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Knowledge Construction In Multimedia Learning At Both Cognitive And Affective Level

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Abstract

The purpose of the study is to measure the students' reaction to the audio-visual presentation of stage plays on cognitive and affective level concerning facts and emotions. Post-tests including 3 brief essay questions on plot, character and theme were given to the students to measure the content or literary knowledge they gained in a multimedia environment. Data results of this study revealed that themes and plots in the stage plays improved their interpretive and analytical skills, transfer of problem solving ability and emotional side of ESL/EFL students in a holistic way. The main results of the study showed that students were able to build a coherent representation of knowledge at both the cognitive and affective levels boosted in multimedia environment.

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1. Introduction

Recent researches substantiate the view that “in-depth understanding requires detailed knowledge of the facts within a domain. The key attribute of expertise is a detailed and organized understanding of the important facts within a specific domain” (Bransford, Brown, Cocking, Donovan & Pellegrino, 2000, p. 239). In this respect, education must provide sufficient mastery of details of specific subject matters in which facts and details are embedded. According to a contemporary view of learning, students come to school with different pre-existing knowledge, skills and beliefs which play an important role in how they see their environment and how they organize and make sense of it as students build up this new knowledge and understanding based on their prior knowledge.

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Therefore, learning is enhanced when students' prior knowledge is applied to a learning task. As a part of learning, teachers need to use prior beliefs and knowledge as an initial step to monitor students' conceptions which change as learning proceeds (Bransford et al., 2000, p. 11). According to the cognitive theory of multimedia learning, Moreno and Mayer (2007) outline the two aspects of learning. These are *information acquisition* and *knowledge construction*. In the information acquisition approach, an instructor presents the information and adds it to the learner's memory so that the learner can receive the information. In this sense, this type of learning environment is non-interactive. In comparison to information acquisition approach, a learner selects relevant information from the lesson, organizes it into a coherent structure and integrates this with his prior knowledge, to make meaning in the knowledge construction aspect (p. 312). As Baddeley (2005) indicates in his researches, "Human memory is a system for storing and retrieving information, information that is, of course, acquired through our senses" (p. 9). The things human beings perceive will influence what they recall because their memories are the records of the information acquired through their senses. Learning is composed of a process of transformation. In this learning process, individuals select the relevant things from the world and assign meanings to this world regarding their cognition. On the basis of the social-semiotic multimodal approach, this transformation is a dynamic process in which a learner shapes meaning as a result of a cultural working of a medium. From this aspect, the learner's text includes a sign making process in the classroom. In this sense, the communicative media incorporates the visual and linguistic messages and signs (Kress, Jewitt, Ogborn & Tsatsarelis, 2001, p. 29). According to The New London Group's (1996) discussion, students and teachers are in need of a language to explain the forms of meaning, which are expressed in Available Designs and the Resigned; that is, they need a *metalanguage* which explains meaning in varied areas in order to talk about language, images, texts and meaning-making interaction (p. 77). Available Designs are the resources which comprise the grammar of languages and grammar of semiotic systems such as films, photography or gestures. These designs also incorporate a structured set of situations, combined with semiotic activity through the use of language (The New London Group, 1996, p. 74). In this respect, multimodal learning, according to Duncum (2004), comprises a set of modalities such as structures, ideas, patterns, sounds and images that promote the learners' understanding resulting from both visual and verbal texts (p. 261). This set of modalities and its relations are found in media texts or texts of multimedia. Clark and Paivio (1991) draw attention to the interconnection between verbal and non-verbal representations. For instance, visual images are more directly related to non-verbal components of human emotions and higher images. These have similar analogous effects on the learners' prior knowledge and have strong effects on physiological reactions to imagined emotional events (p. 182). However, teachers may lack the tools to activate human emotions that are prominent education elements in terms of students' learning experience (Clark & Paivio, 1991, p. 184). In his recent researches concerning human memory, Baddeley (2005) states that high level of arousal in emotions, resulting from words and images, can have an influence on a person's ability to remember or forget events (p. 277). In one sense, Courtney (1990) underlines three types of learning that are important in literary works. The first is intrinsic learning which occurs in a literary work reinforcing inner qualities such as perception, consciousness, different points of views and interaction with others. Intrinsic learning also recognizes the problems and finds solutions to these problems, motivating and transferring to new knowledge (p. 152). Use of literary works also increases other abilities such as language, social studies and other sciences which lead to an affective transfer of learning to other domains. In one respect, this concept is regarded as extrinsic learning. The second type of learning, aesthetic learning comes about when a literary work evokes the learners' feelings and improves their analytical skills. The third one incorporates artistic learning in reference to understanding of personages, gestures and actions of characters, the interaction between personages, sounds and colours, dialogue and the story line (Courtney, 1990, p. 153).

2. Method

A case study research design was chosen. The decision to employ a qualitative case study resulted from focusing on insights to cognitive and affective learning, concerning the individual learning experiences of participants and discovery of context characteristics. On the basis of the study conducted with participants, I aimed to answer the research question:

1. How do students react to the study of the stage plays on a cognitive and affective level?

2.1. Participants

Participants in this study were 17 students, attending the Preparatory school of Cag University. Their knowledge of English was assessed at pre-intermediate level. These participants were between 18 and 22 years old. For the sake of efficiency and to protect their anonymity, they were numerically referenced from 1 to 17. All were Turkish native speakers. I tutored them in English for eight hours in each week, four on Mondays and four on Tuesdays over a period of five weeks. In the context of this case study, purpose sampling was selected. As Merriam (1990) states, “Purpose sampling is based on the assumption that one wants to discover, understand, gain insight; therefore one needs to select a sample from which one can learn the most” (p. 48). Participants were chosen through interviews which were conducted to ascertain their background knowledge of the selected stage play literature. Data results showed that students had never seen any presentation of selected stage plays in the conventional classroom environment.

2.1.1. Data Collection and analysis

In this study, four American stage plays, *Long Day's Journey into Night*, *Desire Under the Elms*, *Anna Christie*, and *The Strange Interlude* were presented to the participants in a multimedia context over a period of five weeks. Participants viewed the stage plays through AV in the last 20-25 minutes of each lesson. Stage plays were selected according to language structure and content. Plays were particularly a dialogue based genre. Themes in the plays were universal and accessible to learners from different cultural backgrounds. In the context of this case study, audio-visual presentation of stage plays were combined with the discussions of themes, plot and character development in which students were asked to reflect and make comments in the target language. In the final 15 minutes of the last hour on Tuesday, participants were given 3 brief essay questions in which they were asked specific questions about the thematic content of the literary work. These 3 brief essay questions were designed to elicit opinions, values and transfer of knowledge at both the cognitive and emotional level. The first question of the post-test aimed to discover what participants thought about the thematic content of the literary work regarding plot, character and theme. The second question aimed to reveal whether participants were able to transfer knowledge of plots including characters and themes. The question also aimed to explore what participants would have done differently, had they been in place of the characters in the plays. Finally, the third question of the post-test aimed to elicit the emotional experiences of participants about the characters of the plays. Content analysis was used for post-tests. In this sense, a qualitative method was used to collect data.

3. Results

This section identifies how students reacted to the study of stage plays on a cognitive and affective level.

3.1. Students' Critical Approach to the Reasons of Corruption in the Family Institution of Western Society

Post-test question 1 aimed to discover what participants thought about the thematic content of the literary works concerning plot and family relations. The results of the post-test on *Long Day's Journey into Night* reflected on family issues in American society, and alcohol was the major problem. In students' opinions, alcohol was self-destructive both to the individual and to family relationships. Participant 12, for instance, said, “The family relations are the worst I've ever seen. Their relations aren't close. In fact, money takes place of the family relations. I didn't like their family relations.” In one sense, Participant 12 showed his reaction and criticized the bad effects of materialism and individualism, which are commonplace in 20th century Western culture. When s/he addressed the relationship between money and closeness in human relations, s/he meant to say that the characters in the play were not family-oriented because of the destructive effects of individualism and materialism. In fact, s/he found the opportunity to compare and make self-assessment through multimodal presentation of plays in a multimedia environment.

In response to post-test question 1, given to the participants after the presentation of *Desire Under the Elms*, participants mentioned that material relations between family members and their partners led to corruption and

break-down in family life. One of the participants made a striking comment saying: I think family relations are highly distorted. The play has an irresponsible father and children who grew up without love. The most important thing is the money for all characters. An attractive young woman was longing to have money and power, because of this reason; she was married to an old man. (Part. 3) After the presentation of *Anna Christie*, in the post-test response to question 1, Participant 4 said, “Anna was raped and she hated all men because had her father not abandoned his family, Anna and her mother would never have experienced such bad events.” In post-test question 1, given to the participants after the presentation of *The Strange Interlude*, Participant 4, for instance said, “Play has lots of forbidden love. Writer mentioned the similar things in his plays. His plays don’t have a family tie very well. Nina betrayed Sam, because she fell in love with Dr. Darrell and it was like other stories of Eugene O’Neill. Eugene O’Neill mentioned about real life.” In this sense, participants found disloyalty in many types of relationships in the plays. The family unit was corrupted by the characters Nina and Dr. Darrell. According to participants, a married woman’s intimate relationship with another man was seen as unacceptable and wrong.

3.1.1. *Students’ Transfer of Problem-Solving Ability about Family and Social Issues*

Post-test question 2 aimed to reveal whether participants were able to transfer the knowledge of plot including character and theme in their essays. The question also aimed to explore what participants would have done differently, had they been in place of the characters in the plays. After the presentation of *Long Day’s Journey into Night*, in the post-test responses to question 2, Participant 11 mentioned that s/he would have changed the personality of the father in *Long Day’s Journey into Night*. Then, the father would have listened to his children’s problems and would have helped them. After the presentation of *Desire Under the Elms*, in the post-test response to question 2, Participant 14, for instance, said, “I think some events did not work including characters and theme, because relations were improper. Characters tricked each other. They were unemotional people.” On the other hand, Participant 3 saw things from a different angle and stated that there was no way of escaping from human weaknesses which s/he regarded as an Achilles’s heel. In addition, s/he added that these weaknesses can be controlled through value judgments, ethics and the morals, which protect individuals and societies. In the post-test responses to question 2, participants made significant comments on *Anna Christie* after the AV presentation of the play. Participants 1, 4, 7, 8, 10, 13 and 17 stated that the play worked well. One of the participants praised the role-playing ability of the characters, saying: All characters always drink alcohol. I think they are alcoholic, so they are up and down. They completed their absent parts of their life with alcohol. I think this plot is different and emotional. I wouldn’t have done any change in this play. (Part. 17) In fact, some participants highlighted that Anna shouldn’t have married Matt and she should have seen a psychologist to overcome her painful past events. In comparison to other plays, the participants stressed that they were deeply sorry for Anna since she was raped by one of her relatives. It shouldn’t have happened, but they noted that it was the reality of life. Regarding post-test responses to question 2, participants commented on the play after the AV presentation of *Strange Interlude*. One of the participants stressed that s/he hated the character Nina, saying: If I were Gordon, Nina’s son, I would leave Nina and never see her face, because his mother had a lover and she was not loyal to his father. However, Nina always protected Dr. Darrell, her real love and she should have deserved to marry Darrell in the play. (Part. 6) Participants’ data results obtained from the second question showed that 17 participants were aware of the problems, which the characters had in their private and social lives. In addition, some of them tried to find clear-cut solutions for the sake of the social order. Nonetheless, some of the participants gave open-ended answers as these difficulties could happen to anyone in the world. In both ways, participants’ responses to questions would have been applied to plot including characters and theme because these ideas occur in real life. The participants’ approach to social problems was related to their emotional feelings and conceptions. Therefore, there was a relationship between participants’ emotions and conceptions when they solved the problems in the context of real life situations.

3.1.2. *Effects of Universal Concepts such as Death, Love and Concepts of Good and Evil at Affective Level*

The third question of the post-test aimed to elicit emotional experiences of participants about the characters in the play. After the presentation of *Long Day’s Journey into Night*, data results obtained from post-test question 3 showed that all participants were affected by characters’ experiences and emotions presented through AV. Participant 7 noted, “It was painful. Mary had psychological problems and James, Jamie and Edmund were

alcoholics.” Participants 12 and 13 had similar comments on Mary’s loneliness. Mary had no friends, social life or hobbies, so she was unhappy. After the presentation of *Desire Under the Elms*, the participants explained how they were affected by the emotional experience of characters. Participant 2 said, “I felt so bad when Abbie killed her baby and I cried when this happened to the baby. It made me so bad to see this for love.” On the other hand, Participant 3 commented on a different issue, “I was impressed with woman’s femininity. The story was full of intrigue, but irresistible passion between Eben and Abbie, a young step-mother affected me a lot.” Conversely, Participant 13, for instance, said, “The characters’ behaviour affected me badly because they tricked father. The father had wrong behaviours because he was married to a very young woman but the father was damaged because of this marriage. I felt so sorry for him because he didn’t deserve this.” After the presentation of *Anna Christie*, in response to post-test question 3, Participant 7 felt sadness for Chris, the father character in the play since he had never seen his daughter. It must be a difficult situation for a father to see his daughter’s face for the first time when she is a young lady. Furthermore, Participant 8 commented, “I think characters are really successful in the play. Anna is unlucky in the life. But she is a very beautiful girl.” Participant 8 felt, Anna had met so many difficulties, such as having being raped by one of her relatives, being ill and staying at the hospital because of her illness. Those things were her fate and she was unlucky to be faced with the brutality of life. All participants showed empathy towards Anna and her father Chris. The abuse Anna suffered at the hands of her relatives affected participants. Although the protagonist Anna experienced ineffable pains, participants were able to articulate their feelings in English. They drew associations between her beauty and sorrow, which represented the good and evil concepts in Western culture. Participants found the hidden symbols at the affective level through the characters. The presentation of *Strange Interlude* showed that the character’s value judgments and ethics had an influence on participants’ emotions in both positive and negative ways. Participant 13 expressed, “Sam’s situation made me sad. He had no crime, because Nina was a very bad woman and she betrayed her husband. I think Sam shouldn’t have died. I wish Nina would have died.” Besides, Participant 15 said, “Nina affected me badly. I got angry with Nina, because she was a big liar. She was not loyal and she always told lies. I don’t like telling lies in real life.” The participants kept emotional bonds between themselves and the characters in terms of society’s ethics, values and moral issues. Their concepts, that is; the way they approached the events was shaped by these concepts, which came with them. According to data, those concepts including prejudices, morals, and ethics also shaped their emotions and feelings and their approach to events.

4. Conclusion

Data results of post-test questions revealed that themes and plots in the stage plays provided participants stimuli to improve their interpretive and analytical skills that can be applied to their social lives. The 17 participants were aware of the communication problems among family members, who appeared to be uncaring about the family values which led to the destruction of the family institution. Participants stressed the bad effects of the material relationship within human relations stemming from personal interest. This corruption in society leads in turn, to a breakdown in family life in Western culture. Data results of post-tests showed that participants made associations between the essence of the problems and the consequences, by comparing the similarities and differences with Turkish society. Alcohol, betrayal, materialism, and individualism were the key elements of corruption and breakdown in family institutions in the modern society of the late 20th century. Stage plays as literary works enabled students to gain insights into norms and values of Western culture, which in turn, helped students to improve their analytical and interpretive skills. At this point, new technologies provide a way to enhance their transfer ability to larger domains. Data results of post-test questions conveyed what participants would have done differently, had they been in place of the writer and characters in the plays. Salutary and clear-cut solutions were proposed to protect the social order. On the other hand, some of the participants had open-ended solutions as these unethical and immoral difficulties could happen to anyone in the world. In both ways, participants integrated their new knowledge and pre-existing knowledge by comparing and contrasting. In a similar way, post-test question results conveyed the unlimited thinking of participants moving from a more individual consciousness to universal consciousness to protect both individuals and societies. In fact, participants come to this understanding, by using cognitive strategies such as analysing, reasoning and transferring information and summarizing. Oxford (2002) stresses that “successful L2 learners think in the language and address the affective aspects of language learning” (p. 125). In this sense, learner improves not only his intellectual and social side, but also the emotional one in a holistic way. Data results obtained from the post-test questions showed that characters’ emotional circumstances swayed participants’

emotions through the presentation of stage plays. These plays caused a high level of arousal in their emotions because of the universal issues including death and love as well as good and evil. Participants stressed that they were deeply affected, because they saw and heard common things that could happen to anybody in real life. From this aspect, participants built emotional bonds between them and characters which led to personalization. Miller (1996) stresses that characters of stage plays in real context appear as the product of their society, both unromanticised and sentimentalized. They represent what is seen in front of the camera. Characters are always three dimensional individuals, neither completely good nor completely evil, but completely human, appearing tough or delicate, brave or coward, as the situation requires (p. 20). Using a variety of text forms, associated with information and multimedia technologies is becoming more significant in a modern dynamic communication environment. These forms include visual images and their relationship to written texts. A multi-sided or multifaceted text maintains a dynamic balance between a learner's school environment and his daily life. In light of recent research, this study depended on integrating literary works of stage plays and language in multimodal learning environments provided by multimedia. This study explored how the balance between cognitive and affective learning, concerning facts and emotions, is more easily achieved in a multimedia environment.

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Appendix

Post-test on Students' Transfer of Knowledge at both the Cognitive and Affective Level

Name/Surname.....

Write a paragraph by explaining your own ideas.

1. What do you think about the family relations in the play? Discuss the plot and themes of the family relations.
2. What worked or what didn't work in the plot about the characters and theme? What would you have done differently?
3. How did the emotional experience of characters affect you? Explain.

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