Learners' confusion and cognitive load while learning from interactive videos

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The success of online video-sharing platforms, such as YouTube, has allowed the use of interactive videos for learning on a variety of topics. The benefits of videos on learning are significant, especially for learning dynamic contents such as procedures (Berney & Bétrancourt, 2016). Whether instructional videos offer numerous advantages, they could also lead learners to experience cognitive disequilibrium because of the transient nature of the information, causing confusion and the miss of learning opportunities (Lehman, D'Mello, & Graesser, 2012). Previous studies have shown that providing learners with possibilities of controlling the pace of videos could efficiently reduce the unwanted cognitive load caused by the transience of the information (Tabbers & de Koeijer, 2010). In addition, providing interactive controls is also likely to promote engagement, hence to be beneficial for learning (Kennedy, 2004). The aim of our study is to explore the effects of interactive videos on the levels of cognitive load in relation to learners' confusion.

In a laboratory, 51 university students were tested on a task that involved learning from instructional videos. Four 5-min videos selected from YouTube were presented under two conditions: (a) interactivity, in which participants had the possibility to pause the videos and use a navigation bar, and (b) non-control, with videos not being interactive, like a television program. Each video depicted the technical operation of everyday devices such as a coffee maker or a smoke detector. Before each video, a short text describing a breakdown scenario about the device was given and participants were asked to provide an explanation about the most likely cause of the problem. Before and after each video, self-reported level of confusion was measured on a 100-point scale and level of cognitive load was assessed with a 9-point scale (Paas, 1992) after each video. The solutions given before and after the videos to the breakdown problems as well as multiple-choice transfer questions were used to assess learning performance. When manipulating the interactive videos, all interactions with the control features were recorded. The hypotheses focus on an improvement of learning with interactive videos in comparison with non-controllable videos, as well as a decrease of cognitive load. It is also expected to observe a correlation between self-reported levels of confusion and cognitive load as well as possible specific patterns of behaviour that participants can produce when learning from interactive videos. All data have been recently collected and analyses are in progress. Results of the study and implications will be presented and discussed at the conference.