab/KWS**
Japanese/English

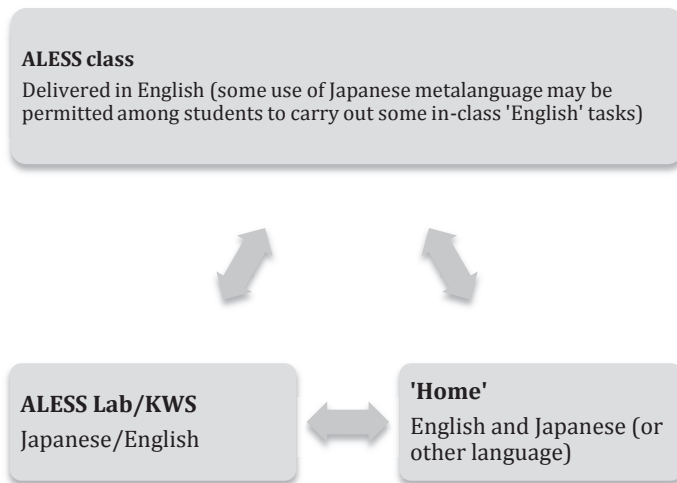**'Home'**
English and Japanese (or other language)

Figure 1    Learning on the ALESS Program in multiple spaces and languages

Other resources are available to students (and teachers) via the ALESS website, the ALESS Lab and/or KWS. The website itself, which hosts teachers' class materials to be accessed on demand by students, is written in both English and Japanese. Japanese is used primarily for opening-page announcements (about the Lab/KWS, for example; see Figure 2) 'administrative' information, and 'form-filling', as when students make a KWS appointment or submit their final paper via the website at the end of semester. There is an *ALESS Program Guide* in English and

Japanese, which describes the aim of the Program, the outcomes of the class, and details the support available; this can be given to students in the first class, who usually have little specific knowledge about the class and its aims and methods. A University of Tokyo research ethics leaflet, and a required experiment safety form, distributed by teachers, also use both English and Japanese. Teachers' pages and other resources, such as 'Experiment Help', predominantly use English.
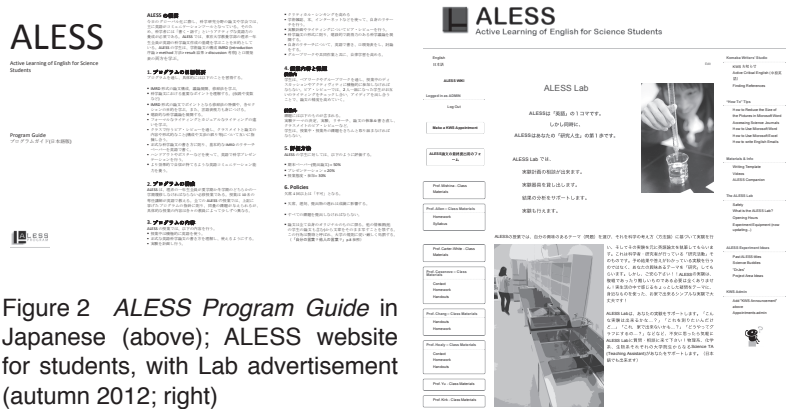


Figure 2 *ALESS Program Guide* in Japanese (above); ALESS website for students, with Lab advertisement (autumn 2012; right)

Additional resources offer students support with both devising their experiments and writing their papers (see Box 1). 'ALESS Experiment Help' developed out of the need to help students generate workable ideas for their small-scale research projects. Lists of past project titles and references to the online science learning website *Science Buddies* (n.d.) that were given out in early classes. Subsequently, booklets of past papers (*ALESS Past Papers*) were placed in KWS along with copies of an undergraduate journal *DrJes*, produced by Dawson College, Canada, of a level of science and English thought accessible for students to work with were added (Dawson College n.d.). These remain available to students in KWS and via the ALESS website, reducing the need to overload students with handouts. In addition, as the ALESS Program developed, and as the difficulty of generating and researching a topic (for knowledge and the literature review) became apparent, collections of published past papers in English (*Project Area Ideas*) were made available to students in both electronic and physical form. Later still, the magazine

*ALESS: A Collection of Student Papers* ('the *Collection*') was inaugurated to aid idea generation and provide additional models for student writing (Figure 3).

<div style="border: 1px solid black; padding: 1em;">

ALESS information for students
*ALESS Program Guide* (English / Japanese) — given out in class

Experiment help
*DrJes* (English) a college journal of undergraduate science papers — available in KWS / ALESS website
*Past ALESS titles* (English) — list on the ALESS website / perhaps given out in class
*Project Area Ideas* (English + Japanese keywords)—bank of published papers, KWS and ALESS website
*Research paper files* (English) other collections of published papers prepared by individual teachers, KWS

Paper resources for experiment, writing, presentation etc.
*ALESS Companion* (English only) — downloaded from ALESS website and printed
*ALESS Past Papers* (English only) — 6 volumes in KWS
*ALESS Collection* (English + Japanese teacher comments in volume 1, vols. 2/3/4 English only) — made available from KWS / ALESS Lab (autumn 2010–spring 2012)

Video resources (ALESS website / class DVD)
*An Introduction to Peer Review* (English / Japanese audio & subtitles)
*Audience-Centered Presentations* (English / Japanese audio & subtitles)
*Your ALESS Experiment* (English only)

KWS
Help sheets of various kinds (Japanese only)

</div>

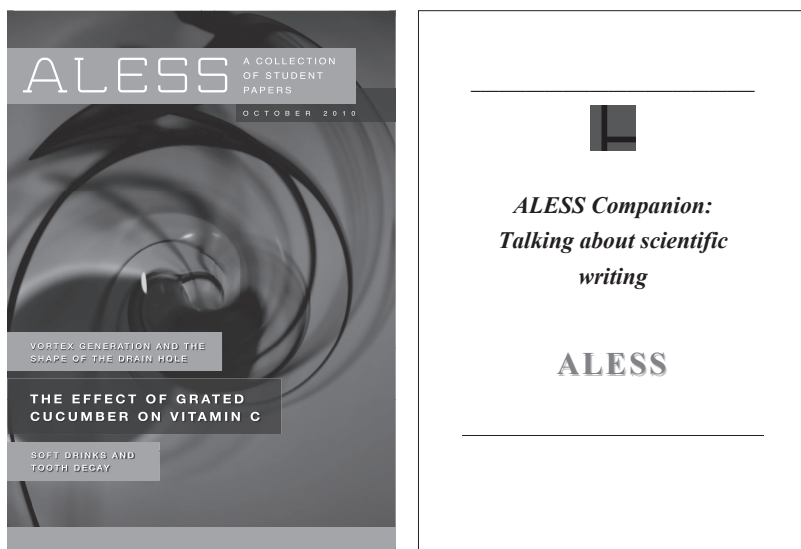Box 1   Some shared resources developed in the ALESS Program

Figure 3    *ALESS Collection* Vol. 1 (left); *ALESS Companion* (right)

Further to these resources for experiment help, the *ALESS Companion* booklet ('the phrasebook' as it was initially known) was created (English only, so far) to provide students with functional language examples and discussion metalanguage that they could actively use in class (or out of it) as appropriate (Figure 3). It has proved useful as a reference guide for the writing and peer review of student papers, and is available to all students (and faculty) via the ALESS website. In addition, a series of self-access helpsheets (in Japanese) have been created for students by TAs in KWS to support students in using software such as MS Word and Excel, writing emails in English, and to provide other practical guidance to meet the demand of less computer-literate students. The website also hosts three short videos available via the ALESS website, about peer feedback, presentations, and experiment design (the first two are available in English and Japanese). The videos were devised as a simple way to introduce students to some of the key content and methods used in ALESS. Most recently, in winter 2012, an ALESS-based textbook *Active English for Science* was published by the University of Tokyo Press, based on existing ALESS class materials.

These resources are freely available for all ALESS students to self-access and study, though teachers may also use them in

class; students are encouraged and expected to become familiar with and to make use of these resources themselves (the textbook will be accessible to students via the university library with reference copies in KWS/the lab). Yet, despite their potentially significant role in supporting students' ALESS experience and in scaffolding autonomous learning of various kinds, and notwithstanding the budget, time and effort expended in developing and managing these resources, little formal research has been done to evaluate ALESS students' reception and use of these resources. The later sections of the paper will contribute some data in this regard.

Having introduced some of the resources now available to ALESS students, I will focus on the development of the *ALESS Collection* and *Companion*, which I was involved with, and then examine their reception and use by students. I will also discuss the use of Japanese in ALESS resources, and argue that the (re)inclusion of some Japanese in the *ALESS Collection* would provide benefits for learners. In the spirit of declaring interests, my perspectives are influenced by a background in teaching EAP (English for Academic Purposes) and related Englishes to under/postgraduates/professionals at several universities in the UK and Japan, as well as other institutions, from formal study of education, applied linguistics, and language teaching, and from my position as a continuing student, which allows me to remain connected with the undergraduate learning experience. I also intend that this paper will contribute a record of what ALESS resources there are and how they emerged, which is useful for new staff joining the Program, but also for those interested in program and resource development. By observing and reflecting on how such development happens, it is to be hoped that, despite the (welcome) *ad hoc* and organic nature of this process, its execution and management can nevertheless continue to be improved.

## The *ALESS Collection* and *ALESS Companion*

The *ALESS Collection* magazine of student papers was introduced in autumn 2010 (with papers written in the previous semester) to provide a platform where faculty-selected student papers could be published and shared, and as a means to cele-

brate students' achievements. In a program where teachers working to the same ends in terms of product individualize course delivery and materials, it was also conceived as a shared resource to introduce incoming students to the major themes and tasks they would encounter on the ALESS Program (the experiment and IMRD paper) through an easily accessible (free), attractive (professionally designed and produced with its own distinctive style), visual (colourful with plenty of graphics) document. In fact, the initial proposal was to produce a much simpler in-house product, where papers would simply be set in a standard format, as a development of the *ALESS Past Papers* some teachers had already provided access to, and somewhat akin to a rougher *DrJes* (Dawson College n.d.).

The *Collection* was intended to inspire, motivate, and support new ALESS students, and on a practical level to provide them with a place to start with ideas about experiment topics and methods, as well as model student texts in the desired form and at an accessible target level (Jones and Freeman 2003). The *Collection* thereby provided a means by which students could become acculturated to the ALESS environment and its expectations in content and language, and the broader academic and scientific discourse communities (Duff 2010). By looking at, reading, and working with models (model published texts being used in class too), students also acquire or refine fluency in the target literacies (academic and scientific literacies), effectively teaching themselves by using the *Collection* (Hinkel 2006, 125–126; Jones and Freeman 2003; Plakans 2009).[1] Accessibility was increased by the inclusion of brief teacher comments after each paper, in English and Japanese. The *Collection* was seen from the outset, therefore, as a method by which ALESS faculty could communicate and set expectations, standards, and values about science and science writing in the ALESS research community outside an instructor-led classroom context.

An additional source of learner support and guidance of a different kind had already been made available (since autumn 2009) in the form of a reference booklet for students—*The ALESS Companion*. The *Companion* was produced in response to a perception of silence in the classroom when attempting to transact tasks primarily in English (Harumi 2011). It has three parts: 1) the 'Introduction', which includes advice on using the booklet

## 7. Talking about the Abstract

The Abstract is a separate section that appears at the beginning of a journal article, or is accessed separately online. It serves to attract, interest, and inform the reader, and summarises the whole article in a few sentences, sometimes as few as three. The structure can be similar to a whole paper. It often includes a list of keywords at the end. Read the example sentences and the content questions, and then use the phrases below to help peer review your partner's abstract.

**Example sentences**

**The topic area/background** (present tense; similar to opening of Introduction)

Example: 'The process of orb weaving and the resultant orb web constitute a good example of a complex behavioural pattern that is still governed by a relatively simple set of rules.' (14)

**Description of the research**

Example 1: 'We used the orb spider *Araneus diadematus* as a model organism to study the effect of three neurotoxins (scopolamine, amphetamine, and caffeine) on the spider's behaviour.' (14)

Example 2: 'Here I show that dust storms that occurred in Asia early in 2004 created unusual ice clouds over Alaska at temperatures far warmer than those expected for normal cirrus cloud formation.' (15)

**What was done (method) and what was found (main result)** (past tense; personal pronouns or passive)

Example: 'Scopolamine was given at two concentrations, with the lower one showing no effects but the higher one reducing web-building frequency; there also appeared to be a weak effect on web geometry.' (14)

**Conclusion/significance/application** (personal pronoun/reference to the research; hedging)

Example: 'Our observations suggest that these neurotoxins disturb parts of the web-building programme presumably by affecting different actions in the spider's CNS.' (14)

**List of keywords** (topic area; variables; subjects)

Example: '*Keywords:* Invertebrate behaviour; Web building; Orb geometry; *Araneus diadematus* spider; Scopolamine; Amphetamine; Caffeine' (14)

**Content questions**

1. What is the topic area/background? (Introduction)
2. What did you do? (Introduction – a statement of purpose)
3. How did you do it? (Methods)
4. What did you find? (Results)
5. Why is it important/what does this show/how can this be applied? (Discussion)
6. What keywords can describe aspects of the research (topic area/independent and dependent variables/subjects)?

15

Figure 4    Page from Part 2 of the *ALESS Companion* showing 1) description; 2) Example sentences; 3) content questions for the abstract. The next page contains functional sentences and vocabulary for giving peer feedback

and an example peer review conversation; 2) 'Active Talk', which contains ten chapters, one on each of the IMRD sections and others on style, scientific method, proposals, citations and references, posters, and format; and 3) 'Presentations and Classroom Talk', which covers presentations/question and answer and classroom language (Figure 4).

The main purpose of the *Companion* was to help students to discuss their writing by providing a model peer review conversation along with some basic sentence patterns and vocabulary items covering a range of functions likely to be required (the later edition was rewritten to dovetail with the peer review video available on DVD/the ALESS website). Part 2, in addition to metalanguage, contains descriptions of each of the IMRD sections, example sentences (drawn from numerous authentic published research papers) expressing typical functions, and content questions (prompts to elicit the usual content/moves of each section). It was thought that, because ALESS had at that time a relatively flexible syllabus and no textbook, such a reference work would provide ALESS students with psychological as well as practical support when immersed in an unfamiliar type of course where expectations might not always be clear. Furthermore, it was designed to be of use to all faculty and students regardless of potential differences in teaching presentation by individual faculty. Through formal student feedback, it became clear that the *Companion* was a useful and used resource, but what was not predicted was that it appeared to be used more as a writing reference booklet than one which increased the amount of English metatalk about texts in class.[2]

Anecdotally, it seems that the *Collection* too has had a positive reception among students, faculty, and management, and it is generally regarded as a beneficial resource in the ways originally intended—increasingly students refer to past *ALESS Collection* papers in their own and build on each other's work, which means that there is a more discernable and authentic audience for 'students as writers' to write to; the lack of a real audience can render student writing composition and language classes inauthentic, in the sense that it is written to be graded, rather than read and shared (Magnifico 2010; Moskowitz and Kellogg 2011; Whitney *et al.* 2011). This referencing of student work also contributes to the formation of a historic body of ALESS stu-

dents' research and an undergraduate research community that stretches over time, putting students own actions and learning into a larger context. It is also regarded as a good and very visible 'advertisement' of what ALESS does and what ALESS/UT students are capable of (and may be learning) as undergraduate researchers (Laursen *et al.* 2010).

While the *Companion* was an individual and one-off creation, one that could no doubt be improved and made more accessible and useful, the *Collection* remains an ongoing and still developing faculty production, now amounting to four volumes, each containing around 20 student papers. Its continuation beyond a single volume was by no means guaranteed, given that production requires an editorial team (now rotating through faculty) and faculty co-operation in choosing and editing papers, but with management encouragement it has been possible. A fifth volume seems likely to be produced for spring 2013, which will see a shift from semester to annual production due to budgeting reasons. This shift seems likely to create changes in the end product of the *Collection* itself, as well as in managing the selection of papers, and the overall production process.

Up to volume four, each of the ten faculty have contributed two papers (three with editors selecting two) from their classes in each semester, but an annual *Collection* of forty papers, even if financially and physically viable, would seem an unattractive and unwieldy prospect, potentially more likely to overwhelm students than inspire them. The practical alternative seems to be to represent fewer students' per semester in each *Collection*, but this lowers each student's probability of being able to get their paper 'published' in future *Collections*. While it could be argued that this may increase the competition among students to produce worthy papers, given the compulsory nature of the class and the mixed reception and (perhaps largely extrinsic) motivation of students, the opposite seems more likely to be true—that the overall motivational impact of the *Collection* (if any), especially with students who require more help (or persuasion), will be reduced.

Regardless of the time, energy, and resources invested in the *Collection* project so far, and the uses and functions assigned to it by faculty and management, little formal research has been done on its reception among and effects on ALESS students', the

stakeholders for whom the *Collection* is produced. Yet, as a resource, it has changed over time at the behest of editors, faculty, and management. I carried out some basic 'action research' over two semesters (in 2011/2012) in order to assess the reception of the *Collection* and to contribute to its continued development from a basis of evidence (Evidence-Based Practice - EBP) rather than desire or opinion (Rainey 2000; Torres *et al.* 2012; Winters and Echeverri 2012). Below, I detail some of the changes made to the *Collection* and the circumstances and aims behind them, after which I discuss the principle of evidence-based practice, a common and valued approach to educational (and other 'intervention') planning. After that, I relate the data I collected and the conclusions I draw from it.

## Developments in the ALESS Collection

Changes to the *Collection* have been relatively few, sometimes forced by circumstances, but also shaped by a desire to use the *Collection* as a medium through which to communicate directly and corporately to ALESS students. One key change after volume one was the dropping of the bilingual (English and Japanese) teacher comments that had appeared after each of the twenty papers (the bilingual 'mission statement' in the front cover remained). These comments briefly stated the teacher's positive reasons for selecting the paper in terms of its writing and/or scientific method or interest, along with something that might possibly be done better (to show that no paper was 'perfect'). This enabled communication between all faculty and all student readers, and was inspired by the faculty comments that appeared after papers in *DrJes* (Dawson College n.d.). The bilingual comments had been intended, as the editorial committee and faculty had discussed, to support students in a number of ways, primarily by providing an easy entry (a scaffolded entry) to the otherwise wholly English language magazine. In addition, they provided an instantly accessible means of interpreting each paper against some kind of standards or values—positive points and points where improvement might be made were included, showing the paper's reception by the teacher. It was generally thought that this would make the *Collection* instantly accessible and user-friendly and more effective as a self-accessed learning

resource. In this case, the change was driven by the requirement to gain co-operation in producing the second volume by reducing input required from faculty.

With volumes three and four, a production process became semi-regularized, with a new system of revolving editorship agreed; various responsibilities for editing individual texts to a general standard were given to faculty to reduce the burden of editorial duty and share labour. This period saw management add information about KWS and the new ALESS Lab to the front matter (in English and Japanese). In the context of the regularization of the *Collection*, it was thought that the bilingual comments boxes could return, and to discover whether they should be restored, in the run up to producing volume four, I undertook a survey of winter 2011/12 students in seven ALESS classes. Students were shown copies of volumes one, two, and three, and asked simply whether or not it would be helpful if future editions of the *ALESS Collection* should, like volume one, have brief teacher comments: 73 of 78 responses were 'yes' (94%) with 5 'don't minds'. This seemed to confirm that the original decision to include teacher comments had been the right one as far as students were concerned. However, this evidence was not accepted and an additional English editorial was included in volume four instead. This helpfully noted various 'good things' to be found in the papers, and pointed selectively at some papers that provided good examples of them. Clearly the editorial had a pedagogical aim similar to the bilingual comments, but it communicated the editors' rather than teachers' views. Furthermore, the English-only medium did not encourage students to make use of the comments included in the editorial.

I hypothesized that few students would read the new editorial, and thus that any potential pedagogical or psychological benefit from it would be lost. In contrast with brief bilingual paragraph of teacher comments in a coloured box after each paper, the editorial presented new ALESS students with an additional double page spread (three columns) of English text. This is in addition to the rest of the English language magazine full of unfamiliar text types, language, and in a small dense text (three columns per page) format, in a compulsory class delivered wholly in English. The presence of such a text, if noted by students at all, seemed more likely to be something they would

avoid rather than be an easy way in or a helpful tool to decode and contextualise the papers. First year students presented with the *Collection*, are apprentice students/researchers, however bright they may be, and however fluent in English, they are new to ALESS, to its philosophy and rationale (which they may no care about), and to their tasks within it; new to using English to read, write, talk about and do experimental science, and new to IMRD papers in formal scientific English (or an approximation of it). The provision of a Japanese paragraph as a point of entry, a foothold would seem a responsible, even obligatory move since it is simple to do and does not compromise any ALESS ethic of 'English only'. This was agreed for the first volume.

Students arrive at their first class, sometimes with negative stereotypes of ALESS (even present before students start at UT, in some cases (student feedback)) with little real knowledge of what they are expected to do and how they are expected to do it. For students to be informed, they are given information about the program, its resources, and the work they are expected to do. Since the ALESS Program requires not just reading, writing, and review, but active experiential out of class projects and learning, it is necessary to set up a context for action which goes beyond text work in the class. It therefore seemed counterintuitive to close down a useful channel of communication from faculty to students that could be readily appreciated with little effort or unnecessary cognitive load (Kirkland and Saunders 1991; Schnotz and Kürschner 2007).

In addition, the new editorial actually creates more work for editors, potentially more than the sum of teachers work in writing comments (time commitments and workload being initial stumbling blocks for the *Collection*), with potentially no benefit for anyone, whilst it also reduces an important opportunity for diverse views and voices to be represented; brief teacher comments had provided a mechanism for all faculty to communicate to all students through the *Collection*. Such an editorial promotes the editors' judgements and opinions rather than those of the teachers who worked with each student contributor, and who proposed the papers in the first place.

## Decisions Based on Evidence

On what basis should choices about educational 'interventions' and 'model' resources such as the *ALESS Collection* be made? Arguably, when not directly forced by budget, or circumstance, they should be made, wherever possible, on relevant evidence rather than opinion, in a context where evidence and knowledge is accumulated and reflected upon as normal and in response to perceived specific issues (Figure 5; Hammersley 2007; Torres *et al.* 2012; Winters and Echeverri 2012). Evidence can take many forms; experience is one form, randomized controlled trials another, but evidence can also be simple data gathered through action research (Lee 2012; Rainey 2000; Sim *et al.* 2004). Evidence can enable appropriate decisions to be made in response to the views of key stakeholders, whose views should be informed by relevant knowledge, enabling them to play a role in developing the educational environment to suit them (or their successors). This practice is ritualised in end of course feedback; overwhelming negative feedback about an aspect of class would probably be expected to result in considered reflection and possibly change.

| Step | Description |
| --- | --- |
| 1 | Ask an educational/pedagogical question |
| 2 | Acquire the best evidence |
| 3 | Critically appraise the evidence |
| 4 | Decide to integrate the evidence into practice |
| 5 | Evaluate the outcomes |

Figure 5    Steps in Evidence-based practice. After Winters and Echeverri (2012, 50).

In order to learn more about students' opinions and use of the *ALESS Collection,* and to provide more evidence on which to base future decisions about the form and content of the *ALESS Collection*, in particular those parts that can be used for more direct faculty/student communication (e.g. editorials/comments (choice of papers communicates values less directly)), I followed up my earlier basic questionnaire, which had overwhelmingly shown students to be in favour of reinstating bilingual teacher comments, with a further brief survey of students at the end of

spring 2012 semester (in July 2012). The reported data generated therefore comes from the primary users of the *Collection* rather than the opinion of faculty or producers of the *Collection* and therefore constitutes an important source of data and evidence on a key ALESS resource self-accessed by students. In addition, students were also asked about their use of the *ALESS Companion*. I describe the method and results below.

## Method

To test the hypothesis that few students would read the new style English editorial comments that replaced bilingual teacher comments, and to verify whether the results of my 2011 survey could be replicated, I devised a short questionnaire (*ALESS Quick Questions*) for students to complete in their final ALESS class (see Box 2). The survey was distributed to six classes ($n =$ 80). I introduced *ALESS Quick Questions* by explaining that faculty constantly reflect on the course/materials/teaching, and so on, and that I wanted to know how students used the *ALESS Collection*. I showed students an example of the bilingual comments boxes in volume 1 and the English editorial in volume four, passing these around the class so that students could compare the two directly. Students were provided with copies of volumes one and four to examine and these were passed around the class with the survey. Students simply marked their preferred options on the paper, as it was passed around (three options (yes, no, don't mind/neutral) for questions one and two).

1. *ALESS Collection* 1 has brief comments by teachers (in English and Japanese), but *ALESS Collection* 2–4 don't.

It would be helpful if future *ALESS Collections* should have *brief teacher comments* (in English and Japanese).

2. The *ALESS Collection* was helpful/useful for me in thinking about my experiment/writing my paper.

3. In *ALESS Collection 4*, I read the <u>editorial</u> at the front (pages 6–7).

4. I used the *ALESS Companion* to help me with writing, speaking, presentation etc.

Box 2   The four questions used in the ALESS Quick Questions survey

## Results

The results of the survey showed that a clear majority of students polled (76 = 95%) thought that it would be useful for future *ALESS Collections* to have brief teacher comments in English and Japanese (Table 2). Very few students reported reading the editorial in volume four (3 = 0.04%). This both confirmed the hypothesis and agreed with the previous survey results.

In addition to this, it was found that most students think that the *ALESS Collection* was helpful or useful to them in thinking about their experiment/writing their paper (67 = 84% students). Finally, when asked about the *ALESS Companion* most students (64 = 80%) confirmed that they had used it to help them with writing, speaking, and presentations etc.

It should also be noted that, since its inception, a number of students have based their experiments (by extension or replication) on previous student research 'published' in the *ALESS Collection* magazines, and have referred to these papers in their own. This provides additional confirmation of the utility of the *ALESS Collection*.

| | Yes | No | Don't mind |
|---|---|---|---|
| 1. *ALESS Collection 1* has brief comments by teachers (in English and Japanese), but *ALESS Collection* 2–4 don't.<br><br>It would be helpful if future *ALESS Collections* should have *brief teacher comments* (in English and Japanese). | 76 (= 95%) | 2 | 2 |
| 2. The *ALESS Collection* was helpful/useful for me in thinking about my experiment/writing my paper. | 67 (= 84%) | 5 | 8 |
| 3. In *ALESS Collection 4*, I read the editorial at the front (pages 6–7). | 3 (= 0.04%) | 77 | 0 |
| 4. I used the *ALESS Companion* to help me with writing, speaking, presentation etc | 64 (= 80%) | 16 | 0 |

Table 2    Results of ALESS Quick Questions survey (n = 80)

## Discussion

The paper began by exploring the development of ALESS resources, which first took place in the context of the maturing program and classes, and in response to student needs and faculty and management perception and policies. This led to the development of the writing center into KWS and the provision of the ALESS Lab, as well as other resources often accessed through them and the ALESS website. All of these resources, many offering Japanese or bilingual support, are well used and provide a far higher level of support for students than was at first available. In order to provide some evidence on students' reception and use of resources, namely the *ALESS Collection and Companion*, these were examined more closely through a small action research project in order to provide an evidence-based perspective.

## Utility and Language in ALESS Resources

Most students polled found the *ALESS Collection* to be helpful/useful and most used the *ALESS Companion* to help with writing, speaking, and/or presentations. Some even used Collection

papers as references in or as the basis of their own research projects. As predicted, very few students read the English editorial to volume four, whereas almost all thought brief teacher comments written in English and Japanese would be helpful in future editions of the *ALESS Collection*. Given that other resources selectively utilise a bilingual approach, and indeed the *Collection's* mission statement is bilingual, the reinstatement of the teachers' comments box would not contradict the rationale of the ALESS Program. Indeed, it could potentially provide significant benefits to ALESS students, in aiding autonomous learning, in positioning students in ALESS, and in imparting values and expectations about writing and science, at little cost.

The results of this basic research, which sought the views of the primary users of the resources in question, provides evidence which confirms that the decision to include brief teacher comments in the *ALESS Collection* was the right one, and accord with the results of my earlier survey. From these results, it can be suggested that bilingual comments following each paper in the *ALESS Collection* would provide a more effective medium for communicating appropriate values to students and providing a way in to reading the papers of the *Collection* than an English-language editorial. It seems likely that for students already receiving a significant amount of new information in an English language situation, an editorial in English represents more 'work' and is of uncertain utility to students browsing the Collection. What should students invest time in reading when faced with many options? Rather than an aid to students' autonomous learning and use of resources, it serves rather to make potentially useful information less visible and less accessible. The absence of brief bilingual comments represents a missed opportunity for all ALESS teachers to offer support and guidance to all ALESS students in a straightforward way.

## Suggestions for Further Research and Development

This research focussed mainly on the *ALESS Collection* and only incidentally on the *ALESS Companion*. In addition, it was restricted to addressing a limited number of specific points about student engagement, use, and response. In the future use of the primary resources of KWS and the ALESS Lab could be

explored, in particular student motivation in choosing to use them or not. It may be useful to learn about students' reception and use of other resources, such as the three videos, Project Area Ideas, and KWS' helpsheets, which are available for them to access. For example, if the videos are not used in class, how many students actually access them? Informal research (shows of hands in classes) suggests a low figure. Such results could teach us more about how students engage with resources, and allow us to modify practice/resources accordingly.

With the *Collection*, it may be fruitful to investigate students' use of the frontmatter, which offers introductions to KWS and the ALESS Lab, included since volume three. These are more graphic and potentially more attractive than the English editorial, and, given their informational nature, it would be interesting to know if they are read and acted upon. Information on KWS and the Lab tends to be distributed regularly in classes, whilst TAs also regularly visit classes and students may be taken to KWS and the ALESS Lab, so it may be worth considering whether students would be receptive to the inclusion of different kinds of content (or changing the content and measuring how useful it is). This might include: a brief guide to formal English/common errors checklist/writing tips/experiment tips/Japanese keywords/bilingual guides etc.). Students may also have some feeling about the issue of annual or biannual production, given that a switch to annual production halves their chances of having a paper included in any future edition. Stakeholder opinions can only be known by asking.

With regards to the *ALESS Companion*, it would be interesting to know if students have any opinions about how the information contained within could be made more accessible and easier to put into use; whether, for example, they would feel it may be more useful by the addition of Japanese keywords, or limited translations or explanations to offer a scaffolded way in to the metalanguage and principles of exploratory talk about texts.

An action research or evidence-based approach to developing resources gives students a voice and has the potential to create a better dialogue and good will between the ALESS Program/UT and ALESS students, as well as increase the utility of the resources themselves. Cotterall (1995) suggests that dialogue

between faculty and students about learning increases students' ability to engage in autonomous learning, and in developing resources, it seems clear that consulting and listening to stakeholders is important. Based on such evidence, we may be able to increase the efficacy of educational interventions made through shared resources, to more easily justify investment in educational resources (time and money), and to inform future decisions about resource development within the Program and elsewhere. The approach also encourages a reflective and critical attitude to pedagogy and supports an atmosphere of good practice and continuous professional development.

## Conclusion

This brief paper has described the development of various ALESS resources, focussing on the *ALESS Collection* and to a lesser extent the *ALESS Companion*; it discussed evidence-based practice and presented the results of a brief action research survey of students' use and attitudes to them. Students used both resources well and were well-disposed to them, but whereas most thought that it would be helpful if future *Collections* contained brief teacher comments in English and Japanese, very few read the English editorial of volume four. Possible reasons and responses were suggested.

The value of both resources to students seems clear, certainly clear enough to justify previous and continued investment of time and resources in producing the *Collection*. Yet it remains useful to monitor how such resources, or aspects of them, are received and work in practice; this, rather than how we might like to imagine them working—whether they are doing what we hope they do, or could do it better, is important for giving stakeholders a voice. Tweaking resources in seemingly small ways may result in significantly different attitudes and engagement, affecting students' experiences and perceptions of the program that makes use of them; asking and listening to students experience of the education provided is good practice and can result in greater motivation and good will, as well as educational benefits.

## Acknowledgements

## Notes

1. It is possible to observe formatting, linguistic, and organizational features that appear to have originated in the *ALESS Collection*.
2. This kind of discussion can be held more naturally between student and teacher by questioning students as individuals/groups about the progress of their own and their peers' papers, and by asking about the changes they make or recommend and the reasons for them.

## References

Allen, D. and Middleton, G. D. (2011). 'Short research articles as proxy models for research articles: The effects of brevity on the discourse structure of introductory sections.' *Komaba Journal of English Education* 1: 67–93.

Centeno-Cortés, B. and Jiménez- Jiménez, A. F. (2004). 'Problem-solving tasks in a foreign language: The importance of the L1 in private verbal thinking.' *International Journal of Applied Linguistics* 14 (1): 7–35.

Cotterall, S. (1995). 'Developing a course strategy for learner autonomy.' *ELT Journal* 49 (3): 219–227.

Dawson College. N.d. '*DrJes* Online.' Available at: http://www.place.dawsoncollege.qc.ca/~drjes/(Accessed 20 November 2012).

Duff, P. A. (2010). 'Language socialization into academic discourse communities.' *Annual Review of Applied Linguistics* 30: 162–192.

Fang, Z. (2005) 'Scientific literacy: A systemic functional linguistics perspective.' *Science Education* 89: 335–347.

Hammersley, M. (ed.) (2007). *Educational Research and Evidence-Based Practice.* London: Sage.

Harumi, S. (2011). 'Classroom silence: Voices from Japanese EFL learners.' *ELT Journal* 65 (3): 260–269.

Hinkel, E. (2004). 'Current perspectives on teaching the four skills.' *TESOL Quarterly* 40 (1): 109–131.

Hodson, D. (2008). *Towards Scientific Literacy: A Teachers'Guide to the History, Philosophy and Sociology of Science*. Rotterdam: Sense Publishers.

Jones, C. (2001). 'The relationship between writing centers and improvement in writing ability: An assessment of the literature.' *Education* 122 (1): 3–20.

Jones, A. A. and Freeman, T. E. (2003). 'Imitation, copying, and the use of models: Report writing in an introductory physics course.' *IEEE Transactions on Professional Communication* 46 (3): 168–184.

Kirkland, M. R. and Saunders, M. A. (1991). 'Maximizing student performance in summary writing: Managing cognitive load.' *TESOL Quarterly* 25 (1): 105–121.

Laugsch, R. C. (2000). 'Scientific literacy: A conceptual overview.' *Science Education* 84: 71–94.

Laursen, S., Hunter, A-B., Seymour, E., Thiry, H. and Melton, G. (2010). *Undergraduate Research in the Sciences: Engaging Students in Real Science*. San Francisco: Jossey-Bass.

Lee, J. H. (2012). 'Experimental methodology in English teaching and learning: Method features, validity issues, and embedded experimental design.' *English Teaching: Practice and Critique* 11 (2): 25–43.

Levis, J. M. and Levis, G. M. (2003). 'A project-based approach to teaching research writing to nonnative writers.' *IEEE Transactions on Professional Communication* 46 (3): 210–220.

Magnifico, A. M. (2010). 'Writing for whom? Cognition, motivation, and a writer's audience.' *Educational Psychologist* 45 (3): 167–184.

Marsick, V. (1990). 'Experience-based learning: Executive learning outside the classroom.' *Journal of Management Devvelopment* 9 (4): 50–60.

Moore, D. T. (2010). 'Forms and issues in experiential learning.' *New Directions for Teaching and Learning* 124: 3–13.

Moskowitz, C. and Kellogg, D. (2011). 'Inquiry-based writing in the laboratory course.' *Science* 332, 919–920.

Plakans, L. (2009). 'The role of reading strategies in integrated L2 writing tasks.' *Journal of English for Academic Purposes* 8: 252–266.

Qualters, D. M. (2010). 'Making the most of learning outside the classroom.' *New Directions for Teaching and Learning* 124: 95–99.

Rainey, I. (2000). 'Action research and the English as a Foreign Language practitioner: Time to take stock.' *Educational Action Research* 8 (1): 65–91.

Robinson, H. M. (2009). 'Writing center philosophy and the end of basic writing: Motivation at the site of remediation and discovery.' *The Journal of Basic Writing* 28 (2): 70–92.

Schnotz, W. and Kürschner, C. (2007). 'A reconsideration of cognitive load theory.' *Educational Psychology Review* 19: 469–508.

Science Buddies (n.d.). 'Project Ideas.' Available at: http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml (Accessed: 28 November 2012).

Sim, I., Olasov, B. and Carini, S. (2004). 'An ontology of randomized controlled trials for evidence-based practice: Content specification and evaluation using the competency decomposition method.' *Journal of Biomedical Informatics* 73: 108–118.

Sollaci, L. B. and Pereira, M. G. (2004). 'The introduction, methods, results, and discussion (IMRAD) structure: A fifty-year survey, *Journal of the Medical Library Association* 92 (3): 364–367.

Tardy, C. (2004). 'The role of English in scientific communication: *Lingua franca* or *Tyrannosaurus rex*?' *Journal of English for Academic Purposes* 3:

247–269.

Tobin, T. (2010). 'The writing center as a key actor in secondary school preparation.' *The Clearing House* 83: 230–234.

Torres, C., Farley, C. A. and Cook, B. G. (2012). 'A special educators' guide to implementing Evidence-Based Practices.' *Teaching Exceptional Children* 45 (1): 64–73.

Wallace, C. S. (2004). 'Framing new research in science and language use: Authenticity, multiple discourses, and the 'third space'. *Science Education* 88: 901–914.

Wang, W. and Wen, Q. (2002). 'L1 use in the L2 composing process: An exploratory study of 16 Chinese EFL writers.' *Journal of Second Language Writing* 11: 225–246.

Whitney, A. E., Ridgeman, M. and Masquelier, G. (2011). 'Beyond 'Is this ok?': High school writers building understanding of genre.' *Journal of Adolescent and Adult Literacy* 54 (7): 525–543.

Winters, C. A. and Echeverri, R. (2012). 'Teaching strategies to support evidence-based practice.' *Critical Care Nurse* 32 (3): 49–54.

Wu, J. (2011). 'Improving the writing of research papers: IMRAD and beyond.' *Landscape Ecology* 26 (10): 1345–1349.