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## ABSTRACT

This study primarily aimed to determine the effects of the situated-cognition teaching model on the mathematical problem-solving skills of the students and their extent of transfer of these skills to other domains, namely Analytic Geometry, Solid Mensuration and General Chemistry. This study specifically compared the mathematical problem-solving skills and the extent of transfer of these skills to other domains of the students exposed and not exposed to be situated-cognition teaching model. Moreover, the study also investigated if English proficiency moderated the problem-solving skills and extent of transfer of the skills to other domains.

The study used the Non-Equivalent Control Group Design with two intact classes of first-year engineering students enrolled at SLSU in the first and second semesters of the academic year 2007-2008 as the research subjects. A total of 42 hours of instruction called Enrichment Math for each of the two groups, (the experimental-BSME and BSEE and the control-BSCE), was conducted in a regular schedule of the same time slot and room and taught by the researcher herself. The contents considered were problem in Arithmetic, Advanced Algebra and Trigonometry. The instruments used include a Semantic Differential Scale for Content Validation of the pretest/posttest, then the Formative Tests, and interview schedule, 28 situated teaching plans for the experimental group, journals and the problem-solving tests in the other domains.

Within the framework and delimitations of the study, the situated-cognition teaching model posted significantly better mathematical problem-solving skills ( $p$ -value=0.023) than the conventional teaching model. The situated-cognition model affected significantly better extent of transfer of the problem-solving skills to General Chemistry ( $p$ -value=0.000) with 58% of the students in the experimental group who were able to solve until the fourth phase of step of Polya's framework ("Looking Back") against only 23% from the control group. The conventional teaching model showed a significantly better extent of transfer of problem-solving skills to Solid Mensuration ( $p$ -value=0.033). No significant difference was found on the extent of transfer of problem-solving skills in Analytic Geometry. Moreover, English proficiency moderated the mathematical problem-solving skills of the students; those with higher English proficiency tended to have better problem-solving skills. English proficiency significantly moderated the extent of transfer of these skills to other domains, in Solid Mensuration ( $p < 0.05$ ) and in General Chemistry ( $p < 0.01$ ). No interaction effect was found between English proficiency and the teaching model used.

Furthermore, qualitative data disclosed that the situated-cognition teaching model developed values of cooperation in a group task, using common sense to have more accurate data, showing eagerness to learn new things, and realizing the importance of mathematical problem-solving skills not only in the classroom but also in everyday living. Better interactions between teacher and students and among students themselves were also mentioned.

This study revealed that the situated-cognition teaching model can help improve the mathematical problem-solving skills of students and the extent of transfer of problem-solving skills to selected domains, particularly General Chemistry, most especially for students with a higher level of English proficiency. This supports the theory of Choi and Hanaffin (1995) which underscores the importance of providing a more realistic way of conceptualizing a particular situation for the students to become better problem solvers.

From the above conclusions, it is recommended that situated cognition be used as a teaching model for enhancing the problem-solving skills of the students or used to complement the conventional model. This can be done by conducting training for proper dissemination, modeling and mentoring. To further confirm the results, parallel studies should be conducted, using the situated cognition model in different school subjects, contents and courses.