A pre-conference workshop will take place at EUROCALL 2004 on corpora organized by Ylva Berglund, and several members of the SIG have submitted abstracts of papers for the conference, 24 for 2004 as opposed to 16 in 2003. A meeting of the SIG will be held in Vienna in September 2004 to discuss future developments within the framework of the aims of the SIG.

A discussion list entitled CORPUSCALL has been set up using JISCMAIL.

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Projects

MALTED - a shared experience

Introduction

The story of MALTED (Multimedia Authoring for Language Tutors and Educational Development) (www.malted.org) goes back a few years to the acceptance by the European Commission of the MALTED project for European Commission funding under the Educational Multimedia Task Force programme. The result is the appearance of the MALTED authoring system as freeware, available to all under a GNU agreement. The appearance of the MALTED2 version has resulted from considerable post-project development work by the Spanish Ministry of Education (CNICE - Educational Information and Communications Technology Unit).

This article will examine how the system addresses the points discovered in the needs analysis and trialling phases of the project, which have contributed to the creation of the most powerful language authoring tool to appear so far. It will also explain how the system has been introduced and disseminated, especially in Spain, and finally will explain varied examples of applications created using the tool.

The needs discovered

In the early stages of the project work, evidence was accumulated as to the need for such an authoring system, and the nature of the requirements for the same. It was clear that, with the advent of web-based or so-called "e-Learning", there were far too many examples of poor pedagogical applications, and what seemed like the dominance of technology over sound instructional design based on well-documented research into cognitive learning and modern second-language acquisition theories. There was (and is) too much re-invention of the wheel, when re-use of materials, templates and techniques could result in huge economies of scale. Authoring tools available specifically for languages (we are leaving to one side more complex, generic tools which require a considerable learning curve), almost invariably create "one-off" exercises, with the need for a Learning Management System to place them into a coherent sequence. Those consulted also gave their account of the exercise/activity types which they felt should be covered in an ideal authoring system.

The response of MALTED

The project also quarried from a rich mine of previous work on authoring systems. As a response to the perceived need for re-usable assets, MALTED has the power to provide access to an Asset Base of materials of varying granularity. The need for any authoring system to be flexible, offer complexity, and yet be accessible to an "average" tutor-developer is a difficult juggling act. MALTED is not a "pick up and go" system, and does require some training, yet is sufficiently user-friendly to keep this at a minimum level. It can offer facilities which will satisfy the low-level user in terms of results, but others which are extremely powerful and can be used only by the more experienced.
The question of pedagogical applications was at the forefront of the design process. MALTED offers a flexible approach to the creation of learning designs in two ways. Firstly the templates themselves are capable of adaptation in many ways. Any screen can be enhanced by the easy inclusion of Media Objects associated with a wide range of Actions. Secondly, all templates, when populated with content and thus becoming "Frames", can be linked together in a variety of ways, with or without conditions and variables, to create a learning system of great power, which can also incorporate activities created outside MALTED. Thus the whole range of design experiences can be catered for, from simple, discrete exercises to whole courses, from a one-off multiple choice to an extensive conditional branching routine.

The question of feedback formed an integral part of the MALTED design process. Research had informed the early stages of the project that there were far too many examples in web-based programs, where exercises resulted in tests with a meaningless score, with no feedback to the user which would help them develop knowledge and skills. MALTED sought to avoid this. Whilst scoring can be applied where appropriate, there are facilities for the inclusion of feedback in all its forms, intrinsic or extrinsic, and in the full range of media types.

Whilst it is clear that many in the educational world prefer to consider applications available to HTML browsers, MALTED came to the realisation that the levels of interactivity required to create pedagogically sound learning routines could only be achieved outside the basic HTML framework. The system uses Java to create the templates, and outputs the results as .XML files, rapidly becoming an industry-wide standard. The compromise of having to install Java and the MALTED run-time system or an applet on the client-side machine, is more than compensated for by the flexibility and richness of the system, especially since all the components can be downloaded free of charge.

**The MALTED system explained**

The MALTED program, in its Developer, Run-time Editor and full Run-Time modes, comprises a series of Interactions. Advanced users can start from these basic interactions, using a "blank sheet" to create activities. However, most will take advantage of the templates provided, which are instantiations of the interactions with parameters. Here is a full list of the template types provided:

<table>
<thead>
<tr>
<th>Association</th>
<th>Free writing</th>
<th>Multiple Choice</th>
<th>Recording</th>
<th>Transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crosswords</td>
<td>Hangman</td>
<td>Memory Game</td>
<td>Spelling</td>
<td>Translation</td>
</tr>
<tr>
<td>Dialogues</td>
<td>Matching</td>
<td>Ordering</td>
<td>Gap filling</td>
<td>True/False</td>
</tr>
</tbody>
</table>

Some of these have more than one version, according to functionalities required (such as instant verification of input), and there are, very importantly, a blank template and a "one-Panel" template. Figure 1 shows how a Hangman exercise was created by adapting the original template to provide a motivating learning environment.

![Figure 1](image.png)
Fundamental to understanding how MALTED works is to view its granularity. At the basic level there are media objects, which in turn are held in containers. Figure 2 shows a container added to a blank screen and Figure 3 shows a container with a media object inserted.

These are either already offered as embedded in a template, or can be added by the developer to any template type. When a developer creates an activity using a template, a frame is created, the properties of which can be set at frame, container or media object level, and containers or media objects can easily be copied from frame to frame. Figure 4 shows a dialogue box for setting properties.

In addition, part of the screen can be set aside for a panel, which will contain a set of cards. Whilst the rest of the screen is static, the cards inside a panel can change according to user input, useful for showing feedback, animations or menu structures. The "one-Panel" template exploits this. If what is required is not a specific template activity but a presentation or other activity not covered by the template list, then a "blank" template is also available, into which any combination of the other elements can be added.

The power of these elements is only realised when one sees that every element can be linked to an action. Actions can be called up as a frame loads, when the cursor is over or moves in or out of a hot area, and on clicking a button or hot spot. Available actions, many of which can have conditions associated with them, include:

- animation of cards in a panel
- linking to another frame or course (more on this later)
- execution of an external application
- opening a URL
- showing a pop-out text or full frame
- general navigation
- showing the result(s) in another area of the screen
• opening email facilities
• playing media such as audio or video
• recording student voice input

However, the most powerful feature of the system lies in the highest level of granularity - the course. Frames can be grouped together and linked to form an item of courseware, either in a simple linear mode, or with the complexity of added conditions to route learners according to, for example, performance, time or other variables. With the use of customised blank templates, this leaves open the possibility of creating conditional branching programs, a pedagogically powerful technique which has been neglected over recent years.

**Development, dissemination and training in Spain**

In the final stages of the original project trialling was carried out. In Spain, where the major trialling took place, the evaluation programme consisted of a cascading solution, where key trainers were identified and given training to be imparted to others. Many hundreds of teachers thus had access to the system and were able to contribute to its improvement through evaluations. Currently, training is on-going in five of Spain’s autonomous regions with others coming on-stream.

The trialling identified issues of navigation and other interface questions. But a major issue was the role of the asset base - the re-usable repository of content material which is to be one of the key elements of MALTED. In order to control the quality of assets uploaded, and to convince a wider audience of the benefits of the authoring system, it was decided to generate a critical mass of material of high pedagogic quality to populate the asset base, before it went "live". This is now under way.

There is another addition to the system, which the Spanish Ministry is finalising: a complete Learning Management System (LMS), which can track and store user input for evaluation, management or analysis. The current first-release version allows tutors and pupils to review the results of student interaction. The core of the system is a database with tables on users, pupils, teachers, administrators and exercises. The administrator associates a pupil to a tutor and to a set of exercises. After the user interaction, the system stores an .xml file, with data on times of entry and exit to each exercise, the answer selected by the user, the number of tries, and details of the user clicks, score and average on each. The pupil can access the database through a user-friendly interface, to check his/her performance, and the teacher can obtain information on each pupil or the average of a group of pupils in an exercise or set of exercises. The LMS, like the MALTED system, can work on-line, or on a school intranet, from a run-time system installed in each workstation, against a file server, without the need for an Internet connection. It is advisable, if bandwidth allows for it, to have the LMS and the MALTED units on-line, so that teachers, pupils and families can access from home, facilitating education beyond school walls. The freeware is being delivered either on CD-ROM or by download, along with the free JAVA programs.

In Spain, MALTED has certainly had a wider impact than elsewhere. It has been the tool selected for the creation of a major 9 CD English distance course. With the "Internet en la Escuela" programme, the Ministry is making available on-line interactive English learning materials, developed with MALTED, for secondary education. A key factor has undoubtedly been the flexibility of the system, enabling the tutor-developer to create courseware which can be used in many classroom configurations. Another factor in its acceptance has been the insistence on minimum conditions for those creating the early programs - such as good levels of feedback, and the creation of teachers’ notes, which has been shown to foment a more careful pedagogic and instructional design phase on the part of the developers.

**MALTED and collaborative learning in the OASIS project**

The system has also been integrated into further initiatives, including the major new OASIS project, aimed at promoting collaborative learning. OASIS is an IST2000 project, funded by the European Commission to more than 3.5M€, and scheduled to end in August 2004. On the technological side, it is developing a school and zone architecture, together with a proposal for a European school interoperability framework which will
allow the sharing of information between different platforms and applications. On the pedagogical side it is proposing a set of collaborative learning models enhanced by the support of technological services developed in the project architecture.

The second phase of the project is now under way, in which experimentation in 20 schools in 4 different Spanish provinces will assess the validity of the technically supported pedagogy proposed. It was felt that earlier didactic units developed with MALTED lacked more ambitious "classroom" proposals:

- Multimedia learning
- Personalised feedback from the system
- Internet navigation to extend information
- Pupil-tutor communication via email
- Access to resources through a metadata template
- Community of teachers sharing lessons and examples of good practice (alongside common concerns and difficulties)

Now the classroom proposals are pedagogically enhanced through the collaborative models developed in OASIS. The project architecture creates a collaborative space for learners, providing at the same time a cost-effective set of networked solutions for the operation and maintenance of school workstations and servers. This had been identified in earlier MALTED trials in Spanish schools as one of the main concerns of teachers when planning classroom practice. The pedagogical models benefit from the former to include:

- collaborative learning projects with learners of different countries
- involvement of families and extended school community actors
- interdisciplinarity
- pupils as authors on the Internet
- parents closely involved in pupils' education
- enhanced communication (not purely digital) between parents and teachers
- empowerment of out-of-school learning

One of the projects proposed by the English department of the Rey Fernando VI School near Madrid, envisages the study of the conditions of pupils' lives: their houses, transport, cultural environment, sports, leisure time, habits, prices - comparing them with those of a secondary school in Grenoble, France, also participating in the OASIS project. It will use materials developed with MALTED for English. Parents and grandparents will provide information on what life was like when they went to school. OECD statistics will be used to compare national and regional parameters with those obtained by pupils. The area of Mathematics will collaborate in the processing of information and comparing data. History will contribute with information on the history and geography of Spain, and vice-versa. Pupils of both schools will create a web site with the information gathered, with pictures taken to assist in the description of both places. Families are invited to participate in the collaboration between both schools. Examples of good practice will be disseminated to the teaching community.

In parallel, the Spanish Ministry's programme "Internet en la Escuela" (http://www.cnice.mecd.es/recursos.html) will widen experimentation on this model in Spanish schools, with the collaboration of the Spanish regional Autonomous Communities, working in particular on the area of English, using the contents developed with MALTED (http://malted.cnice.mecd.es/ingles/).

**Where MALTED goes from here**

The next step for MALTED is to extend its use, whilst collecting feedback as to any future enhancements which might be required of subsequent versions. At the same time, and as mentioned earlier, a programme of materials creation is under way in both
Spain and the UK. This will create a critical mass to populate the asset base, which will then be opened up from the MALTED system and should make a major contribution to avoiding re-invention of wheels. Once this is under way, developers will be able to access the asset base and re-use the projects found there, adapting as necessary. It is even possible to re-version the same structure into other languages with the minimum of effort, especially if items such as text are maintained as external text files rather than embedded on the screen. Subject to arrangements for quality control, the asset base should then grow exponentially as more practitioners come on stream.

At a wider level, the global aim is to influence for the better the production of multimedia learning routines. Many features can easily be used in disciplines other than foreign languages. Above all, MALTED allows for a flexible approach - it can appeal to the small-scale tutor-developer, as well as the commercial course provider, and can offer a tailored approach to individualised learning. But its flexibility goes even further, as it can cater for a range of pedagogic approaches without ever becoming subordinated to the technical imperative, and can thus offer a seamless and pedagogically sound integration of Information and Communications Technology into the language classrooms of the world.

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