

Advanced principles for visual aesthetics in designing the contents of e-learning

Majid Hamdani (corresponding author)
Department of educational multimedia, Universiti Teknologi Malaysia
E-mail: majid_hamdani@yahoo.com

Mohammad Hosseinpour
Department of educational administration, Islamic Azad University, Science and Research
Khozestan Branch, Ahvaz, Iran

Rio Sumarni Bt. Sharifuddin
Department of educational multimedia, Universiti Teknologi Malaysia

Abstract

Visual aesthetic is one of the major considerations in designing instructional contents. The influence of it in the process of learning leads the designers to borrow the classic and routine strategies of applying aesthetic knowledge and learners' experience in the designing phase of electronic instructional contents. The domain of knowledge in designing educational syllabi takes alignment, contrast, proximity, and repetition as the four factors of visual aesthetic into consideration. However, the current study attempts to review the other effective visual aesthetic factors in the process of educational design which are rarely ruminated. Some of these issues which are highly of interest in artistic aesthetics are symmetry, unity, center of emphasis, composition, and harmony. The ultimate goal of this paper is to persuade the instructional designers to consider the mentioned elements in designing the components of multimedia, electronic and virtual educational systems.

Keywords: Instructional design, Visual aesthetics, Educational content, E-learning, E-learning content, content design

1. Introduction

Nowadays, teaching and learning is a constant, lifelong process which is an important aspect of individuals' personal and business lives (Gu, Gu, & Laffey, 2011). The rapid production of knowledge and the continuous transition of different technologies make a durable educational system necessary for people and organizations.

As a result, choosing suitable methods of teaching which are easy, accessible, flexible, economical, and eventually measurable and testable based on the goals of educational systems is inevitable. More importantly, these methods of teaching should be able to manage and optimize human resources. The mentioned necessities lead to the emergence of different educational models which involve learners, educational institutions, educational programs and educational systems.

Gustafson and Branch (2002) for example developed taxonomy of instructional design (ID) models based on three specific characteristics: being classroom-oriented, product-oriented, or

systems-oriented. Classroom-oriented models are designed based on some hours of instructional output which try to improve an instructor, students, and a piece of instruction. Product-oriented models try to develop an instructional package to make production more efficient. Systems-oriented models by providing complete instructional systems for different courses or curriculums attempt to manage learning needs (Prester, 2010).

The emergence of information era and information society has changed the theoretical foundations of educational models. These changes in the area of education are appeared as e-learning models. The most significant part of this system that turns to a fundamental need of virtual and electronic universities is offering quality content (electronic content) to the learners (Darabi, Arrastia, Nelson, Cornille & Liang, 2011). In addition to the mentioned change, there are also other changes in this educational field. As an example, the artistic and aesthetic characteristics as a new field of ID rather than instructional content have received much attention lately (Parrish, 2005; Visscher-Voerman & Gustafson, 2004; Wilson, 2005).

Aesthetic is usually used in at least two senses. In one sense it describes the principles and strategies an artist utilizes in creating his work; in the other sense it is a philosophical tradition which explores the effects of art aspects on human lives. This paper will review the previous principles of aesthetics in content design and will make a foundation for new principles of aesthetics toward e-content nature.

2. Background

2.1. Aesthetics and instructional design

The discipline of ID creatively answers the needs of learners and enhances their learning experience and performance by bringing together the effective use of strategies and media (Reiser & Dempsey, 2011; Jewitt & Parashar, 2011). In order to improve performance, activate and/or facilitate learners' cognitive processes the concepts of origins and trends of instructional design; learning strategies and methods; need/task/goal analyses; and the design, development, implementation, and evaluation of instructional interventions were explored in textbooks (Dick, Carey, & Carey, 2009; Jonassen, 2001; Morrison, Ross, & Kemp, 2007; Smith & Ragan, 2005).

The expansion of educational priorities, technical possibilities, and theoretical pedagogies enhanced the development of ID in textbooks. Cognitive science also played an important role in this development.

Beauty is a new experience, or from San Francisco Heart's (2011) point of view beauty is great sense, a shine or a communicated sense of excellence. However, it does not have any fixed patterns or arrangement of features in different fields. In fact, in the field of ID where aesthetics must have enough opportunity to flourish, it still has remained somewhat marginalized (Parrish, 2009; Stubbs & Gibbons, 2008).

Advocators of aesthetics believe beauty has the ability to assist learners in their learning process. According to Levin (1981) aesthetic in instructional materials typically relates to at least one of the five visual elements: decorative, representative, interpretive, organizational, and transformative. Moreover recently, some ID researchers such as Clark and Lyons (2010), Lohr (2008), Mayer (2001) imply that there is a possibility that aesthetic facilitates cognitive processes. Thus, Lohr (2008) recommends the instructional designers to take visual aesthetic into consideration to enhance learning by integrating principles, actions and tools. In this regard, principles relate to cognition and address learner selection, organization, and integration.

The benefits of utilizing aesthetics are so considerable that some researchers such as Parrish (2005), Hokanson, Miller and Hooper (2007) criticize instructional designers for not using

aesthetic potentials. Miller (2011) believes that not paying enough attention to aesthetic issues damages ID. This issue is so significant that researchers assert that aesthetics, learners' engagement to the course and learning experience are interrelated and should be considered in the design of instruction. The aesthetic issues related to visual attributes which instructional designers may utilize are contrast, alignment, repetition, proximity and their associated terms (Masterson, 2005; Felke-Morris, 2010, Blakesley & Hoogveen, 2011). These qualities are thought to enhance learning.

The notion of aesthetics in ID includes more than providing an attractive design (Parrish, 2009). The deep bases of the concept of aesthetics as a stimulant of learning are explained by the affective domain and cognitive load theory. From this point of view, instruction can be expressed through some outwardly fashion that may be allied with the affective domain. That is why nowadays ID is considered more than a science or technology (Gibbons, 2003; Wilson, 2004).

There are always some potential limitations in applying the principles and elements of aesthetics in ID. However, there are two proposed solutions to deal with the probable limitations. The first way is to design the structure and then add on the features which make the structure accessible. The Second way which is more advantageous is to begin the design with accessibility as one of the primary functions of the building and then harmoniously integrate functionality and aesthetics. McCahan (2007) claims the second approach is more efficient than the first one.

2.2. *Visual esthetics in educational contents*

Learning takes place when a change of literacy state happens as a result of some instructional encounters such as expected outcomes, as well as concerns about interface or textual design. Learning is a measurement of affective domain which includes feelings, attitudes, and judgments. From aesthetic sense, learning experiences and instructional materials are able to provoke learners' emotions.

Specifically, in this paper, learning experience is being studied in designers' interface/ surface organization of instructional content. Designers usually carry out modifications in contrast, alignment, repetition, and proximity as the means of visual aesthetics in educational content. They also make adjustments to typographical tools such as shape, color, depth, and surface to improve the quality of learning by triggering learners' cognitive (Levin, 1981; Lohr, 2008).

Based on the discussion, ID researchers such as Levin (1981), Lohr (2008), and Parrish (2005, 2009) introduce the notion of visual aesthetics as a potential instructional strategy.

2.2.1. Alignment

Hatton (2008) recommends that designers plan content in suitably balanced interfaces with simple design and complex details. Alignment in ID is closely associated with the word "balanced" and the design techniques related to alignment include placement or positioning of objects, justification (left, right, center, top, and bottom) of elements or text along an imaginary line or path, visual connection of all elements in instructional material, balance within the visual field, and symmetry (Niederst & Robbins, 2003; Albers & Mazur, 2003 & Association, 2004).

2.2.2. Repetition

Repetition is a design action that may enhance learning by contributing to visual aesthetic. "Rote learning" which is advocated by behaviorists is another instance of repetition. Moreover, the concept of similarity in Gestalt theory can also be a part of this category because of its influence on learners' perceptions of recapitulated information. "Similarity" which is a notion of grouping is different from the actions which are related to proximal design (Roberts & Thrift, 2005). In fact, "similarity" relates to designers' decisions to logically form groups and place them within an

instructional unit. Instructional designers make use of Gestalt concept to repeat organizational patterns to facilitate the quality of visual information and sense of unity (Lawrence & Tavakol 2007).

2.2.3 Contrast

Pearsal and Trumble (1996, p.312) define contrast as “a juxtaposition or comparison showing striking differences, a difference... the degree of difference between tones... the change of apparent brightness or color of an object caused by the juxtaposition of other objects”. Contrast in designing includes type, font, size (weight/scale/mass), tone (brightness—light to dark value), color, and style (italics, bold, and underline), etc (Lohr, 2008). In fact, by making use of these particulars an instructional designer tries to manage learners’ attention by emphasizing appropriately on objects or textual information. Designers also take into account other concepts of contrast such as visual dominance and/or subordination, shape, and placement.

In order for the designers to employ the techniques of contrast, Gestalt principles of figure/ ground and similarity can be used to draw visual distinctions and demonstrate variety (Smith- Gratto & Fisher, 1999). As an instance, this solution can be utilized to tackle lack of grouping to represent differentiation.

2.2.4 Proximity

Proximity as an aesthetic element is the last designing action in the field of ID (Lohr, 2008; Williams, 2008). Being agree with Pearsal and Trumble (1996, p. 1164) “proximity” in this paper refers to nearness in space and time. In this case, the word “nearness” refers to the designers’ purposeful placement, arrangement and sequencing of texts, graphics, and sections in an instructional material. Proximity has widely been researched both as an element of ID which has the potential to enhance learning and also as a theme of content analysis (Chang, Nesbitt, & Wilkins, 2007).

3. Discussion

Texts establish connection with interlocutors through its visual graphic. Visual graphic in texts plays a significant role in constructing a desirable and enjoyable environment for learners. An overview of the issues of aesthetics that are discussed earlier shows that researchers generally have taken into consideration the basic and apparent aesthetic concepts in designing educational materials. However, since the electronic equipment that is used for designing educational materials have developed a lot these days, more rigorous research on aesthetic for designing electronic content is needed to be conducted. In fact, symmetry, unity, composition, harmony, emphasis, variety, and persistence are the essentials of a perfect design (Landa, 2010; Lauer & Pentak, 2011). Previously, contrast, alignment, repetition, and proximity as the other elements of aesthetic are reviewed. The comparison between electronic contexts and traditional contexts shows that some elements of design such as color, line, shape, value, texture, and form (Hawthorne, 2009) should be considered in ID. Maintaining the balance among these basic elements of designing e-learning contexts must be taken into account more widely. The balance in visual contexts is attained through symmetrically dividing the components (Ross, 2010). Color and texture are also very significant in maintaining or disrupting the balance. However, overemphasizing the balance reduces the attractiveness of instructional contexts or art works. In fact, visual aesthetic is accomplished when the symmetry among the sections and basic materials is possessed.

Repetition, progression, and symmetry are the three essential elements of aesthetic in visual contexts (Molesworth, 2010). Symmetry which is constructed of alternate repetition of different

units has more complexity and mobility. The effectiveness of repetition and alternation depends on the proficiency in handling them as well as the subject matter. When the repetition of an element changes gradually, the weight of the compilation encounters growth and progression. Progression can deviate upward, downward, or to the sides. Progression can be seen when a small shape resizes to a bigger one or vice versa, when a polygon changes to a circle, or when dark colors change to light ones.

Repetition is also called rhythm. In fact, the regular or harmonious repetition of lines, shapes, forms or colors are called rhythm (Ross, D. W. (2010). Rhythm includes the basic theory of repetition which is a solution for organizing forms and spaces.

When the different parts of a composition are slighted to differentiate an element to focus learners' attention to a specific part of a text, that part is called emphasis or center of interest. Emphasis can be created by utilizing color and texture. Similar parts weaken the center of interest. Clear and differentiated figures in comparison with vague ones and strange stuff in comparison with simple ones are more obvious (Fichner-Rathus, 2011). Moreover, the categorizing the elements are also important in putting emphasis on a collection. The rules of emphasis can be used for unifying and reflect variation.

Emphasizing an element has a direct effect on attracting the learners and establishing connection between them and the content (Berleant & Carlson, 2007; Crowe & Institute, 2000). In addition, unity results in coherence. Without unity, the different parts of a composition seem scattered. That is why a unified text catches attention and is more successful in delivering messages. Unity makes the text more understandable and the message simple.

Besides the mentioned elements, variety also causes unity and makes a text strong. Variety is the result of diversity and difference. The difference between shapes, colors, or the texture of the elements is also considered variety (Intrater, 2001; Landa, 2010). The different and disparate parts motivate the learners to find the reason of unity in the whole text.

Unity, variety and symmetry are the creators of visual discipline; in fact Place, line, and surface have great strength (Parrish, & Denver, 2008; Behrens, 1984). Places play differently in creating a visual work based on their sizes and the way they are used. Each line (curved, angular, slanted, vertical, and horizontal) illustrates a different concept and should be used in a proper place. Space distinguishes the place and condition of each phenomenon in comparison with other phenomena which are directly under the influence of symmetry.

Due to above mentioned discussions it is possible to summaries the new elements of aesthetics in designing the e-learning content as follow:

- Symmetry
- Unity
- Composition
- Harmony
- Center of emphasis
- Variety

Conclusion

The current paper made an attempt to study the visual aesthetic concepts in designing the electronic educational materials. This study is significant because designing instructional electronic materials is an important process of ID in virtual universities and distance learning. Accordingly, contrast, alignment, repetition, and proximity as the four concepts of visual

aesthetics are studied. Contrast focuses on the deep differences and similarities of the basic ID materials such as light, line, place, font, etc. Alignment tries to explain the arrangement and make the primary materials coherent. This concept is close to the concept of balance in ID. Repetition shows aesthetic in visual aspects of the stuff. The last but not the least considered issue was proximity which tries to explain the arrangement of the primary educational materials based on their similarities.

In addition to the apparent concepts that are mentioned, the authors tried to introduce some new and necessary rules in designing electronic educational materials such as emphasis, overall unity in the process of visual and conceptual designing, continuity of visual aesthetics in educational contexts, variety in using instructional materials, and keeping the symmetry in producing the content. Generally, the concept of aesthetics in ID consists of following the rules of visual aesthetic such as center of interest, variety, continuity, contrast, alignment, repetition, and proximity, which holistically tries to deliver the instructional message.

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