CHM 103 Introductory Chemistry Online Boot Camp

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ABSTRACT

A pre-semester Boot Camp of 5 mini-lessons was made available to all students in CHM 103 Introductory Chemistry in Sakai two weeks before the start of the Fall semester. It was hoped that these lessons would provide a longer and less steep ramp into the rigors of introductory chemistry. Talent Development scholars and general students did equally well in the Boot Camp. The greatest effect of Boot Camp was on Exam 1. General students scored higher on Exam 1 than TDNG scholars taking Boot Camp showed an 18% greater improvement due to the effect of Boot Camp was on Exam I. General students scored higher on Exam 1 than TDNG scholars who did not take any part of the Boot Camp.

INTRODUCTION

CHM 103 Introductory Chemistry serves about 1000 students each academic year. Students are mostly freshman and come from a number of different majors with a wide array of academic skills. A pre-semester Boot Camp consisting of 5 mini-lessons was setup on Sakai and opened to all students in the hope that this would help start the semester on a more even footing.

MATERIALS and METHODS

The Boot Camp was setup online, in Sakai, 10 days prior to the Fall 2016 semester. It contained 5 mini-lessons ending with a practice exam. Each lesson contained a 200-300 word written paragraph, plus a video and a pool of 7 questions, which could be taken up to 10 times. Boot Camp was concluded with a capstone practice exam that was statistically evaluated as a predictor of score on midterm Exam 1 and the Final Exam. A statistical comparison between the Talent Development Scholars and the General Students. There was a statistical difference between the two groups on Exam 1, TDNG was 11% lower, on the Final Exam, TDNG was 9.2% lower.

RESULTS

There were 403 students in the class, with high participation in some or all of the Boot Camp, nearly 91%. The Boot Camp Exam was worth 21 points.

<table>
<thead>
<tr>
<th>Boot Camp</th>
<th>Exam (100)</th>
<th>Final Exam (200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score (21)</td>
<td>Score (100)</td>
<td>Score (200)</td>
</tr>
<tr>
<td>Talent Development</td>
<td>15.5 ± 3.9</td>
<td>69.6 ± 12.0</td>
</tr>
<tr>
<td>General Students</td>
<td>16.8 ± 3.7</td>
<td>78.4 ± 10.0</td>
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There was no difference in the Boot Camp scores of the Talent Development Scholars or the General Students. There was a statistical difference between the two groups on Exam 1, TDNG was 11% lower, on the Final Exam, TDNG was 9.2% lower.

CONCLUSIONS

It was hoped that the introduction of a 5 lesson, pre-semester Boot Camp would help students both with their course grade average and the D,F,W rate. A comparison was made between the general student population in CHM 103 and the Talent Development scholars. TDNG scholars more often come from weaker academic environments and changes in their scores were hoped to be a good indicator of the success of the Boot Camp.

Although TDNG scholars had lower Exam 1 score averages and lower Final exam score averages, TDNG scholars who took the Boot camp showed an 18% improvement (1.342 vs 1.103 correlation) compared to the general student population who took the Boot Camp. Both groups of students did equally well in scores on the practice exam of the Boot Camp.

In general, non-Boot Camp users scored the same as Boot Camp users in their group on Exam 1 and on the Final Exam. This shows that Boot Camp performance was not the sole predictor of exam scores later in the semester.

CHM 103 Introductory Chemistry has a historic D,F,W rate of 20-25%. The rate for Fall, 2017 was overall 23.3%. The most positive news was that the rate of D,F,W from all students was 19% compared to 60% for those students who were non-Boot Camp users.

Currently, a longer, second Boot Camp was setup this Spring 2017 with 7 pre-semester lessons, again, available in Sakai. At the end of these lessons, a practice exam was also given. A future analyses, like those above, will be conducted on this data.