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## ABSTRACT

English is used as a Second Language across the Philippine curriculum including the tertiary level but literature still lacks evidence concerning the effectiveness of the use of the second language in science teaching. Science teachers are faced with a challenge because students who are English learners have at least two major tasks to accomplish: 1) they must learn English, and 2) they must learn new knowledge contained in that language. In the light of the ongoing advocacy for bilingual instruction, the main objective of the study was to create a language model in one of the major universities in Baguio City that supports instruction in two or more languages in the tertiary level that could complement the linguistic and cultural heterogeneity of the City. Using a non-equivalent quasi-experimental design, the study compared the academic achievements of the two intact organic chemistry classes for one semester in the first semester of the school year 2011-2012 where one was taught using monolingual English instruction (control group), while the other was taught using bilingual instruction (experimental group). The two groups were comparable except on their knowledge of general and inorganic chemistry concepts prior to the treatment. The latter obtained a significantly higher mean rating than the former. Moreover, both groups were comparable in their high level of English and Filipino proficiencies and good science attitude before and after the treatment. Majority of both groups preferred bilingual mode in learning organic chemistry. In terms of language preference in teaching, majority of the experimental group preferred bilingual while majority of the other group preferred English. In the scientific idea test, the mean score of the experimental group was higher than the mean score of the control group but the difference was not statistically significant. After seven quizzes and three examinations, the mean gain scores of the two groups were significantly different, with the experimental group achieving a high gain. In the experimental group, there were significant positive correlations between academic performance and English language proficiency, Filipino language proficiency and Chemistry Diagnostic Test result while in the control group there were significant positive correlations between academic performance and English language proficiency, attitude toward science and Chemistry Diagnostic Test result. Multiple regression analysis revealed that Filipino language proficiency was a significant predictor of academic performance in the experimental group while Chemistry Diagnostic test result, attitude towards science, mothers' years of schooling and Ilokano home language was a significant predictor of academic performance in the control group. The results of the study show that students in the experimental group were not disadvantaged by bilingual teaching instead it resulted in several benefits on the part of the Filipino learner. Quantitative and qualitative analyses revealed that majority of the students had shown support to bilingual instruction indicating that it is possible for tertiary schools in Baguio City to develop bilingual policy that supports the use of Filipino and English languages in teaching science subjects. The results, in general, suggest that academic achievement and scientific ideas learned in organic chemistry are influenced by the language used in class taking

into consideration student characteristics which include English and Filipino language proficiencies, scientific attitude, language preference and general chemistry background. However, context variables involving ethnicity, parents' educational attainment and language spoken at home do not pose significant effects on science academic achievement.