Designing an Intelligent Math Tutor for At-Risk Students

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This paper describes the development of a smart learning software designed to sharpen students analytical reasoning skills. The impetus for this project came from a desire to help middle school at-risk students to successfully pass a standards-based math exam in order for these students to advance to the next grade. The software uses a “guided” coaxing mechanism to improve students’ analytical reasoning skills. The software was designed to drill students on basic math concepts, diagnose student deficiencies, tailor an instructional module to address the deficiencies, and monitor student’s progress. The instructional module or “virtual tutor” would correct deficiencies by guiding the student through step processes leading to a correct mathematical approach. This paper discusses in detail the issues involved in the development of the software. Preliminary data on the impact of the software on middle school at-risk students will also be presented at the Conference.