How Goals Affect Evaluations of Animation Effectiveness

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Introduction

Animation commands our attention, it entertains us, but does it instruct us? Recent studies have shown animation is no more effective in instruction than comparable text or static graphics (for a review, see Tversky, Morrison, & Betrancourt, in press). This is particularly surprising because these studies often focus on teaching the kind of information that ought to be animation's strength, namely, change in time.

Despite the research to the contrary, the perception of animation is that it is an effective means of presenting information, specifically, information regarding movement. Why do these perceptions of animation differ from what research tells us of its effectiveness? The present research shows that the goals one has when evaluating different instructional media affect those evaluations, such that when we must learn from animation we judge effectiveness by our perception of what we have learned, whereas when we are simply evaluating animation we judge on aesthetics.

Media Comparisons

Method

Participants reviewed three learning interfaces, text, text plus static graphics, and text plus animated graphics, each displaying rules of movement through an environment. Thirty-one participants were under instructions to imagine they would be subsequently tested on the information (No Learning group), while 55 were to be tested (Learning group). Following the entire review process, participants rated each interface on three criteria using a 1-7 scale: how *effective* they thought the interface would be/was in helping them learn the material, how *confident* they would be/were about subsequent tests of the material, and how *enjoyable* it would be/was learning from the interface.

Results

For each rating criteria, effectiveness, confidence, and enjoyment, those in the No Learning group rated the interface with animated graphics the highest, followed by the ratings for the static graphics interface and the text interface (Effectiveness: $F(2,70)=16.1$, $p<.01$, Confidence: $F(2,70)=15.5$, $p<.01$, Enjoyment: $F(2,70)= 21.6$, $p<.01$). All paired-sample t-tests showing the differences between the three interface types were significant at the $p<.001$ level (see Figure 1).

Participants in the Learning group showed a different pattern of results in which the ratings in the graphics conditions were indistinguishable. Despite there being overall differences for each rating across the three media

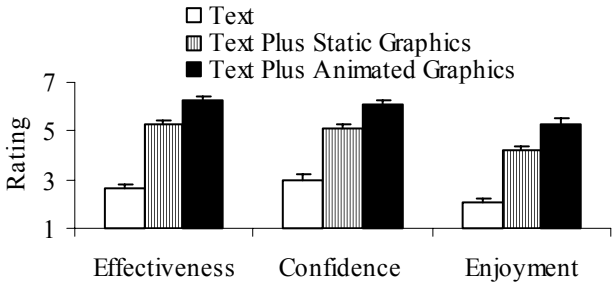

Figure 1: No Learning group ratings for effectiveness, confidence, and enjoyment.

(Effectiveness: $F(3,51)=15.1$, $p<.01$, Confidence: $F(3,51)= 4.0$, $p<.05$, Enjoyment: $F(3,51)= 3.2$, $p<.05$), the only t-test to reach significance was for the effectiveness rating comparing text and animated graphics (see Figure 2).

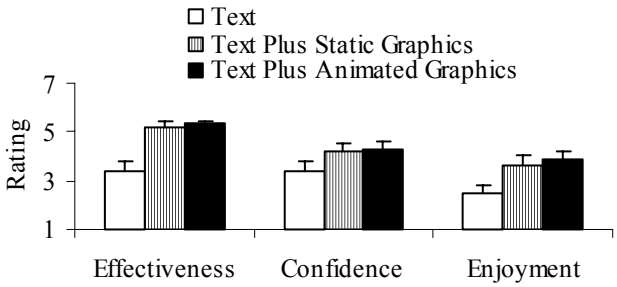

Figure 2: Learning group ratings for effectiveness, confidence, and enjoyment.

Subsequent analyses showed that the pattern of ratings for the Learning group mirrored actual performance. In other words, participants based their ratings on accurate judgments of learning, rather than on aesthetic elements of the interface.

Discussion

Judgments of different instructional media, in terms of their effectiveness, ability to inspire confidence, and enjoyability, differed based on the learner's goals. The attractiveness of animation, and, secondly, static graphics, influenced judgments of those who were not required to learn the information. Those who were required to learn made judgments that superceded the superficial aspects of the interface and focused instead on accurate perceptions of what had been learned.

References

Tversky, B., Morrison, J.B., & Betrancourt, M. (in press). Animation: Does it facilitate? *International Journal of Human-Computer Studies*.