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Conceptualisation and development of multimedia courseware in a tertiary educational context: juxtaposing approach, content and technology considerations

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Abstract

Developing multimedia courseware for successful integration into a wider system necessitates close attention to a multitude of factors. After a brief literature survey and a critical examination of some overly enthusiastic claims concerning the benefits of multimedia, this paper proposes a flexible framework for CALL development that takes the interrelations between approach, content, and technology-based variables into account. It contends that some of these variables are predetermined by the educational context, whereas others reflect the developers' views of what constitutes an optimal language learning environment. The main part of the paper provides a detailed account of how these development factors shaped the design of multimedia materials for a large-scale project at the Vienna University of Economics and Business Administration. It argues for a balanced approach to learner control that, while allowing learners to interact with the materials according to their needs and preferences, provides enough learner guidance for those who prefer a more structured approach to learning. Special attention is paid to the often problematical areas of learner style suitability, feedback, and transparency of structure and content.

1 Multimedia materials: myths and realities

Multimedia advocates and courseware manufactures tend to enthuse about the manifold advantages inherent in multimedia materials. Yet inherent is the operative word here: since a computer is only a medium that delivers the message/content, just like a textbook or an audio tape, computer-based materials are not intrinsically superior to other kinds of learning/teaching materials. In fact, since there is more room for mistakes – of the technical kind – there are probably more shoddily designed, flawed CD-ROMs and online materials around than inferior textbooks.

There are a number of alleged benefits of multimedia which have gained more or less the status of buzzwords. They range from 'increased learner control and autonomy', 'instantaneous feedback' and 'flexibility concerning pace and time', to 'suitability for all learning styles'. Yet in reality, most of these assertions have to be taken with a pinch

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of salt, as a closer look at many commercially produced CD-ROM-based or web-delivered multimedia materials proves. At present, it seems to be more realistic to talk about potential rather than actual benefits.

Let us look at some of the claims in more detail. Learner control can be broken down into control over time, control over pace, control over the path to the goal, and access to the measurement of success (Healy, 1999: 400–402). Control over time (when to learn) and pace (how fast to proceed, how many repetitions and revisions) are a given in any self-access learning situation and not an advantage specific to a multimedia learning environment. One could even be facetious and argue that a textbook is more portable than even the smallest computer and never needs recharging. Even more problematical is the path to language learning objectives (which tools to use, which route to choose) and the measurement of success (feedback, assessment). Whether these two tenets of learner control can be fulfilled, depends to a large extent on the quality of the instructional design and the pedagogy of the multimedia courseware – they are by no means innate features of multimedia.

Unfortunately, the potential of multimedia in the area of learner control is often foiled by overly complex user navigation, insufficient sign-posting/labelling and poor structuring and presentation of contents. McCarthy (1999: 4) observes that students (especially those averse to taking risks) would need "a mental picture", a kind of map of the courseware if they are to make efficient use of it, since all information is concealed, in non-linear fashion, behind a single screen. On a simple level, a detailed 'table of contents', presenting at a glance topics, functions, skills and grammar points covered on the one hand and tools/types of activities available on the other would go a long way towards providing such a map – yet it is seldom offered in self-access courseware. Meaningful unit headings, icons which are compatible with users' "habits and expectations" and are "intuitively clear and direct" (Lonfils & Vanparys 2001: 407), and clear navigational routes to all tasks and language learning resources such as glossary, subtitles, etc are *sine qua non* prerequisites of learner control. Without those features, the learner will have difficulty in finding the activities corresponding to his learning needs, and in implementing important meta-cognitive learning strategies such as self-management and organisational planning.

Moreover, even if all options are laid out before the learner in exemplary fashion, even if navigation is easy and all the necessary information is present, certain types of learner might make poor instructional decisions because they are not able, not ready or not inclined to manage their learning autonomously (Robinson, 1991; Healy, 1999). A truly flexible program would need to take these learner types into account by offering a pseudo-linear default route through the materials, enabling the user to 'cross off' activities completed and objectives achieved one by one.

The next problematical issue concerns evaluation of progress and feedback. Especially in a self-access environment, where learners do not have the chance of comparing their performance with that of their peers, they need to get a sense of whether they are doing well or not. A 'progress report' or similarly called feature is often installed to track students' progress and take over the assessment function. Performance assessment of this kind, however, is purely quantitative, consisting usually only of numbers of exercises completed and percentage of correct answers given, which, without reference values provided, lack significance and motivational potential.

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Though frequently quoted as one of the big advantages of computer-based learning, the usefulness of 'interactive' feedback is another myth. Potential types of feedback can be seen as being situated along a continuum, ranging from confirmation feedback (correct/incorrect) and correct response feedback (the courseware provides the correct answer) to explanatory feedback and bug-related feedback which "aim to correct a user's faulty mental model of a procedure" (Soo, 1998: 12). Although learners appreciate the non-judgmental nature and the limitless patience of computerised feedback (Felix, 2001: 338), user evaluations have shown that the lack of explanation of why a chosen answer is incorrect or inappropriate is often experienced as frustrating by students working on their own, struggling to make sense of red crosses and green ticks (Trinder, 2002). Potential consequences of such inadequate feedback may vary from students mindlessly retrying multiple choice activities until a column of green ticks is displayed on the screen, to abandonment of tasks as the learners' quest for enlightenment remains ignored. Although it depends partly on individual learning styles whether students prefer references to explicit rules or discovery learning (Pujola, 2001: 86), context-specific feedback, in contrast to mere scoring, will always provide "meaningful learning opportunities" (Bangs, 2002).

In any discussion of multimedia, mention is usually made of the benefits of facilitating the use of different modalities. Learners can simultaneously watch, listen and act/react. More specifically, learners are offered the opportunity to discover which types of input or combination of input modes correspond best to their learning style. Pusack & Otto (1997: 6) contend that

> [a] multimedia environment has the potential to help students confront and comprehend material more effectively by offering alternative or redundant presentation modes to match learner preferences of needs.

However, empirical evidence in favour of the benefits of dual coding is not conclusive. Chun & Plass (1997: 66), citing a number of studies investigating the alleged benefits of dual delivery modes, note

> ...that there can be competitive effects from learning from different sources, such as task interference between modes of processing, the directing of attention, and learners' individual differences.

Interesting in this respect is a study by Thompson & Rubin (1996) who observed that, in order to counteract distracting influences, some students preferred to use only one channel at a time, e.g., start off by watching without sound or listening without viewing. Brett (2001:1) similarly found that combinations of media resulted in cognitive overload and thus had a negative effect on recall of vocabulary and information. He concludes that "multimedia courseware design needs to consider not only suitable pedagogy but also the processing demands created by combinations of media".

The multi-modality argument often goes hand-in-hand with the claim that multimedia is suitable for all learner types, as it offers pictures/video/graphical elements for visual learners, sound for those with auditive preferences, and manipulation of the mouse, e.g., drag-and-drop exercises, to cater for tactile/kinaesthetic learners. This view is a gross

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oversimplification of the concept of learner styles as it only addresses perceptual dimensions and ignores other aspects. In reality, the notion of learning style comprises

> cognitive, affective, and physiological traits that are relatively stable indicators of how learners perceive, interact with, and respond to the learning environment... Learning style is a consistent way of functioning that reflects underlying causes of behaviour (Keefe 1979: 4).

Oxford *et al.* (1992: 441) point out that "individual learners have a composite of a least 20 style dimensions", and assess the following as particularly significant for language learning:

- Field-dependent and field-independent
- Feeling and thinking
- Impulsive and reflective
- Intuitive-random and concrete-sequential
- Closure-oriented and open
- Extroverted and introverted
- Global and analytic

The relationship between learning style and success in language learning is far from clear. Apart from the necessity to operationalise the concept of proficiency and differentiate between certain dimensions of successful learning (accuracy vs. fluency, productive vs. receptive skills...) there is no agreement in the literature as to whether high levels of achievement depend more on a match between instructional and learning styles, or whether certain tactics and strategies derived from learning style preference can be considered predictors of success, in short, whether some styles are more effective than others. However, there is evidence that learners will feel more at ease if they are allowed to work according to their style preferences (e.g. Tyacke, 1998; Ellis, 1989), and some empirical support of the claim that "different learners can achieve the same level of success if the instruction matches their own approach to learning" (Ellis, 1994: 524). Consequently, it can be concluded that the facility to accommodate different learner styles is a desirable feature of multimedia and other learning materials.

2 Background to the project

This brief survey of theoretical issues and empirical findings suggested that the promises of multimedia publishers only rarely correspond to the reality of the products. In our project, we started out with more modest claims and expectations. It was our aim to develop not a panacea for all language learning ailments, but a pedagogically sound program that would exploit the capabilities of the medium and avoid the pitfalls indicated above.

3 Funding

The project in question is an e-learning project currently under development at the English Department of the Vienna University of Economics and Business

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Administration. In the context of a completely redesigned curriculum (starting winter term 2002), approximately 2000 first-year students will have to pass through a rigidly structured 'introductory' phase comprising only mass lectures (even for foreign language classes). In order to make up for the drawbacks of such a learning environment, the Ministry of Education agreed to fund the development of e-learning materials, which will be used in conjunction with face-to-face classes, for the eighteen subjects making up the so-called "common body of knowledge" of the first year.

4 Team building

The funding came in the form of salaries for two developers per subject. In the case of the English Department, that meant four developer positions, as the assignment was to create materials for two courses (English being read in the first as well as the second semester of the introductory phase). Much has been written about the necessity of content providers (language specialists) collaborating closely with computer specialists in successful software development (Gimeno-Sanz & Davies, 2002:2). Ideally, one would wish for "... a linguist who understands something about programming and a programmer who understands something about language" (Davies, 1997: 41). We managed to find one person not only proficient in both areas but also interested in working on the project as it complemented her PhD research. Another job was shared by two content developers, and positions three and four went to multimedia/graphic design specialists. In practice the two content providers had to liase with the authors of the classroom materials to consider content questions and with the multimedia specialists to discuss feasibility of activity types.

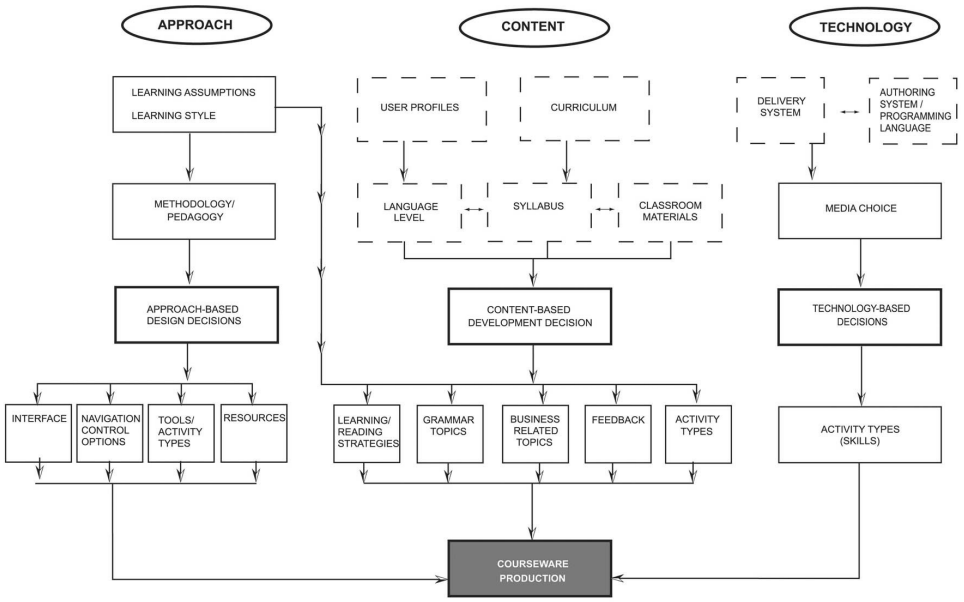


Fig. 1. Courseware development factors.

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5 Conceptualisation of the Online English Mentor (OEM): aims and constraints

The production of any language learning courseware is shaped by a multitude of factors, some within and some beyond the control of the developing team. Figure 1 is meant to illustrate the interplay of internal and external elements, of methodological considerations and technological issues, and their effects on the final product. The framework integrates a number of elements discussed within the tripartite (*Approach, Design, Procedure*) structure of Hubbard's Development Module, which is part of his vision of a CALL methodological framework (Hubbard, 1996: 19). However, in order to accommodate our view of hierarchical relations between certain factors, Hubbard's framework had to undergo substantial adaptations. First of all, we tried to depict the decision-making process as flowing from the top level of the three categories down to the final outcome, the courseware. Whereas Hubbard allocates elements such as *feedback, control options* and *input judging* to the *Procedure* category, we believe them to be dependent on methodological and design considerations and reclassified them accordingly. Thus in our framework, the *Procedure* category is replaced altogether by *Technology*, as the choice of delivery system often depends on the technological infrastructure and consequently on external (and not approach-led) factors, yet has strong impact on the final look of the programme. Finally, dotted lines are used to clarify which factors have bearing on the courseware design, yet are predetermined by the learning environment and are not (at least in our case) subject to negotiation.

5.1 Approach: learning assumptions, pedagogy and methodology

The observation that CALL development should be pedagogy-led rather than technology-driven has achieved the status of a kind of truism, and probably no language teachers would disagree with it. Yet like everything else, the language teaching profession is subject to trends and fashions. The reasons for the rise and fall of methods are explored in the succinctly named article *On the mortality of language learning methods* (Decoo, 2001). Nunan, too, advises against embracing new methods too enthusiastically:

> An important task confronting applied linguists and teachers concerned with second and foreign language learning is to overcome the pendulum effect in language teaching. This effect is most evident in the area of methodology where fads and fashions, like theories of grammar, come and go with monotonous regularity (Nunan, 1991: 1).

Nowadays, teachers and material developers alike have given up looking for a single superior method in the hope it might work like a "magic wand" (McCarthy, 1999: 3) and frequently lean towards an eclectic approach. Reasons behind that trend are a growing disaffection with individual methods which fail to fulfil their claims in the 'real world', and the increased interest in learner characteristics. Research into learning styles and preferences makes it clear that no single method will ever be able to satisfy all types of learners. On the other hand, a number of principles have developed which go beyond the confines of individual methods and are generally espoused by the profession. The importance of presenting language in context and of allocating to the learner an active

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part in the learning process rank high among them.

The approach to materials development manifested in the OEM is not indebted to one particular method, but is partly underpinned by learning assumptions derived from Second Language Acquisition theory and research, and partly motivated by more down-to-earth considerations like individual teaching experience and departmental teaching philosophy and practices. Its core principles are listed in Tables 1 and 2.

These principles lead to approach-based design decisions, which in turn manifest themselves in the design of interface, navigation, control options, help facilities, tools, and activity types (see Figure 1). The conditions in Table 2 are particularly conspicuous on the level of text and task types, whereas the principles in Table 1 inform the design of the program as a whole.

5.2 Approach: Learning style considerations

Learning style has been put in the 'approach' category as the belief that learners benefit from being allowed to interact with materials according to their own preferences is central to the way the program is structured. We will address here only the basic difference in cognitive styles between globally oriented learners, who tend to be field-dependent and intuitive, and analytical (field-independent, concrete-sequential) learner types.

The non-linear nature of a hyperlink resource is anathema to analytical learners, which is why the OEM provides a default route. If they wish to do so, these types of learners can proceed from one activity to the next by simply clicking on the 'next' button (or return to previous activities via the 'back' button), thus ensuring that they do

Table 1. *Key pedagogical considerations*

Materials.
• should be learner-centred and flexible
• should accommodate different learning styles and preferences
• should facilitate the acquisition of procedural knowledge
• should promote the use of a variety of language learning strategies
• should present language in (authentic) context
• should integrate grammar and content
• should expose learners to rich and varied language
• should offer a variety of task types to suit different cognitive styles

Table 2. *Hypothesised beneficial conditions for language acquisition (cf. Schmidt, 1990; Sharwood-Smith, 1993; Hegelheimer & Chapelle, 2000)*

Materials should facilitate consciousness-raising because
• noticing of input is a prerequisite for acquisition of targetforms
• salient input is more likely to be noticed and consequently acquired
• modified interaction is beneficial for learning

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not miss a single activity. On the other hand, globally oriented users can make the most of the hyperlink environment, which is hypothesised to complement their learning preferences, and access different areas in a random fashion.

Global types are field-dependent, which means they rely on context. Consequently – and in accordance with generally accepted methodological practice – we have presented language and content in an integrated way, introducing them on the level of (authentic) texts/articles. As analytical learners tend to concentrate on rules and word analysis, they enjoy form-focused activities. These learners may prefer to start with the grammar reference sections and will appreciate the non-text based exercises for extra (form-focused) practice. They will also find plenty of tasks that lend themselves well to analysing and categorising linguistic items and structures.

In contrast to global types, analytical learners are less inclined to tolerate ambiguity and simply guess at meaning. If they infer meaning by, for instance, analysing expressions contrastively across languages or breaking them down into parts, they will probably want to test the correctness of their assumption by means of the on-line glossary. Similarly, they will appreciate the frequently very detailed, context-specific feedback. Globals, on the other hand, may ignore these facilities and instead practise holistic compensation strategies such as guessing and predicting.

Users can choose whether to follow an inductive approach, i.e., look at examples first, identify the use of certain structures, formulate and finally check a hypothesis. This will appeal to global learners. Analytical learners, on the other hand, may want have a look at the rules first, then use them in relevant tasks and exercises. Both approaches are supported by the instructional design of the materials.

6 Overview of the courseware: approach-based design decisions

Two navigation bars (top and left-hand side) allow constant access to the three main areas of the *OEM*, *units, grammar,* and *learning strategies*. The left hand bar provides the more detailed sub-menu of the particular area students have chosen to work with. As mentioned above, we would expect analytical, concrete-sequential learners to follow the default route through the program. On the other hand, optional hyperlinks to additional information may (and are even meant to) tempt such learners to stray from that path, which makes it necessary to offer an intuitively graspable navigation system and a user-friendly interface that ensure all learners will easily find their way back again. The literature suggests that the degree of guidance students require depends not only on style preferences, but also on experience and ability in language learning: experienced, high ability language learners are, as can be expected, better able determine what tasks will benefit them most (e.g., Gay, 1986, Hannafin & Sullivan, 1995), but only if, to labour a point, they are aware of the instructional options available.

The *units* menu lists the topics of the units and the main grammar areas dealt with. A detailed index provides further information on the topics, skills and tasks the unit addresses. Learners can progress in a linear way through the modules *reading, vocabulary, grammar tasks, listening*, and *grammar reference*. Alternatively, they can open the *grammar* menu for a list of the main grammar areas with links to the relevant units' *grammar tasks* as well as the grammar reference sections.

The *reading* module is tripartite, starting off with pre-reading questions designed to

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activate students' prior knowledge of a topic. Pre-reading tasks are typically meaning-focused multiple choice or true/false questions and prepare for reading by asking for predictions or 'testing' general knowledge.

The reading text itself is an authentic (newspaper) article, enhanced by multimedia elements such as an audio file for extra listening practice, and hyperlinked vocabulary definitions plus audio files on potentially difficult words or phrases. Input which has been made salient in this way (i.e. by underlining expressions to signal the presence of a hyperlink) has the additional advantage of drawing learners' attention to certain lexical items and figurative language and thus of facilitating noticing, which is a prerequisite for intake and acquisition. Giving students the opportunity to ask for clarification of input which is linguistically beyond them, i.e. opportunities for interactional modifications, means offering them the chance to negotiate meaning (see Table 2), which is another condition hypothesised to be beneficial for acquisition (Chapelle, 2001:53). On the other hand, students are also encouraged to work out the meaning of unfamiliar words themselves by using a variety of strategies introduced in the *reading strategies* section, which is placed as a link on the same screen as the text. Which resources and strategies they will actually utilise most to overcome knowledge limitations will, we expect, be governed by variables such as learning style, difficulty level and intrinsic interest of the input text, as well as time pressure.

As for the *reading comprehension* tasks, the objective was to provide a variety of task types to suit different learning styles and to further the use of different reading strategies. Multiple choice activities like selecting the most appropriate ending for a sentence or spotting those statements which did not feature in the text require close reading of the input text and will appeal more to analytical learners. Conversely, tasks such as choosing the best summary of or the best heading for a paragraph accommodate the preferences of globally/holistically-minded learners (for a more detailed overview of learning styles and attitudes towards reading tasks, see Tyacke, 1998). A *book* icon, if clicked upon, opens a window displaying the passage where the answer to the comprehension question can be found, with the relevant sentences highlighted. This resource is intended to ensure that the comprehension questions actually check comprehension, not memory, and saves learners from having to reread the entire text repeatedly looking for details.

The *vocabulary* module focuses on the key vocabulary of the given topic. The starting point is always the input text, yet activities promoting the search for synonyms, antonyms, false friends or 'odd ones out' further expand the learners' knowledge of the semantic field. The first task might be a search activity, requiring learners to find all synonyms of a particular key term, then to determine the register of each, and use them in a new context. Other activities consist of classifying or categorising lexical items, completing word families, matching meanings, reformulating phrases, choosing possible collocations, and many more. These exercises emulate and promote the use of direct cognitive and memory strategies, to draw on Oxford's (1990) classification of language learning strategies. The vocabulary section also provides practice opportunities on lexico-grammatical elements such as phrasal verbs and prepositions. Where appropriate, hyperlinks to the input text are provided so that learners can again see the word used in context before attempting to complete an activity.

Input texts were chosen with a view to content as well as the occurrence of certain grammatical features, which can be explored and practised in the *grammar* tasks section. The

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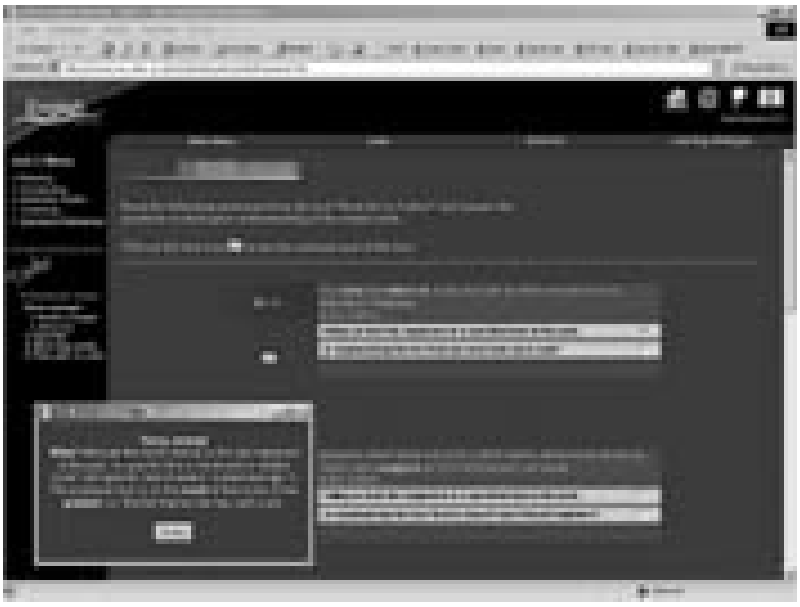


Fig. 2 Sample *Grammer Task:* Activity aimed at raising language awarenes, with feedback window

grammar tasks were designed to encourage consciousness-raising in the form of guided discovery activities rather than teach grammar as such. The sequencing of tasks encourages learners to look at grammatical structures in context and determine their function before testing their hypotheses in a number of exercises – if they follow the default route (see Figure 2). The relevant grammar reference section is only a mouse-click away, if deductively-oriented learners want an overview of form and function before attempting the exercises. However, exposing such learners to authentic language and drawing their attention to the context determining naturally occurring grammatical features is not only in keeping with current methodological principles, but will, it is hoped, motivate and encourage students to explore their individual learning processes and experiment with new techniques. In this regard, we fully agree with Soo in that the instructional aims of multimedia materials should include "not only fulfilling learners' needs according to their preferences but helping them develop new ways to learn" (1999: 301).

Further control is given to learners by the option of calling up complete answer pages for each exercise, with icons indicating links to further context-specific explanations, or to the relevant place in the grammar reference section for general rules. Where appropriate, optional hint buttons provide additional help.

In the *listening* module, learners are exposed to authentic spoken English. The recordings were either custom-made, by asking native speakers for statements concerning the unit's core topic, or adapted from radio broadcasts, and offer a variety of different accents and registers. A written transcript of the audio file can be consulted, too. The rationale behind this dual delivery mode – which applies equally to the audio-enhanced reading module – is one of the key advantages of multimedia, namely the opportunity "to adjust [the input's] comprehensibility as required, not by adjusting (simplifying) the

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data, but by augmenting the media which support the delivery" (Brett, 1995: 81). Meaning-focused *listening comprehension* questions round off the module.

The last section, *grammar reference*, is a resource rather than a module in its own right. The idea was to offer an easily accessible hypertext tool that could provide additional explanatory feedback going beyond the context-specific explanations learners can call up for individual exercises. The hypertext links take learners to the exact location where they can find the answers to specific linguistic queries. On the other hand, those who are thus inclined can work through the unit's grammar focus from beginning to end. The example sentences reinforce and expand on the vocabulary introduced in the input text.

7 Content-based development decisions

McCarthy (1999) likens computer-courseware to textbooks or videos in the sense that all are "essentially a medium/technology plus content". Successful integration into a bigger system such as a university degree course depends on the careful juxtapositions of factors determining the content with those shaping the approach (see Figure 1). Computer-delivered self-study materials, if well-designed, lend themselves particularly well to an individualisation of the learning experience, not only as far as learning styles are concerned, but also with regards to differing wants and needs arising from dissimilar levels of proficiency and previous language learning experiences. The Business Administration programme at Vienna University attracts students from different school types as well as, because of Austria's location, a large number of students from Eastern European countries, many of whom did not study English as a 'first' foreign language at school. Thus despite the fact that the first year's classroom materials are targeted at students with 'A-level English' (*Englisch Maturaniveau*), we are well aware of the discrepancy between hypothesised and actual proficiency level of a not inconsiderable percentage of our students. The differences in users' language levels made it essential to develop flexible materials that offer enough challenge for more advanced learners and enough assistance and support functions for the weaker ones. Consequently, whilst the e-materials perfectly match the syllabus and the classroom materials content-wise, they afford a degree of adaptability and individualisation which is impossible for a lecturer to offer when faced with a classroom of seventy students.

Second, not only the departmental teaching philosophy, but also its test and assessment practice had a not inconsiderable influence on the type of language input and activities we decided to offer in the OEM. First semester English is seen as an opportunity for students to learn to:

- understand and interpret intermediate-level English texts, of various types, about non-specialist business-related topics
- construct grammatically correct English sentences and coherent short paragraphs relating to such material
- distinguish between different registers of language (formal/informal), and apply the distinction actively
- understand and employ specialist vocabulary in a limited number of business-related areas (from: Department of English/Business English Homepage)

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These objectives correspond to the areas students will be tested on and, from a pragmatic, short-term point of view, the OEM is meant to be a resource capable of helping students succeed in their (written) end-of-term examinations.

The OEM deals with the same ten business-related core themes (such as *The Entrepreneur, World of Work, Travel and Transport*) which are meant to build a bridge between general English and the content and terminology oriented ESP of the following semesters. Each unit has a grammar focus, yet, in contrast to the e-materials, the class coursebook provides only limited practice opportunities and no systematic overview of grammatical forms and functions. The more obvious reason behind this partial division of labour is the endeavour to use each learning environment for practising those skills, and offering those types of resources and activities it best lends itself to: communicative group/pair work, and generally activities aimed at language production take place in class, with the reading input and new vocabulary items functioning as a stimulus for discussions, whereas form-focused and accuracy-oriented language work is to be done individually on the computer, with the glossary and reference sections to be consulted as needed. Moreover, in the self-study mode students not only have the possibility of focussing on those language areas/skills where they perceive they have weaknesses, but, it is hoped, will find a more objective tool to assess their strengths and weaknesses before the make or break of the final test. The hint and feedback functions, though not adaptive as far as students' previous performance is concerned, provide extensive explanations against which learners can check their understanding of text and structures (see Figure 3). Again, to stress the point of personalising the learning process: as students will get explanatory feedback to the answers they have chosen, the feedback will be more meaningful to them than if they had listened to somebody in class answering a question.

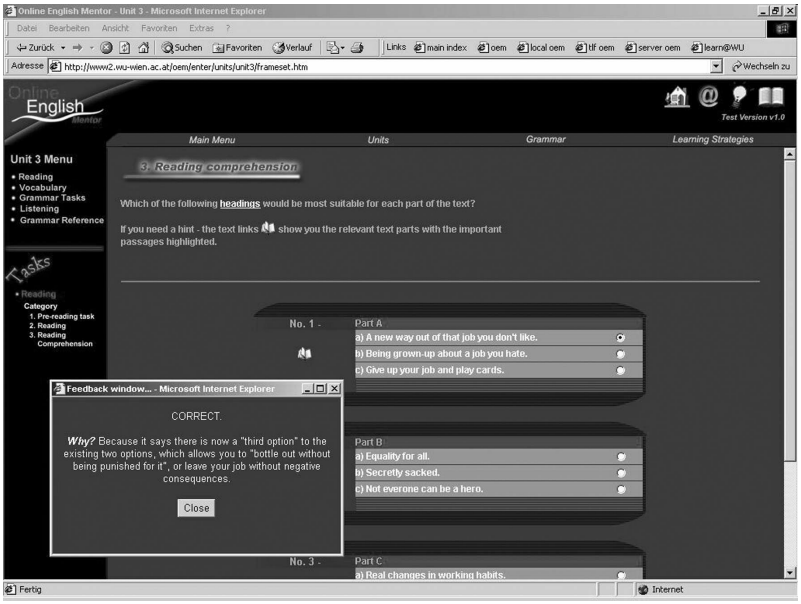


Fig. 3. Feedback to a *Reading Comprehension Task*

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8 Technology-based decisions

As mentioned above, English is only one of eighteen subjects taught in the introductory phase, all of which offer more or less extensive electronic support. It was decided to make all e-materials available on a single platform – which also provides student community services such as e-mail accounts, a chat forum, and administrative information – with access restricted to students registered at the university. The decision to use the internet rather than CD-ROM as a vehicle for delivery was thus taken jointly by the project leaders of all the subjects involved.

Other technological variables affecting the final look of the courseware were questions of browser compatibility and considerations concerning bandwidth and downloading times. File sizes of video material were deemed to be too big to be convenient for students depending on access via modem, which is why only audio files were used.

On the level of tasks, the emphasis of the OEM is, as pointed out above, on receptive rather than productive skills. Actual typing is kept to a minimum and limited to individual lexical items rather than whole sentences. However, the computer offers other ways of actively engaging students in their learning. The exercise formats we felt were optimally supported by the capabilities of the computer included various types of gap-fills (e.g. type-in, multiple choice with drop-down menu, click on correct word in text...), ordering, categorising, drag-and-drop exercises (matching or completion), grid-fills, multiple choice questions (with one or more correct answers being possible), search activities, cross-words, etc. Exercises were created using the programming languages HTML and JavaScript and the tools Flash, Dreamweaver, Photoshop, Truespace, and Soundforge.

9 Conclusion

The *OEM* courseware was developed to complement and supplement the learning environment and the course materials of first semester, (pre-) Business English face-to-face classes. Its principle aim is to provide enough learner choices and instructional options for learners to tailor the learning process to their own needs and preferences. The minimum expectations we have of the courseware are that it will

- allow advanced students to consolidate and expand their existing knowledge;
- afford students the opportunity to address weakness in particular areas (grammar, vocabulary, listening skills...);
- reinforce what has been taught in class;
- offer extra practice opportunities;
- and allow teachers to 'farm out' the bigger part of the accuracy work.

However, the stronger and more ambitious claims are that the e-materials will

- allow the learner to fine-tune the reading/listening input according to his/her needs by using the optional support systems of online vocabulary or grammar notes, detailed feedback and additional delivery media so that the input can be comprehended and thus become a ‘candidate’ for intake;

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- make learning more efficient by encouraging students to become aware of their own preferred language learning strategies, and to try out new ones;
- enable students to test their knowledge and identify their weaknesses, at the same time offering various types of remedial action for students to select from;
- offer a balance of learner choice and learner guidance that will make for an individualised learning experience without overtaxing those learner types who, by nature or nurture, tend to rely on rules and directions imposed from outside.

We have planned extensive student evaluations and attitude surveys to investigate whether, from the learners' point of view, the *OEM* manages to achieve these aims. A second research question is which of the support features are frequently used and which are largely ignored - empirical evidence of that will be collected in the form of user tracking. Further research will show whether learner style or other variables account for differences in learner behaviour.

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