Use of Mundane Analogies as an Effective Tool for Teaching and Learning

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Extended Abstract

Keywords

Teaching and learning, mundane analogy, chemical engineering, process design, mass balance.

Background

Engineering education, particularly chemical engineering is abound with technical concepts, ideas and methods that are apparently complex and thus maybe difficult to be grasped as well as expressed. In chemical engineering education, concepts on mass balance, transport phenomena, energy balance and fluid mechanics are traditionally regarded as abstract. Methods related to equipment design, process design and process control can be elusive, and therefore unpopular among students.

Inexperience and ineptness in introducing such concepts and methodologies can adversely affect students' understanding and interest in chemical engineering subjects.

Objective

This paper describes how skilled use of simple analogies and mundane examples can be very effective in introducing new and complex ideas as well as methodologies. This approach can leave lasting positive impact in enhancing teaching and learning and in captivating students' interest in the relevant subject.

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Summary of Methodology

Some new ideas involving mundane hypothetical examples and simple case studies on daily events and life experiences were use to illustrate complex fundamental concepts and techniques related to mass balances, process design and mass transfer for water recovery during the 1st year, final year and postgraduate levels of a chemical engineering programme respectively. These mundane and familiar hypothetical examples are described in detail first. Parallels are then drawn to the difficult chemical engineering concepts to be introduced. Students are then divided into groups and assigned tasks to generate comparable mundane ideas and observations derived from their own daily life experiences. Each group is expected to describe their observations in detail through oral presentation, and explain the parallels between their examples and the new complex chemical engineering concepts introduced by their professor.

Results and Discussion

The results of such exercise are presented in the form of students' ability to come up with similar examples and their ability to draw parallels and observations to the complex ideas to be understood. Several examples generated by the students are presented. It was found that students demonstrate amazing prowess in understanding and providing accurate analysis of such previously regarded as complex and difficult concepts.

Conclusion

Technical concepts and ideas previously dismissed as inherently difficult to express and to be understood and traditionally regarded as major obstacles in making teaching and learning lively and interesting have been tamed the use of mundane analogy and examples related to daily life experiences. It is strongly believed that many more concepts can be easily represented likewise. Results have shown that such approach is highly effective in turning teaching and learning into an exciting as well as rewarding experience.