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**Daher, Wajeeh; Anabousy, Ahlam**

**Students' conceptions of function transformation in a dynamic mathematical environment.**

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Summary: The study of function transformations helps students understand the function concept which is a basic and main concept in mathematics, but this study is problematic to school students as well as college students, especially when transformations are performed on non-basic functions. The current research tried to facilitate grade 9 students' learning of these transformations through engaging in exploration activities by using GeoGebra. Nineteen high achieving grade 9 students (around 15 years old) participated in 10 lessons (45 minutes each), where they used GeoGebra to solve exploration activities related to translations, reflections and stretches. We used the APOS theory to analyze these students' understanding and performance of function transformations. The results of the research indicate that the participating students differed in their APOS understanding of function transformations where almost sixty percent were approaching the object level and the rest were approaching or arrived at the process level. Furthermore, the participating students held sub-level conceptions of function transformations; which indicates the continuity of the APOS levels of mathematical understanding.

*Classification:* I23 U73

*Keywords:* functions; function transformation; students' conceptions; dynamic geometry software; dynamic mathematical environment

<http://www.cimt.plymouth.ac.uk/journal/daher.pdf>