Educational conditions for meaningful learning in science and engineering with interactive technologies

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Project summary

The overall objective of the project is to investigate students' learning with interactive technologies in engineering and science education. Learning environments, such as microcomputer-based labs (MBL), simulations, interactive lecture demonstrations, are commonly used at all stages of education. In all these environments, scientific phenomenon can be visualised, in real-time, making it possible for students to immediately observe a scientific representation in relation to a phenomenon in an exploratory way. The expectations of these interactive technologies have been high, but research concerned with students' learning shows somewhat contradictory results. Microcomputer-based labs are one exception, since active engagement in such labs has proved both positive and stable results on conceptual tests. Therefore, we find it interesting to further scrutinize the educational conditions that produce different learning results. If we want to understand the educational conditions, and the differences that makes a difference in regard to students learning, we claim it is necessary to use a wide range of methods, such as natural experiments using conceptual tests, recorded interactions, and interviews.