The Effect Of Preliminary Sketches On The Conceptualization Of Design Alternatives

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Abstract

In this study (N=124), eighth graders and professional architects searched the World Wide Web (WWW) for information relevant to a design task involving the storage of heat and the regulation of temperature. One group of students (N=13) did preliminary free-hand sketches of the dwelling before beginning the search and design phases of the activity. The other groups had the option of creating a computer-rendered sketch as part of the final report. Two questions are addressed in this study: (a) What design considerations are typically considered and/or omitted by subjects with well-supported designs vs. those with unsupported designs? and (b) Do preliminary sketches expand the repertoire of models considered by subjects for this particular task? Subjects with certain types of sketches (i.e., aerial views; non-realistic, schematic drawings; and inserts) had significantly better supported designs than those that exclusively used other types of sketches (e.g., perspective, 2D, or realistic sketches). The preliminary sketch group had a higher number of decisions supported by evidence and principled knowledge (as measured by project grades) than the other groups with the effect concentrated in the top performers. Overall, unstructured preliminary sketches appear to hep more advanced students uncover potential design options while having little or no effect on less-advanced students.

KEYWORDS: collaborative design, problem conceptualization, information retrieval, Internet tools, science education.