Investigating the Transient Information Effect in EAP Lecture-Listening and its impact on Keyword Instruction

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In accordance with the principles of Cognitive Load Theory (Sweller, Ayres, & Kalyuga, 2011), an experiment was conducted to investigate keyword instruction: a strategy used typically in Academic English (EAP) courses so as to improve the ESL student's ability to comprehend academic lectures. One of the assumption made is that learning critical vocabulary from the lecture (keyword instruction) will be of major assistance to the student and will lead to improved performance in lecture comprehension. However, the learning of the keywords itself entails a significant cognitive load, specifically due to the transient information effect (see Leahy & Sweller, 2011) caused by the given listening activities. The transient information effect occurs when learning is reduced due to the difficulty of processing information that has disappeared due to transiency, in the present case spoken instructions. This instructional effect has been identified with animations (Ayres & Paas, 2007), spoken text (Singh, Marcus, & Ayres, 2012), and ESL (Moussa-Inaty, Ayres, & Sweller, 2012).

The experiment compared the effectiveness of keyword instruction in an auditory or visual modality. Students in Academic English (n=165) were randomly divided into four groups: a Control group where no keyword instruction was provided, a listening only group (auditory modality), a reading only group (the visual modality), and simultaneous listening and reading group. Keyword instruction was provided to the 3 groups with 12 new and unfamiliar English keywords according to their designated modalities. Once the keyword instruction had been completed, a lecture was played followed by a comprehension test with each question based on the keywords. Cognitive load measures of difficulty and mental effort were also collected.

The comprehension test results indicated a significant group difference ($F = 2.90$, $p < 0.05$) where the Reading only group outperformed the Listening only group. Furthermore, the Listening only group rated mental effort and difficulty higher than the other 3 groups. Conversely, the Reading only group rated the mental load effort required for the keyword learning task significantly lower than for the other 3 groups. These results suggest a rethink of the value of keyword instruction as a learning strategy when implemented (as is traditionally the case inside the EAP classroom) in the auditory modality. The experiment indicated that keyword instruction when delivered through listening leads to higher cognitive load and reduced learning. In contrast, reading keywords has considerable advantages, consistent with a reduction in transitory information. The experiment tends to clearly illustrate the pertinence of applying cognitive load theory principles to the teaching of English for Academic Purposes.