

Effectiveness of Additional Voluntary Consultations

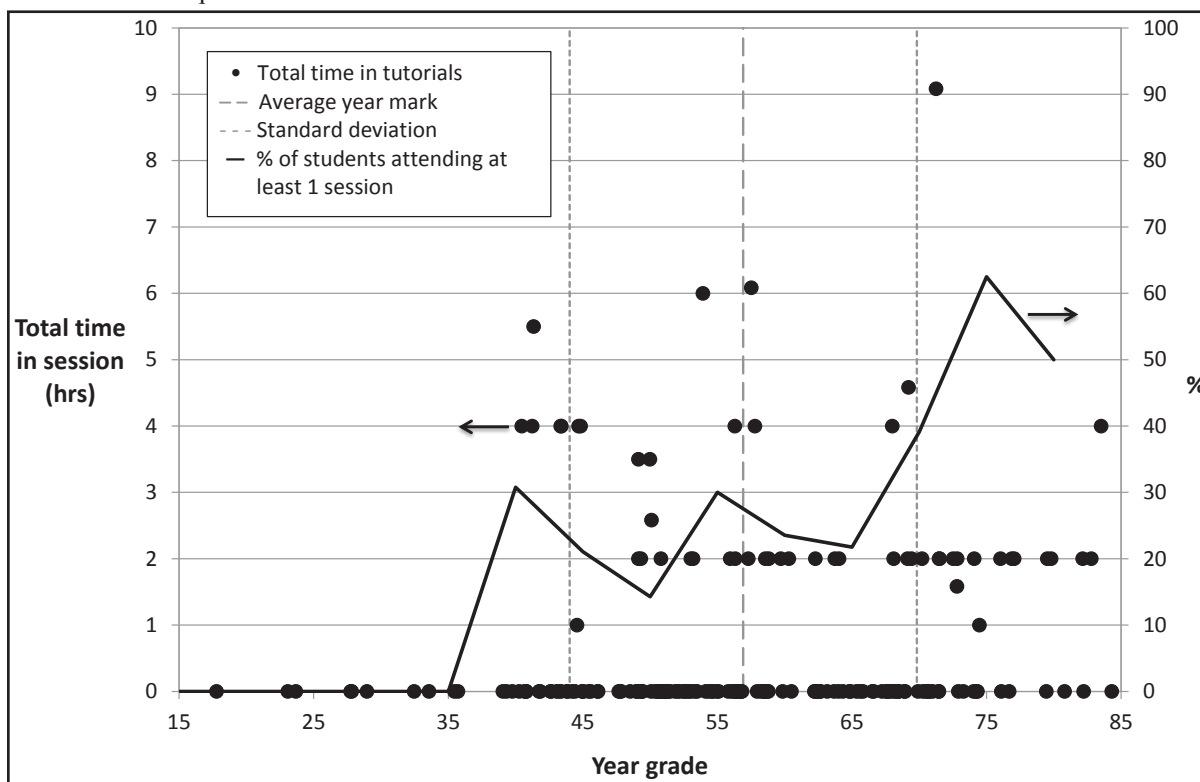
To provide additional support to second-year chemical engineering students, voluntary tutorial sessions (equivalent to supplemental instruction in the United States) were set up for their major engineering course. These took the form of individual assistance with any material that a student found challenging, with an emphasis on conceptual understanding and not on solving specific questions or the final numerical solution. Conceptual understanding is achieved through student-led teaching, interactive lecturing, and peer learning. Weekly 2-hour sessions were run by three paid graduate students, with additional sessions prior to tests and exams. An attendance register was kept and correlated against performance to determine the effectiveness of these sessions.

The total time attended by each student is plotted against his or her yearly grade for this course (Figure 1) excluding the final exam grade. Figure 1 also shows the percentage of students attending at least one session versus course grade, the average course grade, and standard deviation.

Although there is evidence that students that attended the additional sessions performed better than students that did not, this cannot necessarily be attributed to the sessions. Of the 37 students who achieved a yearly grade above 70%, 17 (46%) attended at least one session. Diligent students who attended often required only minor assistance on selected problems. Only eight (21%) of the 39 students that achieved less than 45%, attended any sessions. No students with yearly grade below 35% attended; perhaps, because they had given up.

Before this intervention, the course had a pass rate of 48.7% (2014). Once the interventions started, the pass rates were 80.6% and 76% for 2015 and 2016, respectively. Although students that attended these additional sessions performed better, it is not clear whether this can be attributed to the sessions. The implementation of these sessions provided an opportunity for students to get additional individual attention regardless of their ability. These sessions also freed up time for the lecturers because they received fewer consultation requests. □

Figure 1. Performance (yearly grade) of students vs. the number of hours attended and the percentage of students in each 5% bracket who attended.



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