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**Note**

Developing an Electronic Textbook:  
Factors Affecting the Creation and Distribution  
of Computer-based Language Learning Materials

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**Abstract**

With an increase in the number of students and teachers who have access to computers, both at home and at school, there has been a significant push in the teaching community to provide students with “an integrated electronic learning environment” (Derewianka, 2003, p.200). Ideally this environment would supplement traditional in-class learning with an interactive, computer based component. However, the question of how to integrate this electronic learning environment into the course curriculum, while ensuring that the electronic materials being developed are still pedagogically sound, poses a significant challenge for materials developers. This paper describes the CALL (Computer Assisted Language Learning) materials that were developed to be used in an intermediate listening class taught at a university in Japan. First of all it looks at some of the theoretical foundation behind developing effective listening and computer based materials. It then examines the methodological, theoretical and pedagogical reasons behind the materials designed for this class. Finally, it assesses the value and effectiveness of the CALL materials that were created and offers suggestions for how to improve them in the future.

**Key words:** EFL, ESL, Academic Listening, Listening, Material Development, Electronic Materials.

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## I. Introduction

One of the major components of the job of a language teacher is as a designer. “Not only do many language teachers design or adapt materials, and develop tasks and courses to match the needs and goals of their students (online and offline), they are also designers in the way they organize and manage their classes, programs, time, and resources.” (Levy & Stockwell, 2008, p.10) As a result, teachers need to be able to structure the language-learning experience in a way that is appropriate for their students and to design tasks that are appropriate in meeting learner needs. Increasingly this includes designing and implementing tasks that have a computer based element to them. This can be as simple as requiring students to conduct online research on a topic for a seminar or writing class. It can also be more in-depth, such as developing an interactive environment to assist students in the acquisition of certain skills. When it is done well, the integration of CALL activities into the classroom can add an important new dimension to the language class. Done badly, the addition of an ineffective technological component into the class can take away class time that would be better spent on learning language skills. It can also result in teachers spending too much time trying to figure out the technological aspects of the class and not enough time focusing on the skills being learned. Because of this, the question of how to integrate this electronic learning environment into the course curriculum and ensuring that the electronic materials being developed are still pedagogically sound poses a significant challenge for materials developers.

This paper focuses on the challenges involved in developing a computer based component to the class by looking at interactive materials developed for a second language (L2) listening class. In doing so this paper will address the following broad questions:

- What do current theories of language acquisition tell us about how students learn to listen in a second language?
- How are traditional listening materials created and how well do they conform to what research is telling us about L2 listening?
- How can we use electronic materials make to this process more effective and enjoyable for the language learner?
- What things should materials developers keep in mind when trying to develop computer based L2 listening materials for their students?

## II. Background

### 1. Second Language Listening Materials

The job of the language teacher often begins before the first day of class with the selection or creation of appropriate materials for the class that they are teaching. However, “the sheer labour-intensiveness of developing classroom materials, the pressures of heavy timetables, and the highly restrictive nature of most teaching situations nevertheless force the teacher . . . to choose a book which only approximates to the needs of the local context.” (Sheldon as cited in Block, 1991, p.212) This is especially true for listening classes as creating material for the listening class involves not just creating the text book or worksheets but also putting together the accompanying audio or video material, the material that provides the students with aural texts they need to improve as L2 listeners. Furthermore, many teachers also feel that they lack the training or expertise needed to prepare listening activities for their students. (Berne, 1998) As a result, material development for a listening class often consists of nothing more than selecting a text that the teacher feels is appropriate for their class.

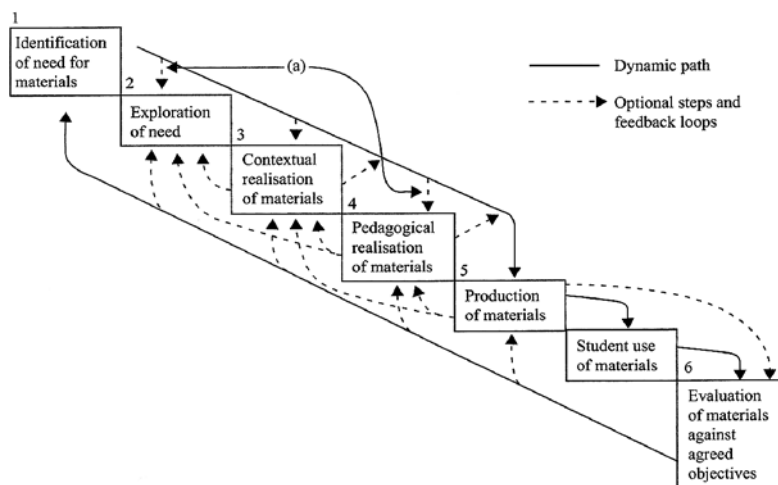
There are two problems with this attitude towards material development. The first is that it is often the teachers who best understand their learners’ needs and their preferred learner styles so it is the teachers who are best positioned to create effective materials for their own classroom. (Jolly & Bolitho, 2011) Furthermore, the same skills needed to develop good materials for a listening class are the same skills needed to select the appropriate materials for the same class. Therefore, if a teacher is, indeed, unable to write their own materials then they may also be unable to select appropriate materials for the class. Jolly and Bolitho (2011) point out that “it is not until teachers have attempted to produce their own materials that they finally begin to develop a set of criteria to evaluate materials produced by others.” (p.129)

Of course it is important for teachers to understand the theoretical approaches involved in learning listening so that they are able to create materials that “are based on the latest ‘SLA research’.” (Littlejohn, 2011, p.181) However, an understanding of the listening process alone is not enough, the teacher also needs to understand what it is that separates good language teaching materials from bad materials. After all, it is how the learners are able to interact with the listening materials that determine if these materials are going to be successful or not. Rost presents a framework of criteria that can be used to judge the possible effectiveness of materials in the classroom. This includes:

- General appearance. Is it modern and up to date with current trends?
- Design and illustration . Are they attractive?

- Objectives. Are they clearly stated, aligned with current theory?
- Topic content. Is the content thorough and ordered sensibly?
- Listening content. Is it naturally recorded? Is it sufficient? Are there a variety of speakers?
- Multimedia content. Is it varied, state-of-the-art, engaging?
- Language content. Is it complete? Does it cover items in syllabus?
- Social and cultural context. Is it varied? Does it convey appropriate cultural values?
- Language skills. Are skills balanced?
- Teachability. Is it easy for teachers to know what to do?
- Flexibility. Is it easy to supplement?
- Practice. Does it have ample practice?
- Testing. Does it have abundant testing? Are the tests fair? (Rost, 2011, p.82)

The process of creating materials for the classroom should not be a linear one that ends with the materials being used in the classroom. To create effective materials the process needs to be dynamic and self-adjusting. (Jolly & Bolitho, 2011) It is necessary for teachers to examine the materials and determine if they have met the objectives and make constant revisions to the materials if they have not or as the needs of the students change over time (see Fig. 1). This process is more effective when using materials that the classroom teacher has created his or her self. This is because these materials are more likely to have been designed to meet the specific goals and objectives of that teacher's class and they are materials



**Figure 1** The teacher's path through the production of new or adapted materials (Jolly & Bolitho, 2011, p.113)

that that teacher feels that they have a sense of ownership of and are therefore more likely to be able to adapt to their students' needs.

## **2. Electronic Materials**

In the field of language learning computers, and computer assisted language learning (CALL), have become something of a hot topic. As teachers attempt to engage students in the language learning process and provide them with opportunities to practice their language skills outside of the classroom more and more they are turning to electronically created materials. "The term 'electronic materials' refers to material that has been digitally processed so that the user is able to access it through a single source, usually a computer." (Derewianka, 2003, p.199) However, electronic materials are not always the best solution to the problems that teachers face. When deciding whether or not it is worthwhile taking the time and effort to design materials using technology it is important for the teacher to first of all try to access the potential value of those materials. For the materials to be effective it is essential that the teacher have an "understanding of the learners' background, role, and perspective" (Levy & Stockwell, 2008, p.35) as well as a clear understanding of the goals and objectives of the class being taught. Simply implementing electronic materials in the classroom as a means of trying something new is not always effective as the cognitive overhead of teaching second-language students how to use the materials is often greater than the benefits the materials provide. One method that can be used to assess the potential value of technology-based materials in the classroom is Bates' 1995 ACTIONS model. This approach to technology involves the teacher looking at the feasibility of using that type of technology in the classroom based on a set of seven criteria. Motteram (2011) explains these criteria in more detail:

- Access: how accessible is a particular technology for learners? How flexible is it for a particular target group?
- Costs: what is the cost structure of each technology? What is the unit cost per student?
- Teaching and learning: what kinds of learning are needed? What instructional approaches will best meet these needs? What are the best technologies for supporting this teaching and learning?
- interactivity and user-friendliness: what kind of interaction does this technology enable? How easy is it to use?
- Organisational issues: what are the organisational requirements and the barriers to be removed, before this technology can be used successfully? What changes in organisation need to be made?
- Novelty: how new is this technology?

- Speed: how quickly can courses be mounted with this technology? How quickly can materials be changed? (Motteram, 2011, p.303)

These criteria can be used, not only to determine if using electronic materials is feasible for individual teachers in their specific situation, but also to help determine what type of electronic materials that teacher should develop. It is these criteria that we will be using in the final part of this paper to evaluate the materials created for an academic listening class at a university in Japan.

### **III. A Case Study**

#### **1. General notes**

The next part of the paper will look at the materials developed for and used in a post-secondary institution in the Kansai area of Japan. These materials were developed for a first and second year academic listening class. The students in this program are expected to take four separate English classes each semester. Depending on the level of the students they will be taking a writing class, a speaking or seminar class, a listening class and a reading or content based class. The academic listening classes being described cover two semesters and are supposed to help prepare students to participate in content based classes taught by English speaking faculty members on a topic related to the students' major. There are 600 students enrolled in the listening classes. Each class contains 20–24 students and there are 27 classes. These classes are streamed, based on the English level of the students as determined by a TOEFL exam they take upon entering the university. However, all of the students enrolled in the course are expected to cover the same materials and are graded using the same standardised exams, also developed by the course coordinator. In total 14 teachers are involved in teaching different classes within this course. Another factor that had to be taken into account when developing the electronic materials for the class was the fact that the coordinator of the class changes every two years. Because of this the materials had to be developed in such a way that the next coordinator would be able to use and update the materials regardless of the technical expertise of that coordinator. In other words, the materials needed to be made using a program that the next coordinator would already know or could learn with minimal effort.

#### **2. Choosing the Appropriate Platform to Develop the Materials**

The materials were developed using Adobe InDesign. The rationale for this is that it would enable the coordinator to produce both a paper and an electronic copy of the materials with minimal effort. Also, as all students were supposed to have purchased

a Windows based laptop upon entering the university and had access to the school's computer labs Adobe Flash provided a simple and free way for the students to interact with the materials outside of the classroom. The electronic materials were exported as a Flash file, which was stored on the school network. This file could be accessed on campus, or from the student's home computer if they copied the files onto a USB flash drive to take home or logged into the school network from their home computers. In order to minimise the technical difficulty involved in access the materials all students were instructed to use Google Chrome to open the materials. As Chrome comes with the latest Flash player installed, updates automatically, runs on both Windows and Macs and requires a minimal amount of installation it was deemed the easiest route for the students to take to access the materials. Certain components of the class were also made available online at the class website so that students could access it on the train or bus while coming to school.

### **3. Developing the Materials**

The materials made use of both InDesign's ability to embed audio and video files in the materials and the ability to create buttons that could be hidden or displayed by the students or the teacher while they were using the materials. This allowed students to do a listening activity and then complete a task based on that listening. Because both videos and audio files could be embedded into the documents students were able to both review the listening covered in class and do additional listening homework. At times it was also possible to embed different versions of the same conversation or lecture given at different speeds to allow lower level students to listen again at home at a slower speed. The ability to include a multimedia element into the materials was seen as one of the main reasons for creating supplementary electronic materials for the class. "Technology, with its multimedia capability, (was seen as) a crucial enabling factor" (Vogel & Klassen, 2001, p.105) for the students as they were able to use the electronic materials to both supplement what they had learned in the classroom and to review the classroom activities at home. Thus giving them more control of the learning process.

After completing the listening students were given certain activities or tasks to complete. Using the interactive buttons in InDesign it was possible for the students to check their own answer against a sample answer by clicking a button in the materials that then displayed the answer box. To make it easier for the students to navigate in the materials all of the audio and video buttons were displayed in red. Clicking one of the red buttons would play the audio or video file. The question buttons were created in an orange colour. Clicking on one of these orange buttons would cause the green answer button that was linked to that question to be displayed. (see Fig. 2)

**Japan's Economic Problems**

Japan's economy is showing signs of going into a serious recession. That is a period of at least 6 or more months where the GDP of the country goes down. By GDP, I mean the total value of all of the goods and services produced in Japan for that month. Also, Japanese exports dropped by their largest amount ever in the last quarter, meaning the last three months. This is a \$60 billion decrease in the amount of money Japan is making from exports. One reason for this recession is the rising Yen. This is making Japan's cars and electrical goods very expensive overseas. Sales in its biggest market, the USA, are really suffering. And the Japanese government predicts worse times ahead for the world's second largest economy.

**1.** **Question button**  
 Signal word: That is...  
 Definition: a period of at least 6 or more months where the GDP goes down

**2.** **Word: GDP**  
 Signal word: By X, I mean  
 Definition: the total value of goods and services produced in Japan for that month

**3.** **Word: quarter**  
 Signal word: X, meaning  
 Definition: the last 3 months

Figure 2 An example of different interactive elements in the electronic materials.

One of the main rationales behind using electronic materials was that the lower level students were having a hard time keeping up with the listening activities in the classroom. The hope was that these students would be able to use the same materials that they saw in the class at home to review and practice the listening activities that they did in the classroom. Because of this both the teachers and the students were expected to use very similar copies of the materials. With InDesign this was easily accomplished with the use of layers. All of the information that the students were not supposed to have access to in their materials was placed in a layer called "Teacher's Materials" and this layer was removed when exporting the student materials. The question buttons on this page were coloured blue to distinguish them from the orange question buttons that would display an answer box in both the students' and teachers' materials. However, as the purpose of the electronic materials was to give students access to all of the classroom activities at home to allow them to practice and review on their own this was only done when the answers were going to be used for an evaluation later in the class.



Another advantage of using InDesign was that the lesson plans for the materials could be embedded directly in the teachers' materials. The lesson plans were created in their own layer and only exported to the teachers' materials. On the teachers' materials hovering over a activity with the mouse would display the lesson plans for this activity. This made it easier to distribute the materials to all of the teachers on the class and the fact that the materials were stored on the network and could be easily updated made it much easier to make small changes during the course of the semester based on feedback from the students and teachers.

#### **4. The Type of Activities Used**

One other advantage of using electronic materials was that it made it possible to create interactive activities based on the listening that the students could complete on their own at home. The flexibility of these materials made it possible to create interactive activities for the students to complete while doing the listening that went beyond the usual comprehension based questions found in many academic listening texts. (see Fig. 3 for an example) This type of activity has a number of benefits over comprehension-based questions. As it does not require the students to write down anything as they listen they can focus more on the listening itself while still doing a task that is related to what they are hearing. According to Nation and Newton (2009) this type of task also helps set the groundwork for students to learn how to take notes, one of the goals of this academic listening class. Even though they are not writing down notes it was still seen as effective as "at lower levels of proficiency note-taking can involve ticking list of points as they occur, connecting given points by drawing lines between them . . ." (Nation & Newton, 2009, p.57) or other activities such as the one shown in Fig. 3.

The materials also made it possible to provide non-linguistic or semi-linguistic support for the listening. PowerPoint slides or keywords could be embedded into the listening. Keywords from a listening activity were made interactive so that they could be clicked to hear the word itself or the sentence from the lecture that the word appeared in. It was possible to embed the transcript in the video so that, on subsequent listenings, students were able to listen and follow along on the transcript at the same time. Finally, in certain cases it was actually possible to make the listening itself interactive so that students could slow it down or repeat certain difficult sections of the listening, something that has been shown to help students to develop strategies for dealing with difficult input. (Nation & Newton, 2009)

**3 Global Problems**

Topic: \_\_\_\_\_

Main Idea: \_\_\_\_\_

1st Supporting Idea: \_\_\_\_\_

2nd Supporting Idea: \_\_\_\_\_

3rd Supporting Idea: \_\_\_\_\_

As you are listening to the lecture fill in the information in the chart below.

Words	Cause	Problem
climate change	carbon dioxide	climate change
carbon dioxide	poaching	extinction
poaching	loss of habitat	loss of species
extinction	debt crisis	economic problems
loss of species		
loss of habitat		
economic problems		
debt crisis		

[Click Here to Watch the Video On YouTube](#)

Figure 3 An example of an activity connected to a listening in the electronic materials.

#### IV. Discussion

While the electronic materials have been popular with both the students and the teachers there is room for improvement. Going forward there are three main areas where the materials could be improved. To begin with the activities found in the electronic materials need to be adapted to provide better scaffolding for the materials being covered in the class. At the moment the materials provide a good

source for the students to review the work covered in the class. However, there should also be a focus on getting the students ready for subsequent classes. Ellis (1998) defines purpose of scaffolding as instructional materials that are able to, among other things, help recruit the students' interest in a task and to help simplify the task for students. The electronic materials could be adapted to better do this by providing students an introduction to the topic before the lesson and giving them the opportunity to practice the sentence level listening skills needed for the subsequent lesson before the lesson begins. This would help them to become more interested in the listening activities covered in the class while also allowing them to make better use of the opportunity to listen and interact with other students during the class.

Another component missing from the materials was the ability to interact with other students while using the electronic materials. Because of the nature of the materials the interactive materials outside of the classroom were restricted to individual activities. However, according to Lynch, to be effective listening requires "exercises which require interactive negotiation by the student" (Lynch as cited in Mendelsohn, 2001, p.38). At the moment the necessity of this interactive component to the listening process is accounted for in the materials by in-class activities. For examples, in one lesson students were asked to watch a different part of the video tape of a lecture at home and then summarise that lecture during the next class. Working in small groups students then had the opportunity to practice listening to other students in the class in a way that allows them to interact with one another and negotiate meaning. Given the possibilities that exist for collaboration outside the classroom using CALL based materials, if possible it would be beneficial to adapt the materials in a way that allows students to interact with one another outside of the language classroom.

Going forward one of the main things that needs to change about the materials is to find a way to allow students to access them from their cell phones or tablets. In a 2005 article, Philip Greenspun identified what advances would make a mobile phone a replacement for a laptop, most of which have become common on high-end mobile phones today. (Greenspun as cited in Beatty, 2010) This is important because, at the moment, more and more students in Japan are carrying smartphones and using them to do their homework as they commute to and from the campus. Last semester many of the homework lectures were also put on YouTube to allow students to access them from devices that were not able to run Flash. This proved to be surprisingly popular with the students. For example, of the 557 students that chose to watch a supplementary video on YouTube 215, or 38.6%, of the students did so using a mobile device. This was despite the fact that the activities connected to the video were not available to those students accessing it through their mobile device. It is believed that this number would increase if it were also possible for

students to do the activities connected to the video on their mobile device. At the moment it is not possible to export the electronic materials from InDesign into HTML 5, or another format that would be playable on an Android or iOS device. However, there are a number of third party plugins that are beginning to offer this feature. At the moment it is not possible to export the electronic materials with all of the necessary interactivity using these plugins, however, it is hoped that this will improve in the future.

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