

# TRANSFORMATIVE LEARNING IN QUANTITATIVE CHEMICAL ANALYSIS LABORATORY CLASS

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## *A POSTER PRESENTATION*

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### **ABSTRACT**

Many recent studies show that traditional academic teaching methods may not effectively promote self-directed learning and may not cultivate the lifelong learning skills in students. In order to promote transformative learning, develop analytical/critical thinking, and improve writing skills among our students, we incorporated research based projects into Quantitative Analysis Laboratory class. The Laboratory course is composed of six regular laboratory experiments and six weeks of research projects. For the first six experiments, students submit individual lab reports. Also, students need to write a research proposal as a part of the assessment. Then, students work on group research projects from problem definition to final presentation. Finally, students do the final presentations which includes faculty and peer reviewed evaluation. Once the students finish this course, they will have a good understanding on experiment design, manuscript/report writing, statistical analysis, presentations, and hands on experience on Analytical Instruments. During this transformative learning process, it was observed that students take ownership of the learning process, become more involved in learning and understand their critical role in learning. The technical and non-technical skills they learn during this transformative learning approach will be added advantages for them to use in future regardless of which career path they choose.

### **SELECT REFERENCES**

Harris, D., Quantitative Chemical Analysis, W.H. Freeman, New York, 8<sup>th</sup> Edition.

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