

The Visual Elements of Computer-based Language Assessment: Aspects and Effects

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The advent of computers and computer assisted technologies has certainly influenced many aspects of our personal and professional lives. The field of second language education is no exception, where such technologies first exerted their influence on conventional teaching methods, and from there moved onto methods of testing in second language acquisition. This transition from the “world of paper” to that of a computer screen and the associated technologies is arguably one of the most significant changes witnessed in second language education since the invention of the printing press. One of the questions that many studies tried to answer in regard to this change was: what effect do the visual elements of computer-based language tests have on test-takers?

Computer-based language tests often times provide the test takers with images or videos as part of one section of the test (e.g., the listening section). This led to research investigating the cognitive effect of processing such visual clues on the construct of the relative language skill being tested and raised questions whether or not computer-based language tests were giving the test takers advantages that were not related to language processing at all. As far as language learning is concerned, Semore and Shwan (2012) found that learning with visual mnemonics can profit from a temporally changing visual-display, something computers can readily provide. Taking Semore and Shwan’s approach to the realm of testing, Ginther (2002) studied the effect of visual stimuli—in the form of a still picture—on a computer-based listening test and found that viewing the still image had a greater effect (positive though small) than being given more time to answer the question. Such a still image, the researcher argued, functions the same way prior knowledge does in that it acts as a facilitator to the test taker. Taking this approach one step further was Ockey (2007) who performed a study to show how test takers engage with visual clues provided in a computer-based listening test that employed both still images and video. Through observation, interviews, and retrospective reports, he found that test takers engage differently with the two types of visual media and suggested only including still images in the listening test due to the fact that still images were found to have minimal effect on students’ engagement compared to videos. In fact, one of the students interviewed in the study actually said that with videos she was always looking for visual clues such as gestures and mouth movement. If this element were not to be taken into consideration, according to Ockey, the construct of the listening test needs to be re-thought.

Other visual effects that computer-based language testing introduces has to do with orthographic presentation. Orthographic presentations of computer-based language tests were also the topic of many research studies for the fear that this aspect too was giving student visual advantages that were not directly related to language proficiency. As far as text or script is concerned, Dyson and Kipping (1998) conducted a study that examined elements in computer based tests that might affect performance. In this case, the study looked at the effect of what he calls “paging” versus “scrolling” in the reading form of such tests. In addition, he looked at the impact of line length on a computer screen (100 characters) versus that on a printed page (25 characters). They found that the comprehension level was not affected by these differences, yet

the speed of reading increased in the computer form of the reading test. Other factors besides the number of characters per line, such as the size and style of the font (which fall under the category of interface design), were investigated by Fulcher (2003) who attempted to uncover elements that enable experts to design interfaces for computer-based language testing without jeopardizing the testing construct by giving test takers advantages over a paper-based test in terms of processing the orthographic presentation. From the result of his study, he recommended a three phase model for interface design. These three phases or steps emphasize test usability and the necessity of such a design to follow a principled approach in every phase of the design. A principled approach to interface design, he argues, starts with “a working test specification document” (Fulcher, 2003, p. 405) that is closely linked to the test construct in order to ensure that it gives no processing advantage to test takers in comparison to a similar paper-based one.

Investigating cognitive processing advantages that computer-based language testing might be giving to the test takers did not stop at visual elements. Processing speed is another such aspect. In other words, the question research was trying to answer this time was: do computer-based language tests give test takers an advantage in terms of processing time? This question came to be due to the fact that working memory and processing speed has a significant effect on performance in language tests (Nelson, Barlieb, Khan, Annc, Heimannl, 2012).

For all of the research conducted, the findings suggest caution when including computer based testing. Therefore, computer-based language testing methods need be approached with full knowledge to the effects they introduce to the field; especially that it is a technology that is still developing both rapidly and drastically. Computer-based language testing must be applied in specifically selected contexts, where the research has shown it to provide beneficial results.

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