

# Accepted Manuscript

Lead me gently: Facilitating knowledge gain through attention-aware ambient learning displays

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PII: S0360-1315(14)00102-X

DOI: [10.1016/j.compedu.2014.04.017](https://doi.org/10.1016/j.compedu.2014.04.017)

Reference: CAE 2628

To appear in: *Computers & Education*

Received Date: 7 September 2013

Revised Date: 23 April 2014

Accepted Date: 25 April 2014

Please cite this article as: BörnerD., KalzM. & SpechtM., Lead me gently: Facilitating knowledge gain through attention-aware ambient learning displays, *Computers & Education* (2014), doi: 10.1016/j.compedu.2014.04.017.

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**Lead me gently: Facilitating knowledge gain through attention-aware ambient learning displays**

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**Abstract:**

This empirical study reports an intervention to investigate identified research challenges on the evaluation and use of ambient displays in a learning context with the objective to gain insights into the interplay between display design, user attention, and knowledge acquisition. The main research questions were whether an attention-aware display design can capture the user's focus of attention and whether this has an influence on the knowledge gain. A display prototype corresponding to the main ambient display characteristics was designed, applied in a controlled authentic setting, and evaluated accordingly. The prototype presented information and guidelines for first responders in emergency situations, especially in cases of cardiac arrest. The prototype was enhanced with a custom-built sensor to measure user attention and trigger interruptive notifications. The study was conducted among 52 employees working at a university campus. Using an experimental research design, a treatment group exposed to an attention-aware display design was compared to a control group. The results provide evidence that such a display design can attract and retain attention in such a way that the acquisition of knowledge (i.e. the comprehension of the presented information) is effectively facilitated.

**Keywords:** ambient learning displays; empirical study; ubiquitous learning support; knowledge acquisition; user attention

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