

Student learning of physics concepts: efficacy of verbal and written forms of expression in comparison to other representational modes*

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Abstract

Physics instruction includes a variety of representational modes including diagrammatic, mathematical/symbolic, and verbal (oral and written passages employing ordinary language). Instructors attempt to assess students' understanding by observing their problem-solving performance employing this variety of representational modes. An important issue that this study investigated is the possible discrepancies in student learning abilities when using oral and written forms of expression in comparison to diagrammatic and mathematical forms. Another issue explored is the accuracy of assessment of student learning via written and oral descriptions of their reasoning, in comparison to their mathematical/symbolic problem-solving performance.

*Supported in part by National Science Foundation Grants DUE-#9354595, DUE-#9650754, DUE-#9653079, DUE-#9981140, and REC-#0206683.

