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外語教育使用多媒體教材的可能性：以日語教材為主

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摘要

本文透過作者所開發的網路多媒體教材的開發實例，來探討外語教育中使用多媒體教材的可能性。

首先，本文透過與已經在外語教育中其它經常被使用的媒體樣式的差異，來探討特別與外語教育關係密切的多媒體的特性，並且確認多媒體除了可統合聲音、文字、靜畫以及動畫等複數的符號語言的特性之外，還具備可以更彈性對應學習者的多樣性或個人差異的特性，因此在教材開發的過程中需要與使用過去教育媒體的教材所不同的考慮。

此外，本文還探討作者所參與開發的網路語言教材『東京外國語大學語言 Module』之中用來學習日語的內容（『日語 Module』）的開發實例，並且在關於設計網路教材時所需要的檢討事項上，加上更具體的考察，並在最後提出今後的課題。

關鍵詞：多媒體、外語教育、日語教育、教材開發、教育媒體

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Exploiting the Potentials of Multimedia for Foreign Language Education: with a Focus on Japanese Language Materials

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Abstract

In this paper, I consider the potentials of multimedia materials in foreign language education by considering the web-based multimedia materials I had helped to develop. I first attempt to identify such characteristics of multimedia which are relevant to foreign language education by consolidating different types of educational media. I also point to the fact that some of these characteristics are advantageous for dealing with differences and diversity of foreign language learning. Then I describe an example of the web-based foreign language learning materials (‘TUFS Language Modules’) developed in the Japanese context with a focus on its Japanese learning content (‘Japanese Modules’). I examine more concretely how the features discussed above are dealt with in the materials. I further discuss some more general issues of materials development for dealing with multimedia as well as make suggestions for the future with the hope that this case study serves as an aid to future development of multimedia materials in other contexts.

Keywords: multimedia, foreign language education, Japanese language education, materials development, educational media

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外国語教育におけるマルチメディア教材の可能性：日本語教材を中心に

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要旨

本稿では、外国語教育におけるマルチメディア教材の可能性について、筆者が開発に関わったウエブ対応マルチメディア教材の開発事例を通して考察を加える。

まず、外国語教育で従来活用されてきた他のメディアタイプとの対比を通して、外国語教育に特に関連深いマルチメディアの特性を考察し、マルチメディアが、音声、文字、静止画、動画等の複数の記号を統合的に扱えるという特性以外にも、学習者の多様性や個人差により柔軟に対応しうる特性を備えており、教材開発の過程において従来の教育メディアを用いた教材とは異なる配慮が必要となる点を確認する。

その上で、筆者が開発に関わったウエブ対応多言語教材『TUFS言語モジュール』の中の日本語学習用コンテンツ(『日本語モジュール』)の開発事例を検討し、ウエブ教材設計における検討事項についてより具体的に考察を加え、最後に今後の課題に触れたい。

キーワード：マルチメディア、外国語教育、日本語教育、教材開発、教育メディア

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Exploiting the Potentials of Multimedia for Foreign Language Education: with a Focus on Japanese Language Materials

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1. Introduction

In this paper, I consider some of the ways to exploit the characteristics of multimedia for foreign language (FL) education by examining web-based multimedia materials developed in the Japanese context. Multimedia as educational media is known for its many advantages for FL education. One important advantage is its potential to facilitate materials design which accommodates the diverse needs of learners (and/or teachers) in ways which cannot be achieved by other more traditional types of educational media.

I start by consolidating three types of educational media and their characteristics as I identify some important relevant features of multimedia. Then I describe an example of the web-based multimedia multilingual learning materials (‘TUFS Language Modules’) developed in the Japanese context with a view to indicating how such features may be exploited in the attempt to accommodate the diverse needs of potential learners (and/or teachers). Finally I discuss some general issues of materials development as well as make suggestions for the future in the hope that this case study serves as an aid to future development of multimedia or web-based materials in other relevant contexts.

2. Characteristics of multimedia as educational media

(1) Multimedia as educational media

‘Media’ are means of conveying an informational content in the process of communication (Nakagawa 1994) but the term has a range of

meanings, ranging from 'symbol or sign' (such as written text, picture, moving picture) and 'quality of material' (such as paper, film, disc), to 'apparatus' (such as TV receiver, VTR), and 'institution' (such as Mainichi Newspaper, NHK)(Saga, 2001). 'Multimedia' in general refers to the integration of multiple media but in the field of education, the term usually refers to media which integrate different symbol systems such as sounds, written text, still and motion pictures in digitized form on a computer (Carrier 1997).

Nakagawa (1994) divides educational media into four types: 1) printed media (e.g. textbook), 2) audio-visual media (e.g. videotape)[1], 3) computer media (e.g. CAI), and 4) demonstrative media (e.g. demonstration, use of realia). He further compares types 1) to 3) according to the following features: (1) use of text, (2) use of still or motion pictures, (3)use of sounds, (4) transition of information, (5) learning environment, (6) interactivity, (7) learner control, (8) accessibility, (9) entertainment, (10) sustainability of attention, (11) motivation, (12) incorporation of games, and (13) interaction among learners. Features (1) to (3) relate to variety and degree of integration of different symbol systems. Features (4) to (8) are features of the quality of the material or apparatus being used and relate to the degree of learner participation. (9) to (12) are relevant to the design of the content being developed. Furthermore, Nakano (1991) adds the following four characteristics of multimedia: integration of media, interactivity, structural flexibility, and extensibility of information. Table 1 synthesizes Nakagawa's (1994) and Nakano's (1991) criteria and compares the three types of educational media, based on which we may identify some of the important features of multimedia relevant to FL education.

1 Nakagawa groups audio, video, and OHP materials all in group (2) but for the purpose of our paper we limit our discussion to materials of sound plus motion pictures in this group.

Table 1 Comparison of educational media (based on Nakagawa 1994; Nakano 1991)

		Printed media	Audio-visual media	Multimedia
1	Media variety	Low	High	High
1.1	Use of written texts	High	Low	Variable
1.2	Use of still pictures	Low	High	High
1.3	Use of motion pictures	None	High	High
1.4	Use of sounds	None	High	High
2	Media integration	Low	High	High
3	Learner participation	Low	Low	High
3.1	Interactivity	Low	Low	High
3.2	Learner control	Variable	Low	High
3.3	Accessibility	High	High	High (but requires basic knowledge)
4	Structural flexibility	Low	Low	High
5	Extensibility	Low	Low	High
6	Social interaction	Low	Low	High

(2) Media variety and media integration

Through multimedia we are able to integrate, present and control different symbol systems of sounds, written texts, still and motion pictures in digitized form on a computer monitor. This means that for teachers/ learners there are a variety of choices of the ways in which language is presented, such as by having text and sound and moving images, or having only one of these elements to suit learners' needs and learning styles.

(3) Learner participation

Features of 'interactivity', 'learner control', and 'accessibility' in Table 1 relate to the degree to which learners (or teachers) who receive the learning content can engage in the exchange of information. Multimedia is bi-directional and has high interactivity which means learners can be involved in learning activities (such as by simulations and role-plays) as first persons. Learners (or teachers) have more control over content and method and can manipulate the material based on their needs, such as by stopping, replaying, or showing or erasing whatever elements they need.

(4) Structural flexibility

With multimedia, information does not have to be presented in a fixed order, within a linear or hierarchical fashion, but can be structured flexibly. In other words, learners (or teachers) can jump from one item of information to another as he or she likes when learning with the materials. This means that teachers/ learners have a greater freedom to restructure the learning materials in the ways they like according to their needs and interests.

(5) Extensibility of information

This refers to the ease with which new information may be added, deleted or modified. With printed and audio-visual materials, such addition or modification is difficult once the materials are completed.

With web-based materials in particular, constant updating, on the part of the materials developers is possible based on teachers' and learners' changing needs.

(6) Social interaction among learners

With multimedia, particularly with web-based materials, it is possible for learners (or perhaps teachers) to have social interaction mediated by the internet. This includes synchronous interaction such as on-line chats and video-conferencing, and asynchronous interaction such as e-mails and mailing lists (Simpson 2002), increasing the choices of means to learning according to different learning styles.

To sum up the above, compared to other types of educational media, multimedia has the following characteristics which may be exploited to take account of the diversity of learners' needs in FL education:

1. Multimedia can provide a wider variety of choices to learners/teachers regarding the content and method of learning/ teaching.
2. With multimedia, learners (or teachers) have greater involvement in choosing and modifying the content and method of learning by themselves according to their needs.
3. It is easier for materials developers to modify and/or update the content and method of learning to accord with learners' and teachers' needs.

In the next section, I describe the case of the web-based multimedia materials 'TUFS Language Modules' which I have helped to develop. I will attempt to describe how the features identified above are exploited in these materials in order to cater to the diversity of the potential learners' needs.

3. The case of 'TUFS Language Modules'

(1) Overview of the materials

'TUFS Language Modules'[2] are multilingual web-based materials developed under the auspices of 'Twenty-first Century COE Program: Usage-based Linguistic Informatics'[3] by the Graduate School of Tokyo University of Foreign Studies (TUFS), Japan. The materials have learning content for seventeen languages out of the twenty-six major languages taught at TUFS. These are English, French, German, Spanish, Portuguese, Russian, Chinese, Korean, Mongolian, Indonesian, Pilipino, Laotian, Cambodian, Vietnamese, Arabic, Turkish and Japanese[4]. Each language module consists of four basic modules: 'Pronunciation', 'Dialog', 'Grammar', and 'Vocabulary' modules (See Sample (1) for the example of the 'Japanese Language Module').

Sample (1) 'Japanese Language Module'



Although the materials primarily target university students learning these languages at TUFS, the materials are accessible on the web from anywhere in the world and one of the original goals of the project was to provide a learning tool which anyone can access by simply having a computer connected to the Internet. Therefore, there was a need to take

[2] http://www.coelang.tufs.ac.jp/modules/index.html

[3] http://www.coelang.tufs.ac.jp/english/index.html

[4] The author has been involved in the development of 'Japanese Dialog Module', 'Learners' Guide for Japanese Dialog Module', and 'Japanese Grammar Module'.

into account the diversity of FL learning needs in designing the materials. From this point of view, the main characteristics of ‘TUFS Language Modules’ can be summarized as having the following four features:

1. They take a multilingual and cross-lingual approach.
2. They give teachers/learners a range of choices of content and method of learning by providing various combinations of modular units.
3. They provide means of assistance so that learners/ teachers can choose effectively from these choices.
4. They have constantly been updated based on feedback from teachers and learners.

I discuss each of these characteristic in more details below.

(2) Multilingual approach

1. Common system for all languages

In ‘TUFS Language Modules’, each of the seventeen language modules (‘Japanese Language Module’, ‘English Language Module’, and so on) are structured according to a common system. They are composed of four basic modules, that is, ‘Pronunciation’, ‘Dialog’, ‘Grammar’ and ‘Vocabulary’ modules, each of which has more or less the same structure for all languages. For example, with ‘Dialog’ modules, all language modules consist of forty units based on forty basic linguistic functions. This makes it possible for teachers/learners to make comparisons of different languages, such as between learner’s first language (L1) and second language (L2), to recognize the differences or similarities. Similarly the ‘Vocabulary’ modules for all languages consist of forty units based on forty common topics. Therefore, it would be possible to compare a set of words used to represent the same topics or meanings in different languages.

Furthermore, in order to survey the seventeen languages cross-linguistically, the following three contents have been developed.

2. ‘Cross-Linguistic Grammar Module’

The ‘Cross-Linguistic Grammar Module’ is the page in which learners can focus on a certain grammatical aspect and look at examples from the ‘Grammar’ modules of seventeen languages. In other words, learners can learn about general grammatical characteristics that are common among various languages using this page. This extensive cross-linguistic facility can enhance students’ understanding of and interest in grammar and human language.

3. ‘IPA Module’

The ‘IPA Module’ presents the IPA (International Phonetic Alphabet) which is comprised of the phonetic symbols used to transcribe the speech sounds of all the languages in the world with the same standards. By clicking on the phonetic symbols for vowels and consonants that appear in the IPA Module and then clicking on the picture of a talking parrot, learners can listen to each of the respective sounds.

4. ‘Multilingual Modules’

The multilingual version of the ‘TUFS Language Modules’ provides the content of the ‘Japanese Language Module’ in other languages. As of 2008, those who understand English, French, Turkish, Mongolian, Chinese and Korean can study Japanese using the ‘Pronunciation Module’ and the ‘Dialog Module’.

(3) Range of choices provided by various combinations of modular units

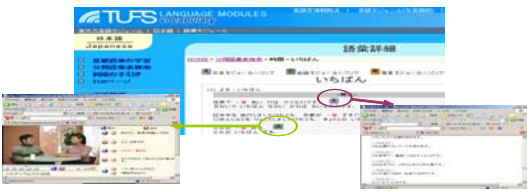
The second characteristic of ‘TUFS Language Modules’[5] is its modular structure, as the name suggests, whereby a set of independent units are combined to constitute a larger unit. Lin and Abe (2006) who are responsible for the technological development of the materials have termed the minimum unit used for this material the ‘Learning Page’. In the Grammar Module, for example, a set of four learning pages (namely,

[5] http://www.coelang.tufs.ac.jp/english/modules/

‘Card’, ‘Explanation’, ‘Example sentences’, and ‘Exercises’) constitute a larger unit called a ‘Step’. A set of steps constitute a larger unit called a ‘Lesson’. Twenty-four lessons constitute the ‘Japanese Grammar Module’. Each page, step, or lesson is relatively independent from one another. Teachers/learners can choose to go through all of the pages, steps, and units in their original order, or use only some of the pages or steps or units in the order they prefer.

It should also be noted that the independent units do not simply stand on their own but are linked to one another in various ways so that learners are able to link the different aspects of the target language. For example, a word appearing in the ‘Vocabulary Module’ is linked to its appearance in the ‘Dialog Module’, ‘Pronunciation Module’, and ‘Grammar Module’ (See Sample (2) below). By referring to the appearance of the word in other modules, it is possible to understand how the word is used in a conversational context, study its phonological features, and how it can be used in relation to grammatical structures of sentences.

Sample (2) Example of linkages between ‘Vocabulary’, ‘Dialog’ and ‘Grammar’ modules in ‘Japanese Language Module’



From the materials developer’s point of view, by recycling the data to be restructured in this way, it becomes possible to provide teachers/learners with many choices in terms of content and method of learning. The choices provided for teachers/ learners can be summarized as below:

1. Choice of learning content

On a macro level, teachers/ learners have a choice of which module to teach/ study. They can choose to teach/study with the 'Pronunciation', 'Dialog', 'Grammar', or 'Vocabulary' modules or a combination of the four. For each of the modules, teachers/ learners have a choice of which units to teach/ study and in what order. However, the relative independence of each unit within a module does depend slightly on the content of each module. For example, units in the 'Grammar Module' tend to be restricted by the original order compared to the other modules.

2. Choice of mode of learning and the degree of structure

In the 'Dialog Module', learners can choose from two different pages each of which represents a differing learning mode. The 'For Classroom Use' page allows for greater flexibility and is suitable for use in the classroom, whereas the 'For Learners' Page' which is more tightly structured is suitable for self-access or self-instruction. In studying with the 'For Learners' Page', learners can choose from four learning models: 'Listening and Speaking', 'Reading and Speaking', 'Listening and Writing' and 'Reading and Writing'. If the learners are autonomous and prefer to use the materials with a greater freedom, they can choose to learn with the 'For Classroom Use' page.

3. Choice of media type

For some pages, learners are provided with a choice of media type. With the 'Dialog Module', for example, learners can choose to display the written text when they view video footage of the conversation (See Sample (3)). They can choose to erase the sound of either of the speakers to engage in role-plays. They can also choose to show or erase the translations. Some of the content (such as the 'Learners' Guide') provides the content in a 'for-print-out' format so that those who do not wish to study just with the computer can print out the content and use the material as printed media.

Sample (3) Example of choice of media type
from ‘Japanese Dialog Module’





4. Choice of indexing system

Teachers/ learners have choices of indexing systems to search for the content they want. For example, teachers/learners can choose a language first and then proceed to choose what module to study. Alternatively, they can choose a module first and then proceed to choose which language to study.

5. Choice of medium language

In the case of the ‘Japanese Language Module’, the content is provided in various different languages in the ‘Multilingual Module’ indicated earlier. This means that learners have a choice of medium language including their mother tongues in studying Japanese.

(4) Means of learning assistance

Although having many choices is advantageous for learners in many respects, there is also a danger that learners may get lost unless they are given assistance in choosing the appropriate content and method which best suit their learning situation, purpose and needs. The following systems have been developed as means of learning assistance:

1. User manual for each module

On the front page of each module, a user manual is provided which contains descriptions of the contents, tips for choosing the right unit, and

so on.

2. Learning management system

A learning management system called the ‘TUFS E-learning System‘ has been developed. Though limited to internal use within the university, it monitors learners’ learning and keeps record of and provides scores of their activities (See Lin and Abe, 2006 for more details).

3. Guides for teachers and learners

For Japanese and English language modules, guides for teachers and learners have been developed. To give the example of the ‘Japanese Language Module’, ‘Learners’ Guide for TUFS Japanese Dialog Module’ has been developed which includes the following content: precise descriptions of situations and characters appearing in the ‘Dialog Module’, tips for making the most of the module, some model courses suitable for different learning goals, and precise explanations and examples of the key expressions and social/cultural information appearing in each unit (See Umino 2004, Umino et.al. 2006; Umino (Ed.) 2006 for more details).

(5) Constant updating based on feedback

The final characteristic related to catering for diversity is that ‘TUFS Language Modules’ have undergone constant updating based on various feedback from users. Major sources of feedback include access log records obtained from the learning management system, practice reports from classrooms (for example, Roussel and Nakata 2006; Sugiyama 2006; Matsumoto 2006; Kano 2006), and materials evaluation research (for example, Tokita 2004; Uzawa 2006; Lin 2007, Lin and Umino 2008). Still more data sources are being accumulated. The feedback data obtained and being accumulated enable us to observe problems learners find in learning with the materials in different situations, according to the target language, and to various learner

characteristics such as their mother tongue, major language, year, etc. By constantly updating and/or modifying the content based on such records and reports, the content can be shaped to meet the needs of diverse learning/teaching situations. The ‘extensibility’ feature of multimedia makes such continuous endeavours possible.

4. Conclusion and future implications

In this paper we discussed the possibilities of multimedia in dealing with the diversity of FL learning by describing the case of ‘TUFS Language Modules’. The issues discussed above relate to the content of teaching/learning, the method of teaching/learning, and the method of materials development. In designing the materials on multimedia, then, we need to consider all three of these aspects simultaneously in order to best exploit its characteristics. I now touch upon issues which need further considerations in the future.

First, one issue which has not been sufficiently dealt with is the creation of social networks among the users of the materials, particularly learners who attempt to learn with the materials in self-instruction. It would be useful for both learners and teachers to have a means of sharing ideas of making the most of the materials and/or resolving problems they find.

Secondly, there is a need to develop further means of assistance for teachers and learners. So far, a guide for teachers or learners has been developed for Japanese and English dialog modules. Such assistance should be extended to other language modules. As a further means of assistance for teachers, we need to accumulate and provide further practice reports from classrooms in various contexts for reference.

Furthermore, in order to provide more appropriate means of learning assistance, further research should be carried out to understand the strategies learners use to learn from this material, how such strategy use

changes in the course of time, what similarities or differences can be found in the ways learners approach the tasks according to their backgrounds, and so on. It is our task to carefully consider various issues which arise from this field of study and shed light on the realities of L2 acquisition and pedagogy according to different target languages and contexts of learning. Such research will eventually contribute to elucidating the process of second language acquisition as well as for the future development of materials and for finding effective methods of use of such materials.

Finally, I would like to point out the fact that in the development of multimedia materials we need to take a quite different approach to materials development from other (more traditional) types of materials we considered previously. In the case of web-based materials in particular, it is possible to constantly revise the content with relative ease to meet the various and dynamic needs of teachers and learners. This means we can take a developmental approach to materials development in that we do not complete the material to be presented at once but we make constant revisions after the material is presented to bring it closer to its ideal form. Thus, we need to formulate a systematic method which takes into account the various data sources discussed above for the development of multimedia materials. In developing such a system, a collaboration of specialists from different fields of study is indispensable. This is one issue of urgency in addition to the development of a systematic methodology for linguistic informatics (Kawaguchi 2004) which incorporates contributions from studies of language, language education, and information technology.

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