Abstract
In the 1998-99 academic year, the Department of Chemistry at the University of Manitoba reorganized its first-year course to include two types of sections: “regular sections” for students with high school chemistry grades above 70 percent, and “developmental sections” for students with grades between 50 and 70 percent. The regular sections had about 200 students with two or three lectures a week for 150 minutes and associated labs, and, in contrast, the developmental sections had between 60 and 100 students with five lectures a week for 250 minutes, weekly tests, and associated labs. By end of the 2006-07 academic year, 7,890 students had completed the chemistry course, and 7,045 (89%) of these students were included in this study: 5,600 in regular sections and 1,445 in developmental sections. We found that the students in the developmental sections did better than the students in the regular sections when a number of important variables were controlled. In addition, students’ grades in high school chemistry and mathematics were strongly related to their grades in university chemistry, and their attendance in classes and labs, an indicator of their engagement, had strong effects on the developmental students’ chemistry grades.

Keywords: academic achievement, attendance, course structure, developmental programs, engagement, first-year chemistry, mastery learning