Investigating motivation to learn chemistry and physics among students of tertiary education

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The growing relevance of science in daily life and its influence on many everyday situations have never been so pronounced. Therefore, there is a need for science literate citizens who are able to make informed decisions about science-related issues. Current research suggests that motivational enhancement would have to accompany conceptual change to promote public understanding of science.[1] Furthermore, it has been shown that the interaction between student motivation and the content of specific academic disciplines is an important determinant of student achievement.[2] Recent research indicates that even in pre-primary school, children express some differences in their motivation toward different science disciplines.[3] Therefore, it is both interesting and necessary to separately investigate the motivation to learn chemistry and physics among students in secondary and tertiary education.

This paper describes the results of a study about Greek tertiary students' motivation to learn chemistry and physics using the Greek version of discipline-specific Science Motivation Questionnaire II (SMQ II[4,5]. The study was conducted in 3 academic departments of the Technological Educational Institute (T.E.I.) of Ionian Islands. The participants were 281 students, 105 males and 176 females. Most students in the sample were of middle socioeconomic status. The students participated voluntarily without extra credit or compensation for their participation.

The current study provides strong evidence for the validity and reliability of the recently adapted chemistry-specific Greek version of SMQ II[5] in measuring motivation in the physics discipline as well as among students in tertiary education. Discipline-based comparisons showed that students had higher motivation to learn chemistry relative to physics. The differences are statistically significant between all means of the five motivation scales. In addition, students reported more positive experience from the attendance of chemistry relative to the physics courses both in high school and university. More detailed comparisons related with gender and the specific academic department were conducted and provide insights as well as stimulus for further research.

References

[1] Sinatra, G. M., Kienhues, D. & Hofer B. K., *Educational Psychologist,* 2014, 49, 123-138.
[2] Breen, R., & Lindsay, R., *Research in Higher Education*, 2002, 46, 693-725.
[3] Mantzicopoulos P., Patrick H. & Samarapungavan A., *Early Childhood Research Quarterly*, 2008, 23, 378–394.
[4] Glynn, S. M., Brickman, P., Armstrong, N., & Taasoobshirazi, G., *Journal of Research in Science Teaching*, 2011, 48, 1159-1176.
[5] Salta, K. & Koulougliotis, D., *Chemistry Education Research and Practice*, 2015, 16, 237-250.