

Volume 4 Spring Issue

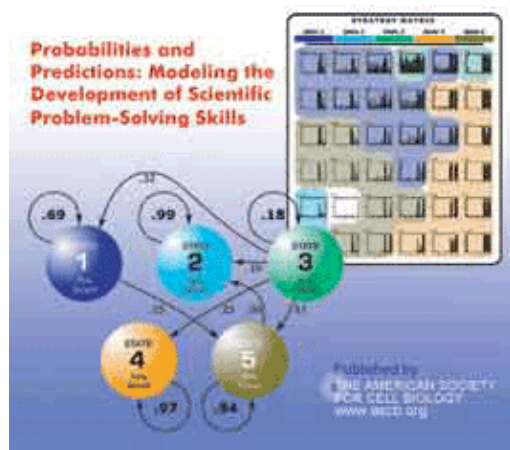


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Supported in part by an Undergraduate Science Education Program grant from the Howard Hughes Medical Institute

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September 3-7, 2005, Sydney, Australia
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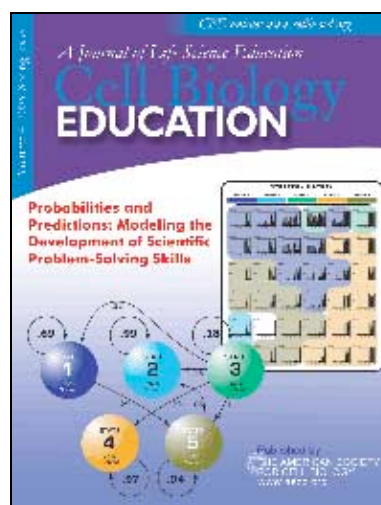
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Modeling the development of scientific understanding.

This model illustrates the most likely strategic pathways students take as they learn how to solve problems in molecular genetics. The matrix shows the 36 most frequent strategies (as identified by artificial neural network analysis) students used while analyzing simulations. The state transition diagram shows the most likely pathways students will follow in their problem-solving strategies. Students in State 2 tend to guess at the solution and are not likely to change their approach without intervention, whereas students in State 3 tend to attack the problem in a variety of ways, progress to even more effective strategies (States 1, 4, and 5), and increase their chances of solving the problem.