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Introduction

How students feel about chemistry is important to educators as it can play a role in determining student's overall success in a subject. In particular students' attitude and self-efficacy are key factors as they are linked to engagement with the topic and their resilience when faced with obstacles.

Method

The students in an introductory chemistry unit and a physical chemistry unit at UWA were surveyed during the first laboratory session and again during the final laboratory session approximately 10 weeks later. The Attitude toward the Subject of Chemistry Inventory v2 (ASCIv2) was used to evaluate attitudes and a modified version of the College Chemistry Self-Efficacy Scale (CCSS) was used to evaluate self-efficacy.

Findings

- Physical chemistry students had higher levels of self-efficacy and a more positive attitude towards chemistry when compared to introductory chemistry students.
- Both groups had a decrease in average ASCIv2 score from pre-test to post-test indicating a deterioration in attitude after completing a laboratory course.
- Both groups had an increase in average CCSS score after the laboratory course indicating an improved self-efficacy.
- Changes in attitude and self-efficacy were more significant for introductory chemistry students compared to physical chemistry students.

Discussion

- First year students can have varying feelings towards chemistry. Depending on their chemistry background they may have negative or positive feelings
- Students' experience through a course can impact their feelings towards chemistry and the chemistry laboratory
- As predicted students became more confident in their abilities after a laboratory course. Surprisingly students' attitudes became more negative after a laboratory course

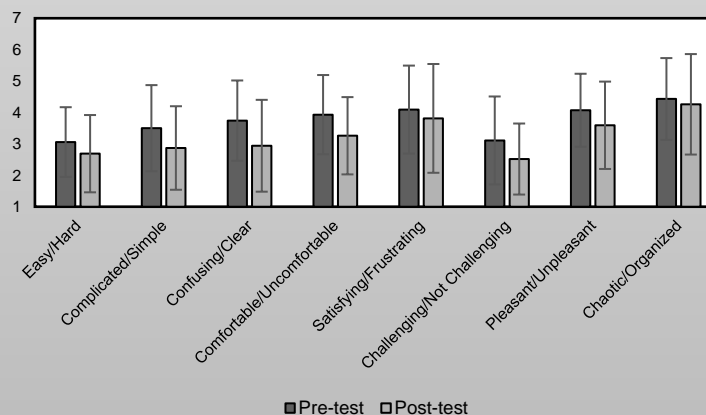


Figure 1.1 Average Attitude toward the Subject of Chemistry Inventory v2 (ASCIv2) scores for Introductory chemistry (N=54) at the start of semester (pre-test) compared to end of semester (post-test)

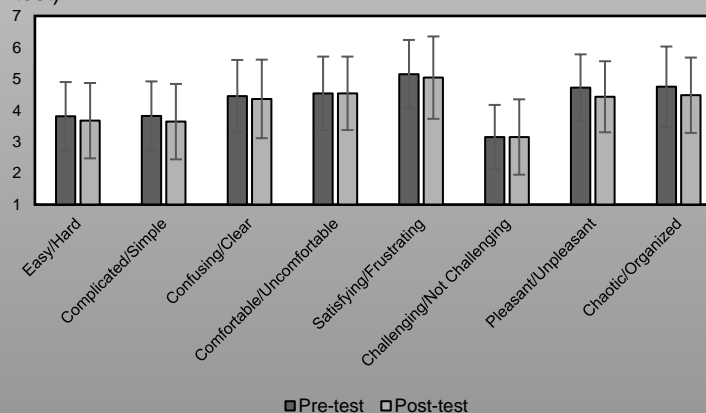


Figure 1.3 Average Attitude toward the Subject of Chemistry Inventory v2 (ASCIv2) scores for Physical chemistry (N=67) at the start of semester (pre-test) compared to end of semester (post-test)

Implications

- Design introductory chemistry courses tailored to students with negative feelings towards chemistry
- Negative attitudes and low self-efficacy may impact a student's decision to continue studying chemistry in the future
- Use technologies such as instructional videos and virtual laboratory tours as a way to improve attitudes towards chemistry and self-efficacy

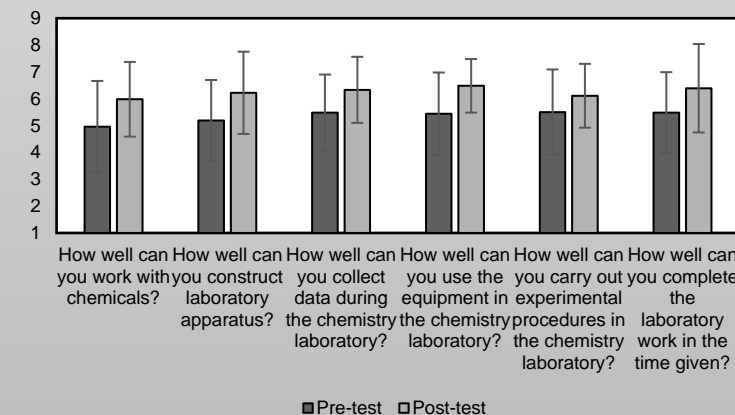


Figure 1.2 Average College Chemistry Self-Efficacy Scale (CCSS) scores for Introductory chemistry (N=54) at the start of semester (pre-test) compared to end of semester (post-test)

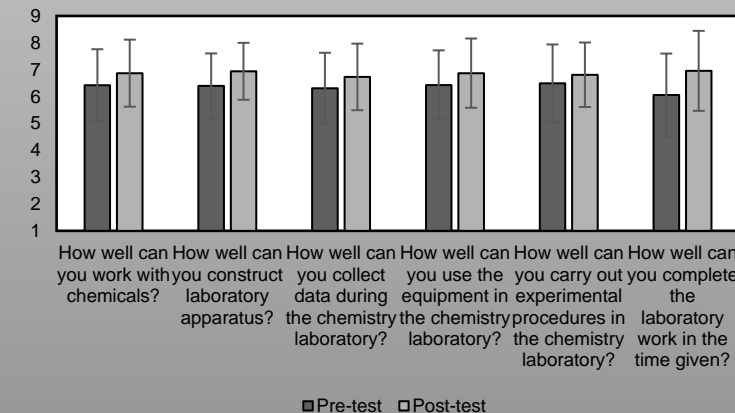


Figure 1.4 Average College Chemistry Self-Efficacy Scale (CCSS) scores for Physical chemistry (N=67) at the start of semester (pre-test) compared to end of semester (post-test)