

The Translation and Validation of Calculus Concept Inventory and its use in Czech Republic on Physics-Gifted High School Students

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Abstract

The Calculus Concept Inventory (CCI) is a test of the conceptual understanding of the most basic principles of calculus. CCI was developed by Jerome Epstein (2006 & September 2007). It is designed to work similarly like the Force Concept Inventory of Hestenes et al. (1992), but in the field of calculus. This contribution discusses the translation, adjustments and validation of the CCI for use with Czech speaking students and its preliminary use.

Calculus is generally very important part of university study in the field of Physics and especially its conceptual understanding which is vital for Physics interpretation. That is why is taught calculus at the camps of FYKOS (The Internet Physics Competition) for gifted high school students, where we wanted to try to measure the gain. The test is originally designed for studying of (Hake's) gain in the first semesters of university studies (ISCED 5), but we have decided to use it also on gifted high school students (ISCED 3).

The CCI was used recently in a cross-national study (Chai et al. 2015)., so it was already used in some representative applications so far.

The translation encountered many small problems and some somewhat bigger – like biological or physical inaccuracies in provided version which could create misconceptions.

This contribution describes how did we deal with these issues and summarizes some ideas for improvement of the original CCI. We also discuss the validation (expert views, student views), preliminary use of CCI on FYKOS' camps and future plans.

References:

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Keywords

Calculus Concept Inventory, calculus, concept test, FYKOS

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