

THE IMPLEMENTATION OF INTERACTIVE-LEARNING THEORY BY MEANS OF MULTIMEDIA PRESENTATIONS IN THE FOREIGN LANGUAGE TEACHING PROCESS

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The paper describes the advantages and disadvantages of using modern multimedia resources in the foreign language teaching process. It considers whether multimedia presentation as a collaborative tool is perceived by students as a positive way to improve learning outcomes. Special attention is devoted to the on-line resources used by students. These resources can increase the level of motivation to learn foreign languages. Also we describe six principles of multimedia design based on several research study findings in modern scientific literature. In this paper the term «multimedia» refers to an educational presentation made using primarily audio and images. Unlike hypertext and web-based instruction the reliance on text is minimized in a multimedia product. The results of the paper show that multimedia has for years been considered high in development potential as a tool for educators. However, the author notices two difficulties: there is still relatively little evidence to support the value of multimedia for enhancing learning and the cost of most multimedia production is still relatively high.

Key words: multimedia, interactive-learning.

Choosing the «right» type of technology, either synchronous or asynchronous, to facilitate learning outcomes is a new challenge as the pace of emerging technologies increases and diversifies. Teachers are encouraged to design courses that require collaboration in on-line learning communities to facilitate the development of higher order thinking skills for life long learning. It is therefore important to gather evidence of the kinds of opportunities afforded to students and whether the students themselves endorse collaborative tools (e.g., multimedia presentations) as a legitimate method of assisting in their learning. The paper considers whether multimedia presentation as a collaborative tool is perceived by students as a positive way to improve learning outcomes.

Multimedia can be defined in a variety of ways, but in this paper the term «multimedia» refers to an educational presentation made using primarily audio and images. Unlike hypertext and web-based instruction, for example, the reliance on text is minimized in a multimedia product. While multimedia has for years been considered high in «development potential» as a tool for educators, we should notice two difficulties: there is still relatively little evidence to support the value of multimedia for enhancing learning and the cost of most multimedia production is still relatively high. Another drawback is the problem of integrating technology into a regular content-driven course. These issues are especially relevant in Ukrainian higher educational establishments.

One of the main sources of scientific evidence supporting multimedia learning is Mayer's body of research [6, 38-41]. In Multimedia Learning Richard E. Mayer proposed six principles of multimedia design based on several research study findings. These guidelines could easily be collapsed and re-organized into six key categories:

- integration – sums up research that indicates that audio/text need to be highly integrated with the images used;
- parsimony – indicates that there is better learning when extraneous words, sounds and pictures are excluded;
- narration – indicates that learning is better when words are presented as narration rather than as text;
- individual differences – indicates that learning is better if the target audience has low-prior knowledge of the content field and that they have high spatial ability;
- personalization – suggests that students work harder at learning when they feel involved with the presentation. For example, one study [7, 389-392] found personalization could be achieved simply by the narrator using a conversational style of voice rather than relying on a third-person voice;
- interactivity – tentatively suggests students learn better when they can control the pace of the presentation.

Just as Richard E. Mayer found that products adhering to the six design principles led to

increased retention and transfer of knowledge, so it was reasonable to infer that if student-generated products (e.g., Microsoft PowerPoint presentations) were made using many of these same principles then learning was also likely to be enhanced.

A second theoretical lens was framed by the work of C.A. Benware and E.L. Deci on active-learning. They hypothesized that «learning material to teach it will lead to enhanced learning and to a more positive emotional tone than learning material to be tested on it, even when the amount of exposure to the material being learned is the same» [1, 270-272]. In turn, Benware and Deci built their study upon the theoretical approaches of J. Bruner [3, 72-75] and C. Rogers [9, 116-118] who both suggested that students learn better if the content of the instruction is useful for a task they are undertaking. The «activity» would, in turn, result in a fuller engagement of the material. The logic behind this line of thinking is straightforward: students approach the material with the anticipation of using it, so they become more fully involved.

Benware and Deci's research, as well as the subsequent research of others, has indicated that active-learning approaches can be quite effective (J. Brophy, J. Alleman, Y. Kafai, M. Mitchell). More recently, H. Marks provided evidence that suggests authentic instructional work in general may lead to higher levels of student engagement [5, 36-39]. By requiring students to make multimedia products, educators may have the opportunity to explore, and make something, out of their investigation into critical theories and the applications of those theories. This approach could be called an academic studio learning environment. The notion of an academic studio is a specific implementation of the more general category of active-learning environments.

Design-based research is seen as being highly iterative where the «primary goal for a design experiment is to improve the initial design by testing and revising conjectures as informed by ongoing analysis of both the students' reasoning and the learning environment» [2, 19-23]. The framework for the content analysis was based on Mayer's multimedia design principles and Benware & Deci's active-learning theory. How would student products and student reports «fit» with these two frameworks? The content analysis also looked for additional patterns of behavior that seemed not to be captured by either of these theoretical frameworks. The quality and effectiveness of student products could be largely explained by parsimony. Usually student audio tracks are fairly parsimonious, but there is great variance in how students use images. In some student products images are too often used as «filler» whereas in other products every image

seems necessary. Students may notice that the assignments forced them to distill the essence of a theory to communicate it clearly and effectively in a multimedia format. Student's opinion is that the simple act of recording an audio script solidifies his/her understanding of the content, that even five months after the courses ended many of students still remembered and can discuss their presentations fluently. This narration principle is a non-issue since all students have to use audio narration. Students typically use some text (such as text in a heading) in their products, but always in a manner that supported the audio.

Richard E. Mayer uses the term «individual differences» to indicate that the target audience benefiting the most from multimedia presentations will be those who have low prior-knowledge of the content area and those who have high spatial ability [6, 18-22]. Also he uses the term «personalization» to refer to the use of a first or second-person voice in the narration. Every student's product, such as typical multimedia presentation, has this basic level of personalization. However, a surprising result of these initial multimedia products is that they seemed to encourage students to make very personal connections with the academic material.

To some degree the personalization factor seemed to be in conflict with the parsimony factor. Specifically students have a strong tendency to first create a «context» in their products. This could be a professional context (such as something that typically may occur in their own classrooms) or a personal context (such as an event that actually happened in their lives). This initial setting of a context certainly makes the products more personalized, but not necessarily parsimonious. Nonetheless, it is the setting of such a context that tended to «hook» viewers and get them engaged.

Benware and Deci's active-learning principle predicts that students will become more engaged with the learning material. It is important for students that they learn from each other's work [1, 147-149]. Such theme as «engagement» seems to be directly related to increasing students' motivation. In addition, most students think the creation of multimedia products encourage them to use higher levels of creativity than they would be employed in a paper-based product. This implicit encouragement to use their creativity seemed to result in a higher level of student motivation to learn.

The student products and reactions to the multimedia assignments are very positive. These initial explorations into using multimedia within regular content-driven courses is encouraging enough that the teacher is now incorporating multimedia projects into all of his courses nowadays.

Multimedia projects need to be suitably ambiguous in terms of the conceptual challenge student's face. However, it is clear that there is too much «technical ambiguity» that trips up the students who have a relatively low level of computer skills. In the future students will be provided with a ready-made slideshow template that has some key technical decisions already «completed» so that students can focus on multimedia storytelling. Hopefully this will provide novice computer users with an easier way to start developing their multimedia presentations.

Students certainly understand the need for visual and audio integration on a conceptual level. However, some initially floundered with how to be pragmatically organized so their products are integrated without too much wasted time.

The major quandary left from this initial exploration was that of the seemingly conflicting roles of parsimony and personalization. Mayer's definition of personalization was narrow with the focus being on using a conversational style. Furthermore, his conception of parsimony would seem to preclude any personalization beyond the simple technique of using the first or second-person voice. It is important to understand that Mayer's research is focused on presentations of simple science-based systems that tend to be two minutes or less in duration. In contrast, students' presentations tended to be much longer (approximately seven minutes) and cover content that was typically more complicated than that used in Mayer's studies. It may be that when the content is richer, and the presentation length sig-

nificantly longer, the concepts of parsimony and personalization need to be slightly redefined.

An alternative approach to defining parsimony may be that a «streamlined» presentation should not include «irrelevant details». Similarly it may be worthwhile to view personalization as the ability to create an «emotional connection» with the viewer. When working with more complex material, these slightly expanded definitions may better serve as helpful guidelines for creating effective multimedia presentations. In future explorations, however, more attention will need to be given to helping students focus on the essential role parsimony (especially with regards to images) plays in creating an excellent product.

The challenge to create effective multimedia products about academic topics appeared to result in students thinking carefully about the effective design of multimedia learning experiences as well as leading them to a higher level of engagement with their learning. Both of these findings are indicators of an increased level of student learning compared to previous text-based versions of the same course. Yet how far, really, can an academic studio approach be used with effectiveness in higher education? For students who are also educators there is a natural fit as the multimedia products challenged them to think more deeply about what it means to learn and how to communicate effectively. Student-generated multimedia products may be a viable way to increase student engagement within a fairly wide range of academic disciplines where the primary emphasis is on the integration and critical synthesis of course content.

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