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LIFESPAN DEVELOPMENT  
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EFFECTS OF INTELLIGENT TUTORING SYSTEMS IN BASIC ALGEBRA  
COURSES ON SUBSEQUENT MATHEMATICS LECTURE COURSES (168 pp.)

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The purpose of this study was to investigate how intelligent tutoring system ALEKS, which was implemented in remedial Basic Algebra courses, affected students' success in subsequent lecture courses and how former ALEKS students and instructors in lecture courses perceived ALEKS learning environment. ALEKS courses were delivered in emporium style: instructors were available to answer students' questions, while ALEKS guided students through online exercises individually based on their skills and knowledge.

The participants were students from four mathematics lecture courses and their instructors. Some students took remedial courses in ALEKS prior to the lecture courses while some students did not. The quantitative part of the study compared ALEKS and non-ALEKS students on the final examination and students' self-reported-preparedness. The qualitative part of the study discussed students' and instructors' perceptions of ALEKS based on student surveys and instructor interviews.

No difference between ALEKS and non-ALEKS students was found in final examination scores and self-reported-preparedness. Students rated learning experience in ALEKS emporium on average at 2.74 on the scale of one to five, with five being the highest. One third of students liked studying at their own pace and ALEKS content (they rated ALEKS emporium at 3.29), while one fourth claimed that “nothing was good” in emporium courses (they rated ALEKS emporium at 1.55). Although ALEKS emporium was very different from lecture courses, only one fifth of students reported changes in their study habits. The instructors did not observe any difference between ALEKS and non-ALEKS students and mentioned benefits of ALEKS-like tool for drill-and-practice. One instructor observed positive shifts in student attitude towards mathematics but advised longer study to be conducted to confirm this observation.

Providing a choice to students between online and lecture courses, while increasing the role of instructors in online courses, may result in better student satisfaction. Students could also be gradually trained to effectively use online resources. The design changes in ALEKS could include the replacement of the “pie” with the bar chart, different types of feedback, explanation of how assessments are done, and ability to revisit problems on assessments.