Language Learning and Interactive TV

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Abstract. The integration of engaging TV style content with the individualization and 'intelligent' content management offered by techniques from AI has the potential to provide learning environments that are both highly motivating and educationally sound. This paper describes why the area of language learning would be a particularly appropriate domain for interactive educational television to focus on. It also indicates some of the criteria to be fulfilled in order to provide optimal language learning conditions and how these might be satisfied using TV/Film content and techniques from AIED.

Keywords: Interactive TV, Language Learning, Learner Modelling, Engagement & Motivation.

Introduction.

As a language teacher and as a language learner I know that both TV and computer-based activities can give rise to highly rewarding, motivating and successful learning experiences. However, certainly from the teacher's perspective, lessons based on video material and classes in the computer room tend to be very different. Perhaps the most obvious difference is that with a single video and a group of learners it is somewhat more difficult to individualise the learning experience than when single learners or small groups are working at multiple computers, of course this difference might be resolved by simply viewing video material on the computers. But, then there is also the somewhat more fundamental difference between *watching* TV and *doing* something at the computer. In fact, typically much of a teacher's effort in a video-based class is spent on trying to turn what is frequently seen as a passive experience (TV watching) into a more *active* learning experience. Often the teacher will use supplementary tasks that rely on the participants' shared viewing experience to promote activity. I find the prospect of integrating the benefits of computer-based activity with highly motivating and authentic video material in interactive television very exciting. In this paper, I imagine what interactive educational TV (ie-TV) for second language learning might be like. First, I indicate why language learning is a particularly interesting domain for ie-TV. Secondly, I outline some requirements for good language-learning experiences derived from second language acquisition (SLA) theory. Then I show how techniques from the field of artificial intelligence in education (AIED) might be combined with video content and delivered via interactive TV in order to satisfy these requirements. I also hint at how research into current use of video in the classroom might contribute to the design of ie-TV learning experiences. Finally, I provide a 'scenario' illustrating a use of ie-TV for language learning.

Why language learning?

Firstly, there is a significant demand for language learning delivered via TV; an EU report [1] cites two surveys, one 'revealed that 41% of those surveyed wanted more language tuition on television' another 'found that 28% of men and 22% of women were prepared to pay for more language tuition on television'. Secondly, language learning can make use of almost any material in the target language (i.e. it doesn't necessarily require tailor-made content) consequently a huge amount of potentially appropriate raw content material that could be adapted to support language learning already exists in the form of films, TV series, documentaries, quiz shows, etc. This huge variety is in itself very significant as it potentially allows ie-TV language learning materials to cater for an enormous range of personal tastes and interests. Thirdly, as Alexander Nakhimovsky [2] notes, perhaps 'of all subjects foreign language instruction can benefit from multimedia materials most obviously … the most difficult task facing a language instructor is to show the deep semantic and cultural differences hidden behind dictionary

equivalents… the movie and its script makes that task much easier … students can see the clash between their expectations and the realia of a different culture.' The rich narrative structure and visual context provided by TV programmes and films help the learner to form a deep understanding of the language to be learnt and its culture. Fourthly, for language learners TV material is genuinely authentic. As Liontas [3] observes, this is material produced by and for the native speakers of the foreign language and for many language learners watching, understanding and enjoying TV and films in the foreign language can itself be a learning objective.

What kind of interactive TV will help language learners?

Evidently, it is not enough to simply combine TV and computer-based activities. Interactive educational TV should be designed in a 'theoretically' founded way. It should at least attempt to provide optimal conditions for learning as defined by current theories of learning. Several conditions for good language learning experiences can be drawn from theoretical work on SLA (see [4, 5]). Here we summarize some of these:

- Focus on meaning, activities should primarily focus the learner's attention on the meaning of the language.
- Is there good 'Learner Fit', i.e. is the target language (material to be learnt) appropriate both in terms of its difficulty given the learners' current knowledge and also in terms of other factors such as the learner's motivation for learning, interests, needs, age, personality, learning style, etc?
- Are the key linguistic features (grammatical features) in the language presented made salient to the learner?
- Is 'negotiation of meaning' supported, i.e. are there opportunities for the learner to take actions in order to reach an understanding of material that they do not understand at the first encounter; perhaps via repetition, simplification, non-verbal clues, decreased speed, access to reference material, or change of modality (e.g. from aural to written)?
- Are tasks appropriate, i.e. do the tasks learners are asked to take part in provide genuine opportunities to use the target language for a communicative purpose and are they sufficiently close to 'real life' tasks the learner is likely to want to engage in using the foreign language?
- Are there opportunities for learners to correct their output (i.e. what they say or write), and are they helped to do this?
- Are learners helped to keep track of what they are learning?

From these criteria we can arrive at a description of the kind of ie-TV that might actively support language learning: *Authentic, richly contextualised language is presented through video content matched to the learner's current knowledge, motivation, interests and preferences; perhaps clips from favourite films are used. Key to this is an accurate learner model enabling the system to provide the individual learner with material they really want to understand. Significant linguistic features appropriate to the learner's current language competence and learning objectives are automatically highlighted, possibly using emphasis in subtitles with hyperlinks to grammar and other reference material. Facilities to assist understanding are available; i.e. first language and foreign language subtitles, dictionaries, slow-down, replay etc. Appropriate opportunities to interact using the target language are provided; maybe through chat rooms, discussion forums, VR role-playing, games, prompts to phone in or send text messages etc. Learners are also prompted to reflect on their own language output and correct it, where feasible spoken and written interactions are recorded and can be replayed later, possibly with automated highlighting of errors. A 'history of use' provides a visible trail of what the individual learner has covered and supports revisiting and revising of past learning experiences.*

In this section I have attempted to briefly indicate some conditions for optimal language learning experiences derived from current SLA theory. However, I have perhaps failed to place sufficient emphasis on the importance of motivation; many educators believe that those who really want to learn will learn – motivation is key – and this is where TV/Film comes into its own.

What can TV provide?

Existing TV/film material provides a huge quantity and variety of high quality content; i.e. language in authentic, motivating, and memorable contexts. This material is authentic not just in the sense that 'scenes from real life' may be shown but also in that, for many learners, watching and understanding TV and film in a foreign language may itself be a learning objective. And here it is the huge amount of material available covering an immense variety of interests and tastes that is key. TV and film-makers are highly skilled at engaging an audience and this

skill is what needs to be tapped by educationalists. However, not all individuals have the same tastes, what engages one learner may not engage another. In order to provide good 'learner fit' existing TV and film material needs to be carefully managed and this requires labelling that enables matching of an individual's interests to appropriate content. However, 'interest' is not the only dimension of 'learner fit'; material also needs to be appropriate to current learning objectives. Video material needs to be 'marked-up' in a number of dimensions; topic, linguistic content, appropriate age-range, etc. Material also needs to be chunked at a number of levels; a single scene may be appropriate for some learning objective, say language for ordering food in a restaurant, while a whole movie may be marked as suitable for those interested in science fiction. Additionally, the number of ways in which any chunk might be used is very large; the same clip might be marked as containing food vocabulary, functional language for restaurants, language with polite register, examples of present continuous grammar for describing a scene etc. The objective should be to 'mark-up' TV and film content at a meta-level in a way that allows for extension as new users find other ways of using the same material. Equally important is that chunking and mark-up of content should support 'reuse' in a variety of language learning applications, suitably marked up chunks of film/TV content would become 'learning objects' in the sense described by Wiley [6] and these learning objects would be amenable to 'intelligent' content management.

What can AIED provide?

Evidently, the task of 'marking up' a suitable amount of video content is huge, although linguistic mark up might be partially achieved through automated analysis of scripts. However, even after the content is suitably marked up the learning experience needs to be managed so as to satisfy the conditions for language learning described earlier. This is where techniques from AIED are appropriate. A student model must be developed capable of describing the learner's current level of language expertise, interests, motivation etc… and keeping an inspectable history of the learner's interaction with the content. A pedagogical model is required to define what suitable content would be, given current learning objectives. This component would also put together suitable combinations of learning objects to produce appropriate tasks. Knowledge from the pedagogical model and the learner model could be used to conduct a search of available marked-up content and identify material with good 'learner fit'. Scaffolding, through subtitles, slow-down, links to reference material, etc, would support 'negotiation of meaning'; i.e. bring material and tasks into range of the learner's ability, this scaffolding would then be faded as the learner's competence improves. A natural language processing component might be used to automatically highlight 'key linguistic features' in the presentation material and possibly also 'errors' in learners' written output. Techniques from computer-mediated communication and also from gaming could be used to provide 'communicative opportunities' to use the target language interactively. The current state of speech recognition software rather limits the kind of opportunities for authentic spoken human-to-machine communication. However, it should be possible to design ie-TV supported tasks that provide opportunities for spoken communication with fellow viewers. Ideas from current classroom practice might provide a useful starting place for the design of such activities.

What can language-teaching practice provide?

Language teachers have been using video in class for many years and addressing the issues of how to make TV watching an interactive experience, how to address individual needs with multiple viewers and how to link to authentic opportunities for communication. Generally, collaborative and/or individual tasks are provided pre-viewing, during viewing and post-viewing; perhaps learners are asked first to watch a clip without the sound and then discuss what they think is happening, then they watch with the sound to see whether their predictions are confirmed. Next, they may be provided with a partial transcript and asked to speculate collaboratively about what the missing words might be. After this they watch and listen again and try to fill in the gaps, perhaps this time they can control the video recorder making use of pause and rewind facilities. Finally, maybe they re-enact the scene as a role-play or discuss how it might be improved, or what happens next, etc. A comprehensive study of how video is currently used in the classroom will provide ideas for ie-TV task design; perhaps many of current classroom tasks can be 'digitised' in some way. And these 'digitised' tasks would provide another part of the content; ie-TV content would not be made up of marked-up video clips alone. Language practice activities and reference materials would also be marked up and available for use and, to varying degrees for reuse, as learning objects.

Conclusion – An ie-TV language-learning scenario

In conclusion, this vision of ie-TV for language learning consists of a large, varied and continually expanding library of carefully labelled engaging film/TV content and 'digitised' language practice activities. This library of

'learning objects' is managed 'intelligently' utilizing AI learner model and pedagogical components in order to provide motivating and individualized learning experiences that satisfy 'optimal' criteria for language learning drawn from SLA research. An example of how such ie-TV might be used in practice is offered in the concluding scenario:

Jon studies English at school. Last class they watched an information video for visitors to Brighton. As usual, they worked in pairs for most of the class, each pair sitting at an ie-TV console and working together at their own pace to complete the electronic questionnaire prepared by the teacher. Towards the end of the lesson the whole class together discussed whether they would like to visit Brighton and gave reasons why and why not? The teacher has set the students a group project to make a short video for visitors to their own town. For homework Jon is to extract and practise language, from the Brighton video and other tourism videos, that will be useful in his video. He logs into the ie-TV channel and requests the Brighton video. He watches again with subtitles on and with language highlighted that the pedagogical model has flagged as potentially useful for the task. He is free to pause, rewind follow explanatory hyperlinks from the subtitles etc… he saves some clips, containing language he is interested in using, to his electronic notebook and practises by recording his voice over the clips. After working through the Brighton video again, he chooses to watch two other short tourism videos suggested by the system, one on Sydney and one Vancouver, towns he has always wanted to visit. The teacher receives an automated summary of what Jon has done using the system generated from Jon's learner model. Later in the week Jon and the group he is working with discuss their video, previously they have shared ideas for content and the script electronically. They also talk about the other ie-TV videos they have seen, Jon asks a friend to send the reference for one that he thought sounded particularly interesting. Later in the term and over various sessions they use a digital camera and editing software to put together the video for their town. This video becomes part of Juan's electronic course notes and can also be exchanged with other learners through the ie-TV system. A month later the class receives some email questions about their video from a class in Germany also studying English, attached is a link to a short video about Bremen prepared by the German students.

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