Title: A Multi-Strand Model for Student Comprehension of the Limit Concept

Category: Contributed Research Report

Abstract: In analyzing interview transcripts to assess student understanding of limits for first year calculus students, the application of the 7 Step Genetic Decomposition created by Cottrill, et. al. (1996) indicated that the interviewed students possessed no higher than a 3rd step understanding. Despite an inability to clearly articulate their understanding in terms of the expected lexicon, several students were able to create valid examples and counterexamples while justifying their answers. This suggests that these students possessed a better understanding of the limit concept than they were able to articulate. Thus, this study concludes that there exists additional criterion that should be taken into account in order to accurately diagnose student understanding of the limit concept. In particular a model for student understanding of limits should contain strands reflecting the student's method for solving a problem involving limits, the student's justification for the solution, and the applicability of the student's method and justification within the context of the problem.

Keywords: limits, student understanding, calculus, interview methodology

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