

Authentic Learning in Multimedia

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ABSTRACT

In nowadays where rapidly evolving technology especially computer technology has an important role in our lives; the concepts of authentic learning and multimedia stand out. While the concept of multimedia describe the applications of environments which are created by using a combination of different media types, authentic learning characterizes the type of leaning which students learn in their natural environment with the real-world issues and complex problems. In this study, the terms and characteristics of multimedia and authentic learning are explained; reasons and examples of the authentic learning in multimedia are sorted.

Keywords: *Multimedia, Authentic Learning.*

INTRODUCTION

The present fast progress of technology, education takes the shape in accordance with the technology and the concept of multimedia and authentic learning come into prominence. In this study, two important concepts -multimedia and authentic learning- are defined and authentic learning applications in multimedia are exemplified.

Multimedia

Technology is steady incremental growth and is used in every environment. With the technology integration, multimedia is used more increasingly. Multimedia is developed with the terms of hypertext and hypermedia.

These terms are defined in many ways by different researchers and specialists. While the term of hypertext as book metaphor is defined as electronic text document or electronic book, hypertext as space metaphor is defined as information networks or spaces (Bromme & Stahl, 2005). The most important feature of hypertext is its non-linear structure. In the light of this feature hypertext is the non-sequential text which is organized for users to access the non-linear information (Son, 1998). The other term of hypermedia not only covers hypertext and also includes diagram, animation, audio and video with the text. Hypermedia is often described as a system of nodes of information through which people can move nonlinearly. In this definition, nodes of information with links between them, suggesting the conceptual model of a graph denotes hypermedia (Parunak, 1991).

Multimedia is defined as the combining of different media types such as sound, animation, text, graphics and video for the presentation of information by making use of computers (Bornman & Solms, 1993). According to Mayer (2001), multimedia is the presentation of materials that text and image are used in. In response to this definition there are some objections caused by insufficient definition. Briefly the definition of multimedia is commonly understood to mean the integration and combination of the components of multimedia or several media types such as sound, animation, text, graphics and video (Tolhurst, 1995, Schwartz & Beichner, 1999, Brooks, 1997, Greenlaw & Hepp, 1999, Maddux, Johnson, & Willis, 2001, Mishra & Sharma, 2004).

Mayer(2001; Akkoyunlu&Yilmaz, 2005; Mann, 2006; Clarck & Mayer, 2003; Mayer, 2005) explain multimedia principles for the effective multimedia. These principles are:

1. *Multimedia Principle*: Students learn better from words and pictures than from words alone.
2. *Spatial Contiguity Principle*: Students learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.
3. *Temporal Contiguity Principle*: Students learn better when corresponding words and pictures are presented simultaneously rather than successively.
4. *Coherence Principle*: Students learn better when extraneous words, pictures, and sounds are excluded rather than included.
5. *Modality Principle*: Students learn better from animation and narration than from animation and on-screen text.
6. *Redundancy Principle*: Students learn better from animation and narration than from animation, narration, and on on-screen text.
7. *Individual Differences Principle*: Design effects are stronger for low-knowledge students than for high-knowledge learners. Design effects are stronger for high-spatial students than for low-spatial students.

In the light of these principles and features, multimedia applications are used in education as in other environments. There are some reasons of using multimedia applications in education. These reasons are derived from the characteristics and principles of multimedia. Multimedia;

- Provides individual differences.
- Allows students to learn according to their own learning speed for giving students control over the transition between the information.
- Provides personalized instruction. In this tutorial individual differences are stood out. Students have the chance to learn with different cognitive strategies, different teaching styles and different teaching methods.
- Rises the remaining time in memory of what has been learned and this affect the increment of the retention.
- Provides the transfer in two ways: using information in real applications or in different areas.
- Provides students to participate actively in lesson.
- Increases the students' interest and provides motivation. This simplifies and accelerates the learning.
- Gives students the problem-solving and decision-making skills.
- Increases students' ability to focus on.

Authentic Learning

The word of authentic is defined as genuine, original, accurate or reliable, trustworthy, real, right, honest in different dictionaries (Oxford, Babylon, WordReference, Cambridge, Longman, Meriam-Webster). Contained meanings of authentic are also included within the definition of authentic learning.

Newmann and Wehlage(1993) use the word authentic to distinguish between learning that is significant and meaningful and that which is trivial and useless and define the authentic learning . In their definitions, when students achieve authentic learning, students construct meaning and produce knowledge, use disciplined inquiry to construct meaning, and aim their work toward production of discourse, products, and performances that have value or meaning beyond success in school.

On the other hand Cholewinski(2009) define authentic learning in two different ways. First definition is commonly used as a synonym for classroom realia that means there are not any material (e.g., newspapers, movies,

song lyrics) specifically designed for instruction. Second definition is made by constructivist with a more complicated meaning, history and use. This definition includes the complex task and real life authentic activities. Lombardi (2007) also expresses that authentic learning typically focuses on real-world, complex problems and their solutions and use role-playing exercises, problem-based activities, case studies, and participation in virtual communities of practice.

Authentic learning has nine basic characteristics (Herrington, 1997; Herrington, 2006; Herrington and Oliver, 1995)

1. *Authentic Context*: Authentic learning provide authentic context that reflect the way the knowledge will be used in real-life.
2. *Authentic Activity*: Authentic learning provides authentic activities.
3. *Expert Performances*: Authentic learning provides access to expert performances and the modeling of processes.
4. *Multiple Perspectives*: Authentic learning provides multiple roles and perspectives.
5. *Collaboration*: Authentic learning supports collaborative construction of knowledge.
6. *Reflection*: Authentic learning promotes reflection to enable abstractions to be formed.
7. *Articulation*: Authentic learning promotes articulation to enable tacit knowledge to be made explicit.
8. *Coaching and Scaffolding*: Authentic learning provides coaching and scaffolding at critical times.
9. *Authentic Assessment*: Authentic learning provides for integrated assessment of learning within the tasks.

Authentic Learning in Multimedia

For the realization of a successful and effective authentic learning, some requirements should be taken into consideration. As a result of studies, it is observed that multimedia environments meet the requirements of authentic learning. Looking at opportunities offered by multimedia, it provides the necessary conditions for authentic learning. In multimedia, the realization of authentic learning is formed with providing close to real-world environments, increasing permanency with using a combination of audiovisual aids, focusing attention on the information by appealing to several senses, creating flexible learning environments (Akkoyunlu and Yilmaz, 2005).

With these features, authentic learning may be applied in multimedia activities. In these activities for design of multimedia there must be three equally fundamental elements: the learner, the implementation and the multimedia program (Herrington and Oliver, 1995, Svensson and Östlund, 2005, Herrington, 2005). Authentic context, authentic activity, expert performance and multiple perspectives provide designing the role of the multimedia program; collaboration, reflection and articulation provide designing for the role of the learner; coaching and scaffolding and authentic assessment provide designing implementation (Svensson and Östlund, 2005).

Authentic multimedia program must have some features like authentic learning characteristics. Herrington (1997) lists these features in the guidelines for use of the interactive multimedia program:

1. Be thoroughly familiar with the program and its possibilities.
2. Introduce the issue of assessment.
3. Provide brief instructions to students on the program elements and how to access them.
4. Model a problem briefly, by asking a question and thinking aloud as you demonstrate how you would go about investigating it.
5. Ensure students are working in groups of 2 or 3.
6. Be available to students at all times when they are using the program.
7. Respond to student's requests for assistance.

8. Initiate assistance by asking students frequently if they need any help, but do not impose.
9. Provide hints and ask questions.
10. Provide assistance to students as they use the program, not by supplying the solution if there is one, but by giving guidance—the 'scaffolding'—to take them to the next stage.
11. If a problem emerges which more than one group needs assistance with (such as a misconception about the required task or a problem with the program's operation), give this advice to the whole class.

Examples of Multimedia Applications

There are lots of multimedia applications in authentic learning. In this section examples of multimedia applications are presented.

Read and Cafolla (1999 cit. Kabakçı, Fırat, İzmirli and Kuzu, 2010) studied about the projects combining authentic assessment and multimedia technologies used in the portfolio for teachers. Projects carried out at Florida Atlantic University. In this university, faculty staff and administrators supported the multimedia portfolios that are authentic assessment tool. The most important problem in the development of multimedia portfolios was expressed that how to manage portfolios in all of the institution. In this study, teachers' multimedia portfolios were stated that innovation of education and technology. As a result of this study, it was indicated that teacher candidates using multimedia portfolios may have knowledge that they need.

Herrington(2005) defined authentic tasks for e-learning environments and gave examples of them. The Project of North American Fiction and Film was presented for learning literature. In this project, students studied about novels or films of famous authors and published summaries of novels or films in an online magazine. This online magazine was a real issued journal at the end of each semester and its' editor was also teacher. An authentic task in this project was writing literary criticism with reaching out the real readers and making arrangements in this online newspaper. Another study also tried to teach research methods. In this study students were working on the data collected by two researchers by going online research rooms. According to their research method, students examined school records, demographic information, interviews with teachers, family, and community members, newspaper interviews and other documents individually. An authentic task in this project was to write a report based on qualitative and quantitative data and analysis, and to decide these information about the school or not.

Tüzün(2006) examined the educational computer games and presented the program of Quest Atlantis(QA) as an example. QA environment offers authentic learning activities to users in a gaming environment. Its design configured dimensions of the principles of education, entertainment and social responsibility. Participants can make contributions with student identification in the parallel with the dimension of education, player identification in the parallel with the dimension of entertainment and identification of a citizen of a virtual community of QA in the parallel with the dimension of social responsibility in the game. QA includes authentic world affairs. Game is carried out on the basis of experience and inquiry -based learning and in the game portfolio assessment is used. The project of Quest Atlantis is designed for primary school children (9-12 years of age) from the beginning. In QA, topics are the fields of science, geography, history, social studies, technology, health, arts, economics and music. In a study on the effects of learning on QA, middle school students following the unit plan about plant and animal cells with three quest showed significant learning with respect to the conceptual understanding of the cells over time. Similarly in the context of QA, students who are learning history of the world have made the big stage about her/his interest in this topic in their own lives (Tüzün, 2006). These data show that as a result of all these efforts a rich meta-gaming environment that is perceived as meaningful and attractive by children participation has emerged. Approximately 5,000 registered users, revised and approved 6000 quest, approximately 1.2 million lines of chat and 50,000 sending messages from various countries around the world show that students are itching to participate this kind of meaningful and attractive learning environments.

Ferry et al.(2006) formed a virtual classroom to support teacher candidates education with creating online classroom simulation. Developing teacher candidates' decision-making skills in students' literary education is the aim of this study. In this online class, there are pre-school students ages 5-6 and teacher candidates play the role of teacher for these students. During the simulation, teacher candidates make decisions belonging to a variety of skills in the teaching processes such as coordinating teaching and learning experiences.

Anderson and Cowan (2006) presented an example of performance evaluation strategy. In this study archived the students' information and recorded studies on the management. Studies were found from the internet; documents

and standard samples were analyzed and assessed. It is also expressed that online discussions prevent distant students feel alone and help them.

Herrington and Kervin (2007) presented 10 key recommendations for authentic learning environments. These are authentic context using real-life data, authentic activities, expert performance, multiple roles and perspectives, reflection, collaboration, articulation, coaching and scaffolding, authentic assessment and professional learning.

Woo, Herrington, Agostinho and Reeves (2007) made some recommendations to the practitioners about the use of authentic tasks in online classes as a result of their research. These recommendations fall under three topics: Consideration in Task Design, The Management Challenge, and Facilitation Tips.

CONCLUSION

Multimedia and authentic learning are two significant factors in education. Nowadays there are applications combining multimedia and authentic learning. Especially simulations and games are used for authentic learning.

Authentic learning may be applied in multimedia activities with some features such as providing close to real-world environments, increasing permanency with using a combination of audiovisual aids, focusing attention on the information by appealing to several senses, creating flexible learning environments.

Authentic learning has nine basic characteristics (Herrington, 1997) and these characteristics are used for designing multimedia programs. Authentic context, authentic activity, expert performance and multiple perspectives provide designing the role of the multimedia program; collaboration, reflection and articulation provide designing for the role of the learner; coaching and scaffolding and authentic assessment provide designing implementation (Svensson and Östlund, 2005).

Consequently, designing authentic learning environment is important for efficient and attractive learning. For making this environment with authentic learning features, multimedia applications are available. In the future with the importance of authentic learning multimedia programs will be designed according to authentic learning more.

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