

The Blended Approach: Computer Assisted and Traditional Language Learning in Aviation English Training

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Introduction

This paper will describe the development of a blended learning (BL) approach for aviation English language training. We will define the blended approach and then examine in detail the component parts namely Computer Assisted Language Learning (CALL) and face-to-face instruction. We will then briefly discuss implementing the BL approach in Air Astana.

The term Blended Learning (BL) has become very familiar to English language training providers over the last decade. BL is used to describe all manner of training situations but in general can be described as combining “face-to-face instruction with computer-mediated instruction”(Graham 2003). This definition is a suitable starting point for a specific outline of the blended learning approach Edgewater College is implementing. To expand this definition it is necessary to consider some points that are specific to providing English language training solutions for the aviation industry namely, which approach to second language teaching to use and the ratio of face-to-face instruction to computer mediated instruction.

Firstly, in outlining an approach to second language teaching it is important to consider the constituent parts of an “approach”. H.D Brown describes an approach to second language training as “ theoretically well-informed positions and beliefs about the nature of language, the nature of language learning and the applicability of both to pedagogical settings.” (Brown 200:14). A training solution without a clear position on the nature of language, language learning and how these are incorporated in the media used is worse than useless: “to design a syllabus is to decide what gets taught and in what order. For this reason, the theory of language explicitly or implicitly underlying the language teaching method will play a major role in determining what syllabus is adopted” (Reilly 1988). Therefore, our definition will incorporate this condition.

Secondly, it is important that we specify the relationship between the computer and face-to-face mediated instruction in terms of a student’s exposure time to each element. In light of the serious financial costs of having a lot of pilot downtime the obvious solution is to have a greater time emphasis on the computer-mediated instruction. We have developed a blend with a 75% to 25% ratio of Computer Assisted Language Learning (CALL) to face-to-face instruction. However, this ratio should not be arrived at for purely financial reasons. It must be demonstrated that the rate of language acquisition will not be affected negatively by weighting towards CALL. Now we can formulate a definition of the blended approach for aviation English training as:

The Blended learning approach for aviation English combines computer-mediated instruction with face-to-face instruction within a complimentary theoretical and pedagogic framework without negatively affecting language acquisition rates.

To explore the theoretical approach of the CALL system we are using and to detail some of the failings in the area, including our own, we will briefly outline the history of CALL from its inception in the 1960s and attempt to sketch its relationship to the prevailing second language teaching methods from then until now. This will provide an overview of the changing beliefs about the nature of language, language learning and second language pedagogy. It will also demonstrate how the rush to embrace technology without adequate theoretical and pedagogic change can lead to expensive failures.

Early examples of CALL tended to concentrate on language learning through behaviouristic stimulus-response approaches. This was manifested by a concentration on grammar and discrete point activities. In the era of the audio-lingual methods' supremacy, technology was seen as a way to take the necessary but tedious pattern practice, drilling and so on out of the classroom. The most well known example of these programs was PLATO- (Programmed Logic for Automatic Teaching Operations)

The synergy between the behaviouristic methodology and the capabilities of the computers of the time was quite uncanny. The tutorial-and-test approach *drill-and-kill* suited the limited processing power of the computers and the limited linguistic knowledge of the programmers. Mark Warschauer labelled this era "Behaviouristic CALL" (Warschauer 1994).

The limitations of these early call systems were: (a) access limitations (b) the inability of the computing power to allow anything but discrete point drilling type activities (c) the huge cost of using these computers. The inability of the early computers to allow CALL to move away from audiolingualism was perhaps its greatest limitation. Innovations and improvements in both technology and language methodology took place throughout the 1970s. During this time great innovation in the investigation of the nature of language, the nature of language learning and the pedagogy of second language instruction had taken place. The behaviouristic model of language, with its emphasis on stimulus-response, had been rejected by the cognitivists. The Chomskyan revolution was initiated in 1957 with the publication of Chomsky's review of B.F Skinners "Verbal Behaviour" which he roundly criticised as "a superficial account of language acquisition". This statement was generally accepted as applying to behaviouristic inspired second language teaching methods as noted by Ellis: "in the late 1960s and early '70s a growing consensus was reached that behaviouristic theories of second language learning were inadequate" (Ellis 1994:44). They were inadequate because it was now believed that language was a combination of in-built pre-programmed mental functions and outside stimulus. Learning was not a habit that could be drilled but required cognitive processing and mental effort

By the time the PC had made it's appearance in Time Magazine in 1982, second language learning theory and pedagogy had seen a seismic shift from the days of *drill and kill* audiolingualism. The '70s had seen various efforts to place the individual at the centre of learning. There was a greater concentration on the language register and style and the Notional Functional syllabus was born; this innovation saw "language and content arranged according to the meaning the learner needs to express through the language and language functions the learner will use the language for" (Richards 2002:364). This would be the blueprint for English for Special Purposes (ESP) for the next two decades and beyond. By the 1980s the Personal Computer had been launched and the communicative approach to language teaching was being formulated.

The Communicative approach emphasised providing the learners with opportunities to communicate in a meaningful way with a concentration on both fluency and accuracy while accepting that this involves the learner making errors. The opportunity for the inexpensive, powerful and portable PC to become a major part of second language instruction was evident. The limitations of the large mainframe computers were now a thing of past. Technology could interface with the new methodology in a meaningful way. However, the new CALL products developed for the PC did not reflect the new theoretical approaches to the nature of language learning and "by the end of the 1980s, many educators felt that CALL was still failing to live up to its potential" (Warschauer 1996). Critics pointed out that the computer was being used in an ad hoc and disconnected fashion and thus "finds itself making a greater contribution to marginal rather than to central elements" (Warschauer 1996) of the language teaching process.

By the early 1990s the CD-ROM appeared to be the answer to finally establishing CALL in the mainstream of English language learning. It could store and present a huge variety of activities with text, audio, images, video etc. Edgewater College (EPTI) was one of the early providers of an Aviation English CD-ROM and suffered from the failings of many other multimedia English language learning CD-based programs of the time. The concept was innovative and the content was and still is valid. The major problem with it was the lack of any discernable pedagogic validity, the overuse of text, the ungrading of

language, the overuse of glossed items, lack of comprehensive audio input and the overall textbook nature of the product without language-specific exercises.

We do not believe these problems were unique to Aviation English on CD-ROM and 10 years later they are still prevalent in many CALL products. The major publishers have concentrated on concordance and dictionary tools which, while providing useful reference material, can in no way be considered to help second language acquisition. An example is the huge Collins COBUILD, which seems to be a complete retrograde step of providing huge textual information with context being minimal. The textbook nature of many CALL programs has to be lamented. This new technology should be at the cutting edge in providing a new paradigm for pedagogy based on the latest research on the nature of language and the nature of language acquisition/learning but it has failed to do so.

The procedure of rebuilding and re-igniting a pioneering effort to provide the aviation industry with a multimedia tool for Aviation English began with a process of examining the current crop of CALL systems. The criteria established were minimal. The product had to offer a way out of the textbook paradigm and had to have a strong theoretical position on the nature of language and the nature of language learning. The programs available and well known did not meet these criteria except for a system designed and marketed by DynEd International, Inc. or DynEd based in the United States. The theoretical system they developed is called Recursive Hierarchical Recognition (RHR) developed by its' founder, Lance Knowles. This language learning approach resonates with how the human brain has evolved to search for, recognize and employ language patterns in predictable ways. Learning proceeds in a recursive fashion, employing the brain's hierarchical memory structure in ways that a linear approach cannot (Harris 2006 citing Knowles 2004).

The theoretical underpinnings of the approach are outlined in two papers written by Knowles and referenced here. Essentially the theory calls for a replication of natural L1 acquisition with an emphasis on auditory input in conjunction with other processes such as the visual, the conceptual etc. According to Knowles "The activation of multiple processors at the same time, for example, increases the probability that neurons will wire together to form the neural structures and neural pathways necessary to lead from comprehension, to automaticity, and to long-term learning. " (Knowles 2004) This grounding of the input in a theory is allied to strongly held beliefs about the nature of effective learning. The system emphasises frequent practice, controlled placement in relation to language input and stresses well designed appropriate input.

This system is, we believe, the best one available and the most appropriate one for Edgewater College's ongoing efforts to provide the aviation industry with the most effective language learning tools available. The framework provided by recursive hierarchical learning was incorporated by Edgewater College in developing a call program specific to aviation English in conjunction with DynEd and other partners. This collaborative effort has resulted in the creation of Aviation English for Pilots. The aviation specific product is a supplementary course to be used in conjunction with other DynEd CALL courses such as New Dynamic English, English for Success, English by the Numbers and many others.

It is undeniable that language acquisition requires the interaction of learners with other learners, instructors, native speakers etc. I believe the CALL approach we outlined above has a greater emphasis on learner interaction than other CALL systems. However, a social forum for the personalisation and extension of language is necessary for effective learning. This extension comes in the form of face-to-face interaction within a classroom setting. This is where the traditional pedagogical setting has to reflect the theoretical position taken in relation to the nature of language and language learning. To illustrate how CALL and classroom learning can be blended in an authentic context we will outline a blended Aviation English learning program designed for Air Astana in Kazakhstan. The classroom interaction is based on the scope and sequence of the language within the CALL courses. The initial program is for those students we have identified at ICAO level 1 and is designed to progress them to ICAO level 2.

The creation of a classroom program for aviation English requires a number of preliminary steps to be taken. We will illustrate the process with reference to the implementation of the face-face section of the blended approach for Air Astana. We will address:

- (a) The needs analysis
- (b) Situation analysis
- (c) Planning goals and learning outcomes
- (d) Course planning and syllabus design

Needs Analysis

The needs analysis process when providing English language training to airlines is heavily guided by ICAO's "Manual on the Implementation of ICAO Language Proficiency Requirements." The nature of the language skills and the level relating to those skills is set out clearly in this document. The group was mono-linguistic, the daily use of English was known due to the routes of aircraft being specific, the attitude of management to language learning was positive. What was required was an assessment of language ability, an assessment of attitudes to the use of English and the reaction to the possibility of mandatory language tuition. We also needed to know the availability of computers to the pilots plus what existing processes were in place relating to English language training.

To assess the students' level of English a computer adaptive placement test¹ was used. This test took place in a computer lab, with flight operations scheduling pilots in groups of 10 to take the test. This process lasted a number of weeks. The test was correlated with a sample, taking a stretch pen and paper grammar test², (which, according to O'Sullivan (2006), is probably still the best indicator of language level, but lacks communicative pedigree). These results were then correlated to the ICAO language levels. To assess the attitudes to the use of English and the possibility of mandatory language tuition meetings were held with chief pilots. We discovered that they were enthusiastic about the process and eager to get it started straight away. The aviation industry seems at ease with assessments and training. The fact that regular line checks, medicals etc. are part of normal working conditions seems to eliminate hostility to testing. Previous language courses had taken place but little information was available. No outline of a syllabus was available nor lesson plans or schemes of work etc. A discussion with the A320 chief pilot did establish that they were assessed orally in a one-to-one conversation with a teacher but no written results were provided. Essentially nothing substantial can be said about the previous training except the record keeping was not very good. Flight operations carried out a survey of what computers pilots owned and it was shown that 80% had laptops that met the basic criteria.

¹ Computer adaptive testing is a method for administering tests that adapts to the examinee's ability level. For this reason, it has also been called *tailored testing* (Rudner 98) For a great introduction to adaptive testing see ^{Lawrence M.} Rudner An On-line, Interactive, Computer Adaptive Testing Tutorial, 11/98 (<http://EdRes.org/scripts/cat>)

² Standard 200-item grammar and listening multiple choice placement test. For a similar example see Dave Allen's Oxford Placement Test.

Situation analysis

The situation analysis again, is basically covered in the ICAO document “Manual on the implementation of ICAO Language Proficiency Requirements.” The main area of concern here is what will happen to people who do not reach Operational Level 4 and what assessment is used to decide this. Obviously, without further clarification from ICAO we cannot pursue this issue. This is an area that perhaps this conference can shed some light on. In the Kazakh program the pedagogical history of the students was a factor. Strother et al outlined this clearly in their paper “Acculturated Blended Learning: Localizing a Blended Learning course for Russian trainees”. The issues explored there are applicable to the Kazakh learners. One of the points they addressed was the sciento-technical pedagogical tradition, which is evidenced by a teacher-centered approach. The possibility of a negative reaction to a learner-centered approach was addressed by consultation with the chief pilots and management. It is hoped that a trickle down effect regarding the pedagogical nature of the course will go some way towards reducing negative initial reaction. It was also decided to provide a textbook for the students. This was done to provide a concrete relationship to the pedagogical paradigm that they were familiar with. The text chosen was the original version of the “English File” series. These are non-linear topic based textbooks that correlate in scope and sequence quite well with the CALL courses. The textbook provides class instructors with ready-made tools for language extension that do not contradict the principles outlined above.

Planning goals and learning outcomes

The structure of the course provides inbuilt goals. A period of time is set as the basic time scale for advancement from one ICAO level to another e.g. for someone to advance from level 1 to level 2 a three-month period is set. Within this timeframe a series of smaller fortnightly goals are set both for the CALL program and the classroom interaction. The progress of the candidates on the CALL program is measured by their “study score” which takes into account such things as: use of speech recognition, playback of student voice, the use of text, comprehension scores, mastery test scores, completion time etc. The classroom component is assessed with objective scores for attendance, time keeping, work completion rate etc. in conjunction with a teacher assessment. Together the two assessments provide clear and measurable progress stages. Failure to meet the progress stages results in early intervention and possible solutions are: extra tuition, one-to-one classes and so on, thereby avoiding attention drift that is so common in e-learning.

Course planning and syllabus design

Course planning and syllabus design are areas dictated by the theoretical underpinnings of the CALL program along with this other factor that apply to computer-mediated instruction in general such as low boredom thresholds and high dropout rates.

A lack of interaction with native speakers and lack of monitoring within the CALL system are major difficulties that lead to general dissatisfaction. E-learning dropout rates are substantial.

In one study published by Learning Tree, a national IT training provider that conducted its own e-learning trial, a mere 30% of the participants completed the program (Van Liew 2007). This figure is transferable across the whole sector and is caused by the very nature of poor language technology which is manifested in (a) a pedagogy free system (b) separation of learners from human tutors (c) lack of interactivity (d) necessity of constant access to the internet (e) the isolation of the learner.

The Blended approach we champion deals with these issues in the following way:

- (a) The pedagogic underpinnings of the CALL system outlined above place it outside a pedagogic neutral framework.
- (b) The DynEd CALL system does not require Internet access all the time and is not an e-learning system. On-line access is only required to upload your records at an interval decided by the project manager.

- (c) The records management system supplied by DynEd provides both the learner and the administrators with instant, comprehensive feedback on individual use.
- (d) The course material is presented in a non-linear fashion and repetition of activities and direct language repetition is avoided through the use of complementary activities. The availability of various courses with the same language focus but various conceptual foci is another factor in the avoidance of learner boredom.
- (e) The interaction with the tutor, to extend and personalize the language covered in the CALL system is designed to be frequent. This avoids a failing of e-learning which according to Rehak is “essentially about a single-learner [whose learning is] self-paced and self-directed.” (Friesen 2003).

The general English focus is on extending the language explored by the learner through CALL. This extension and personalization of the language takes place within a multi-faceted pedagogic approach that can be described as “Principled Eclecticism.” The general English classes have been designed to give experienced EFL teachers a degree of autonomy over the methodology used. However, the scope and sequence of the language are set by that of the CALL programme and no substantial deviation from these is acceptable. Although, it is not usual for ESP to be taught at such low levels we felt that to further motivate the learners and to keep them focused on their goal and lastly to further personalize the language it would be beneficial to include aviation-specific English. To give face validity to the aviation-specific language classes we decided that they would be delivered by former pilots. These lessons give the students time to practice aviation English while interacting with a Subject Matter Expert (SME).

To avoid a lack of real world tasks that “require learners to approximate, in class, the sorts of behaviors required of them in the world beyond the classroom” (Nunan 1989:40) the use of subject matter experts (SMEs) is required. The use of pilots as instructors is an area where careful consideration had to be given. The basic framework for the use of SMEs was twofold (a) to help in the design of language lessons with an authentic aviation context and (b) to provide an interface for the learners with their native speaking peers. The SMEs’ interaction with the learners is carefully spaced. After an initial introduction before the course commences the SMEs classes are timetabled at intervals of 4 weeks. We believe that spacing aviation specific content classes increases motivation to perform well on the general English classes, which precede and follow them. Secondly, the SMEs’ lessons have been designed to provide a communicative framework for the instruction of standard phraseology. We believe strongly that standard phraseology has to be imparted to the students by those who have used it in a real world setting. The SMEs’ classes were developed by pilots and English language professionals and provide further extension of the general English as well as a heavy emphasis on aviation-specific English, for example in one lesson learners are required to note down information from a ATIS and reformulate this information to make a PA announcement to passengers using the language they have already acquired in their general English lessons (both CALL and face-to-face).

The blended approach we have described above has been in place for a number of months. Early results indicate that it has been adopted well by the stakeholders. It is too early to say definitively how successful the program will be but we believe that it is the only logical approach to take. Also, the confidential and commercially sensitive nature of the information we hold prevents a fuller exploration of concrete data such as initial test scores, timescale predictions for achievement of level 4 and so on. It would be a great pleasure to present some concrete results at a further date with the permission of Air Astana.

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