On-Line Assessment: An Audio-Visual Approach

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Abstract -This paper discusses the final conclusions and empirically derived guidelines for the investigation of the role of some multimodal metaphors in On-Line Assessment: An Audio-Visual Approach interfaces using avatar, images, visual text, and earcons in terms of efficiency, effectiveness and user satisfaction as well as learning performance. This experimental approach was evaluated using two different versions a control group (VOEBT) and experimental group (VMEBT) of On-Line Assessment interface. The outcomes of the experiment was observed that users taken less time to successfully complete tasks and ease of use and user enjoyment as well as making the platform more satisfactory. In addition, the use of images and avatars made the information communicated more memorable.

Key-Words: Avatar, e-learning, Images, Earcons, multimodal, Virtual text, Human Interaction, Multimodal.

1. Introduction

Nowadays, most of e-learning applications focus on the visual channel to communicate information in its interfaces. Moreover the multimodal nature in human-human interaction (HHI) can assist to create computer to human and human to environment interaction additional natural [1, 2] also could get over the lack of face-to face communication difficulty in computer user interface [3, 4].

However, other senses could be incorporated in a multimodal approach in order to communicate a larger volume of learning material either on their own or simultaneously. Such as, combining graphics and diagrams with earcons has the potential to provide a richer user learning experience. Moreover,” Some of these studies suggest that the use of multimodal metaphors such as speech sounds, non speech sound and avatar could improve the usability of computer interfaces in many different ways including e-learning application”[5, 6, 7 and 8].

The objective of this empirical study is to examine the effect of amalgamating and integrating diverse modalities using earcons, and avatars, images, visual text within on-Line Assessment framework. In this experiments, we investigated the impact of including multimodal metaphors such as graphic, earcons, recorded speech, video and avatar with simple facial expressions to communicate data, and see how the addition of these metaphors affect the usability of an e-learning system [9, 10].

2. Objectives

This study had major aims to be considered. The first objective was to enhance performance of on-line assessment and to measure efficiency of the two interface for every task through measuring the time spent through users to execution the required task provided. Also to calculate effectiveness through counting the number of the number of correct answer tasks through and after that for every task also, and user enjoyment from interface.

More specifically, this experiment to measure users effectiveness, efficiency also satisfaction of a multimodal on-line assessment interface (M) compared to test (NM).
to investigate the enjoyment stage that users attained through online assessment that were offered to users by avatars during to explain the question facial expressions, on the usability of on-line assessment to users to obtain to right answer.

3. Design of Experimental Platforms

On-line assessment platform was developed particularly to be used in conducting this experimental investigation. The interfaces provided two various platforms versions: test only interface version, and test with multimodal.

Both platform versions of the empirical interface were designed to provide the similar information about test. Such as in the form of tow type of question true, false and multiple choice includes 3 difficult question and 3 moderate question also 3 questions easy, and each of interface was given in a divide screen display.

4. E-learning

In the last few years, developeducation blast and an accelerated development in technology to keep pace with this time. More specifically, E-learning systems are used to make easy learning Processes during internet. The computer has become essential in our lives its can’t dispensed all ages, also shifting the direction of the students and the orientation of traditional education to e-learning to keep pace with needed, its support to them the time and place.

In (2007) e-learning uses new electronic media and gear and extends learning environment to personal computers and the internet. The growth has not yet ended and perhaps we will see cell phones and TV satellites as components of learning environment in the very close to future [11].

Nevertheless in (2009) e- learning has in history had wider connotations that built a varied set of practices, technologies, and theoretical positions. it is not only decided on online contexts, and includes the full choice of computer-based learning platforms and delivery methods, genres, formats and media such as multimedia, educational programming, simulations, entertainment and the use of new media on fixed and mobile platforms across all discipline place [12].

Students are able to investigation access the online learning facilities at every time and from any place, therefore useful students who cannot attend the usual classroom style of teaching [13]. There are several different views of definitions of e-learning one of these definitions in (2009) e-learning is a type of training or learning in which instructors and student interact at different times and different space gap and allowing learners to access training at their own pace and with methods that are convenient for them [12].

4.1 Learning Material

The topic matter examined as on-line assessment content was Human Computer Interaction. Consider that HCI as topic matter is mostly theoretical, the user’s wishes to watch and listen to in order to enhancing on-line assessment. This can be complete by explain the questions to users during incorporating avatar as facial expressions, and visual text, images, eicons.

5. Implementation of avatars

These expressions were chosen such as of the expressions typically used in daily life to express human feelings and affect [14]. For make avatar presentations, the next tools were utilize.

- Audacity [15] Avatar is a different multimodal platforms ingredient that collects between of auditory and visual human senses. [16] it was used Avatar to record -the live speech sound and create it in WAV (Waveform) data coordination.

- Mimic that could be Avatar utilized to be human- such as cartoon-like characters [15]. Moreover, this software routinely make the -mouth movements, eye blinks also head nodes to human-as figures [17]

6. Implementation of images

Nowadays, visual stimuli are utilized to sell products-, or to demonstrate facts. Tests have proved that the proposed characteristic adaption strategies really enhance the precision recall average in image retrieval. In addition usability experiments which realization the effect of
multimodal platform in retrieval yielded those users really understand multimodality [18]. The cooler images were used in this study to explain the question to user through the deliver information demonstrate different aspects of the images.

7. Implementation of visual metaphors

visual text in this experiment (VMEBT) small information located near the question like text in box. It is explain the question to user through provide information about correct answer in on-line assessment it might be help the user to do the test by the deliver information.

Figure 4 shows the overall time spent by every user in all groups to answer every the 9 questions, the time differences among tasks for both groups where a larger exhaustion of time -for the users of the VOEBT compared with the VMEBT. In fact Time differences between tasks are not much significant, The maximum answering times consumed in the first platform control group were 4.40 mints (User 7) and 7.04 mints (User 8) respectively and the mean time was 5.46 mints on average. In the second platform experimental group, the maximum time indicates was slightly lower (2.49 mints by User 4) while the minimum time (4.36 mints by User 15) and the mean time was 3.22 mints on average.

8. User Satisfaction

User satisfaction was measured to different aspects of the in both e-Learning interface by inviting users to express their point of view to statements provided through answer to the post-experimental questionnaire using five point Likert scale- which consisted of 7 statements connected to ease to use, bemused, enjoyment, ease of learning, also generally satisfaction. The five-point Likert scale ranging from 1 (the value of strong agree) to 5 (the value of strong disagree) was used for all statement. Moreover on the whole satisfaction score for every user was calculated using the SUS (method Usability Scale) system [19].

The scoring method followed here is through taking the mean score for all statement. This usually results in a positive outcome where users liked experimental groups more than control group. Figure 5 shows that the number for images and Avatar ware higher score this indication us that images to communicating the information for user is easy than visual text.
9. Discussion

Consequently, these results are discussed from the next three measures through the multimodal in users’ efficiency, effectiveness and satisfaction.

1. Time consumes to answer the required question in total time in on line assessment in terms of complexity – levels and (efficiency).

2. Correct of each users’ answers to the - questions in total - in terms of Avatar, images, visual text (effectiveness multimodal performance) in experiment group.

3. User satisfaction - with both of the –on line assessment platforms.

Generally, the experiment (VMEBT) produced encouraging outcome. As a result the VOEBT platform offered simple model interaction, the results illustrates that the use of multimodal - (Avatar, images, visual text also earcons ) was - more efficient and effective also more satisfactory compare using the text without multimodal to enhance performance of on line assessment interfaces.

10. Conclusion

This chapter present an empirical experiments for investigating the role of on line assessment interfaces, and to achievements the evaluation of multimodal – metaphors -(Avatar, images, visual text also earcons ) on usability (in terms of efficiency, effectiveness and user satisfaction) also learning performance in on line assessment by Human-Computer Interaction.

The major objective was to enhance the learning process during developing two different versions of the experimental online assessment interfaces. the results of the experiment presented in this chapter
indicated that the multimodal metaphors could indeed assist to enhance the usability of e-book exam interfaces through less the time to correct answer and enabling the users to execution these exam easy and user enjoyment as well as making the improved In addition interface more satisfactory.

References


