Multimedia in Language Instruction: Challenges and Solutions

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Media - Just a Novelty Effect?

The use of media in teaching is often considered by students and teachers alike as a welcome change in daily teaching routines. The equipment itself usually produces a novelty effect which attracts their attention. Whether or not the technology is actually needed to transmit the subject matter and whether or not it in fact improves language learning and teaching (and how) often appears to be of secondary importance, though, overpowered by the "technology factor". Contrary to common perception and (often expensive) practice, very little is actually known about the real effects of new learning technologies on learning, certainly language learning. It is known, however, that

- media have traditionally been overrated by instructors with respect to their positive effects on language learning
- the use of media in a behavioristic context (such as traditional language lab applications) produces at best mixed results, often actually negative outcomes with respect to achieving communicative competence
- interest in new media wears off easily if the software is not stimulating
- stimulating software does not necessarily imply successful learning; in fact, a high entertainment proportion of so-called "eduware" may distract from the task of learning because the users (students) perceive their task as different from (language) learning.

Speech Processing and the Use of Media

In order to determine what constitutes better use of media in language learning it is helpful to turn to psycholinguistic models of speech processing, which treat language production as a continuous process of interrelated and overlapping production steps. This process begins with the conceptualization of a message, leads to the selection of

a syntactical frame, the retrieval of lexical items, the morphological and phonological encoding, and ends in the articulation of an utterance. Language comprehension is usually considered to happen through the reverse order of steps (Levelt 1989).

At first glance, such an approach to a more process-specific use of media in language learning appears to make a lot of sense as it would allow us to identify and target critical areas more specifically. After all, second language learners usually struggle with the lack of automatization in the foreign language, more specifically, with the phonological and morphological encoding of utterances and the lexical retrieval processes. Consequently, it could be argued that the automatization process could easily be supported by machines since it is a fairly mechanical and time-consuming process. Furthermore, machines allow more individual and hence less intimidating learning in those areas where automatization is required. However, empirical evidence shows that automatization alone does not produce proficient speakers.

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While many of the processes are highly automated and not consciously controlled conceptualization requires a lot of such control (attention). Traditional audio-lingual and audio-visual teaching methods target mostly, if not exclusively, the highly automated processes while neglecting the processes that precede (or in the case of comprehension follow) them. Traditional grammar-translation methods target processes which are often taken out of the processing continuum in a similar way. It is assumed there that learners complete the conceptualization processes on their own, but in reality they generally do not have the necessary access to the developed conceptual systems in both (or even one) culture language and relatively little attention is paid to the crucial articulation phases. Without taking into account such discrepancies many of the existing computer programs designed to enhance language learning continue to follow the same patterns of the traditional grammar-translation and audio-visual/audio-lingual methods. Learners do not realize that the only significant difference between old and new programs exists in the medium, not in the theoretical foundation or the methodology. As a result, negative experiences made with previous technology are often repeated with the new media.

The problem remains that, without the preceding or following steps in speech processing, training the other steps in a decontextualized manner will have rather limited

effects. A perfect pronunciation of the foreign language, for instance, will be of limited use if the learner does not quite know what she/he is saying, or understand what others are saying. Consequently, it does not make much difference if the stimuli are provided on an audio tape or by the computer. Given the predominance of computer programs which are based on traditional methodologies the new technologies so far have added mainly a great deal of convenience but only few substantive improvements. The improvements include features such as enhanced speech monitoring through the visualization of speech waves and — most important of all (albeit limited to very few programs) — the incorporation of more demanding content into teaching materials.

The most fundamental aim of the advanced, content-based initiatives with more demanding content, is to move language learning closer to real immersion-like settings. This is currently being done in three major ways:

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• By creating fictional and non-fictional microcosms reflecting contained segments of the target culture in the form of stories or documentaries. *A la rencontre de Phillippe* by Gilberte Furstenberg and her team at MIT, published by Yale UP (1992), is still among the most sophisticated and acclaimed specimens of the story type. *Berliner Sehen*, under development by Ellen Crocker, Kurt Fend and team, also at MIT, follows the documentary type. *Edubba - The Learning Engine* being developed at UBC, in conjunction with Lunny Communications, presents a task-oriented, animated program to teaching English as a Second Language. In addition, a number of textbooks accompanying CD-ROMs contain short spotlights of target culture communication. These programs feature seemingly authentic communication patterns with sound and images while providing different help features on request for learners who need them (e.g. reduced speech rate, non-colloquial variants, vocabulary explanations, reference materials). The more sophisticated of these programs also allow student participation in developing the story, thus creating an illusion of interactivity. Some programs in this category include the introduction to Spanish *Destinos*, the programs for teaching English Hollywood Theatrix and Business Challenges, and *Einfach Toll* for the teaching of German.

• By tapping into the vast resources of the Internet: A recent survey published by *MacLean's* magazine (November 1998) corrects the view that the Internet mainly operates in English. In fact, only 56% percent of the

Internet sources use English. Of the remaining 44%, 24% use Spanish, 22% Japanese, 13% German, 10% French, 6% Chinese, 4% each Swedish, Italian and Dutch and 13% other languages. This makes the Internet an ideal source for the teaching of ESL as well as other languages. Although the remaining 44% are split among several languages, they still represent an infinite abundance of authentic and constantly updated sources and resources, including audio and video, just waiting to be explored by students and to be incorporated into language learning. While this should not be too difficult for advanced levels of instruction in many languages (not all yet, to be sure); but the problem remains of how to mediate the overwhelming and likely overpowering abundance of information presented in a foreign language to beginner or intermediate students in order for language learning to occur. [See the British-German co-production *Stop Press* (Foreign and Commonwealth Office/Auswärtiges Amt/ British Council/Goethe Institut, 1998) for an advanced program that integrates Web-sources into teaching.]

• By incorporating technical and scholarly content into software: Language teachers usually do not possess the necessary technical skills in, for instance, the sciences or commerce to teach a special purposes course in a meaningful way. Consequently, a specialist in the technical field might be required to co-teach the course, but would probably lack the language teaching expertise. The computer can replace expert knowledge to a certain degree, making it possible for highly skilled and focussed students to learn the required segments of the target language much faster. The multimedia *Reading German* course on language for technical and professional purposes is one of the few programs which do this.

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Why Start with a Reading Course?

Language learning relies largely on comprehension. In many cultures the primary sources of information are written texts. Dependence on written sources is also the dominant characteristic of the Internet. In an academic learning environment, students who want to acquire highly specialized language skills in a limited area of a language, namely "their" area of specialization in that language, often prefer reading courses over standard introductory language courses. Furthermore, they want to acquire these skills in the most 'economical' way in terms of spending valuable time. The logical key is to exclude the 'unnecessary' from the 'crucial', or reduce what — from the students' perspective —

could be considered as 'waste' (of time). The didactic challenge for the course developers, then, is to prepare and present relevant content without leading students through three or more years of survival training in how to cope in foreign restaurants, public transport systems or other basic communication situations. In other words, the challenge is whether or not beginning language learners can tackle content-rich materials in the original. One common way to begin the task is to concentrate on reading in the foreign language.

Languages for Special Purposes

What I am proposing, therefore, runs counter to common and widespread practice in foreign language instruction: a shift towards languages for special purposes (LSPs) in foreign language instruction at the early stages. In order to do so it is important to understand the structure of LSPs, both in terms of their own (vertical) structure as well as their (horizontal) relation to other LSPs. Languages for special purposes have a common basis but at the same time differ in many layers of specialization 'above' the basis (vertical structure). Linguists distinguish between three to six of these layers in each LSP. In fact, most LSPs consist of more unique/idiosyncratic rather than commonly shared elements. The German LSP of medicine for instance is estimated to consist of more than 500,000 terms with 10,000 alone for body parts, organs and organ parts, 20,000 for organ functions, 60,000 for diseases and 80,000 for medication items. Even the German "Verwaltungssprache" (officialese), despite the fact that it uses many common terms, can often not, or only barely, be understood by the ordinary people who have no special linguistic training in that LSP. Languages for special purposes are highly specific in many ways. Their specific characteristics reach far beyond just vocabulary, right into various aspects of word formation, morphology and grammar, e.g. the use of certain tenses, exclusive use of, or preference for, the active or passive voice; particular word formation patterns especially in the sciences (Fluck, 1985; Fluck, 1992; Grindsted/Wagner, 1992; Schaeder/Bergenholtz, 1994; Schröder 1993).

Current teaching practice focuses extensively on the basis, but hardly reaches the levels above. If it does,
- it is only temporary and very limited
- it deals with a "lower" level of a given LSP (because students who have no expertise in the subject matter might get lost completely).
- it can not reach every area of specialization students

may be interested in
- students with no particular interest and expertise in the fields often find it boring or too technical anyway.

Instead, I would like to propose that we move from both directions: from the inner core comprising the more common linguistic features of a language to the outer, more specialized layers *and* vice versa. Students thus get a solid, albeit selected, introduction to the basics of the general language while dealing with familiar topics and using specialized but more familiar terminology.

Technical and Methodological Challenges

As well as the technical hurdles, an approach such as the proposed one faces two major didactic and methodological obstacles. For the development of reading programs such challenges present themselves as follows.

First, relevant and appropriate texts have to be found and didacticized, mostly on highly specialized levels. While foreign language instructors usually do not possess the required technical knowledge in any of the highly specialized disciplines in which the LSPs are to be taught, pre-programmed lessons only require the programmers to acquire this knowledge or do the programming — in a truly interdisciplinary fashion — with specialists from the other disciplines involved. In addition to the knowledge problem outlined above, the lessons have to be organized in a way that allows for constant communication between reader and text, similar to the processes taking place in the reading of literary texts. After all, many of the principles found in reader-response theories may be applied to the reading of technical texts as well. At the same time, the program should anticipate all kinds of questions (technical and linguistic) for largely self-guided study.

Second, current authoring programs must be adapted to guarantee smooth operation during self-guided study while allowing for a relatively flexible handling of texts. Learners will not only be expected to work on pre-programmed questions such as yes/no questions, multiple-choice questions or fill-in-the-blank tasks. Rather, they should be able to find their own paths through the texts without getting lost in an 'anything goes' labyrinth. They should be able to pick out (e.g. underline, highlight, group) those elements that they consider important in a text and give their summary of a text to be compared with pre-programmed models.

The consequences of implementing such a diverse multi-user program are obvious:
- The program provides the specific linguistic tools for

intercultural research in different disciplines, and access to a vast array of information sources.

• It addresses students' needs from the very first day, creating and enhancing motivation for learning and allowing fast progression.

• The program is much more appealing to a larger number of students, regardless of any language requirements. Furthermore, it is also attractive for learners studying for 'non-credit' purposes.

• Its flexibility and accessibility make it very learner-friendly.

• It fosters independent study skills.

• The class capacity (enrollment) can be expanded significantly without increasing teaching staff.

• The instructor does not require a technical specialization in the subject-matter discipline.

• Methodology and technology can be easily adapted to other languages and programs can be easily updated at any time.

As mentioned before, the program *Reading German - A Multimedia Self-Study Course on Reading German for Professional and Technical Purposes* is based on the linguistic principles outlined above and follows the methodology presented here. It consists of an introductory module with 26 chapters and currently branches out into humanities, business/ economics, music and chemistry modules on the second level (25 chapters each). The program enables students to read scholarly texts in their disciplines within one (university) school year equaling approximately 80 contact hours of a traditional reading course. It emphasizes reading strategies rather than translation and it is process-oriented rather than fixed on teaching and testing factual knowledge. Learners proceed from stages of rather general reading through different stages of increasing complexity before arriving at a level where detailed reading is required. An attempt has been made to include a broad selection of authentic texts representing a large variety of genres typical for each discipline.

The two screens above show the menu of the module on Business German and the task menu of Unit # 2 in Group 5, which deals with economic theories. An abbreviated version of the program can be viewed on the Web: **http:// web.arts.ubc.ca/mlc/ger/protech.htm**, and more information on the programs can be obtained from UBC Access (francis@cstudies.ubc.ca).

Since it was first introduced as a pilot program at the

University of British Columbia in 1994 enrollment in the reading course has sharply increased. Different sections of the course are now offered throughout the year in both on-campus and distance education courses which can be taken around the world through UBC Access. Because of this, the program actually helped create teaching and development jobs rather than reduce them. In fact, for many language departments facing drastic downsizing or closure this program and similar programs can prove to be a major tool in maintaining acceptable levels of offerings or surviving per se. The methodology and technology have been used to develop an introductory program on *Reading Business Japanese* and an ESL program for speakers of German. This latter program reviews and expands reading strategies and grammar while providing the linguistic tools to access the portion of the Internet which uses English as a means of communication.[1]

Notes

[1]The first generation of the program used the DOS-based *CALLGEN* authoring program developed by Bill Gilby at the University of Calgary and adapted by Peter Willmer. The second generation (*Reading German*) uses *Asymetrix Toolbook* as the authoring template (adapted by Brian Powell). The third generation, used to produce *Reading Business Japanese* and subsequent programs, was developed by Wolfgang Bauer of *IMS-GmbH* (Germany) and is written in *Java*, which allows for broad cross-platform and Internet applications.

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