Possibilities of "Nuclear Concepts Theory" on Educational Research, a Review

Ricardo Luengo González, Luis Manuel Casas García, Mercedes Mendoza García, Juan Arias Masa.

rluengo@unex.es, luisma@unex.es, mendoza@unex.es, jarias@unex.es

Universidad de Extremadura(Spain)

Abstract

In 2002, Casas and Luengo created the "Nuclear Concepts Theory" (TCN in Spanish), which has served as theoretical framework for much research in the field of educational research. During 2005 it was created the research officer Group CIBERDIDACT of the University of Extremadura (Spain), which has been working in the cognitive structure knowledge of students, from the point of view of the TCN, constituting one of the main research lines of the Group. Almost a decade elapsed, have already obtained sufficient results to make a review of the point where we are and show the possibilities of TCN in education research.This communication aims to inform about the research on the TCN, from its origins, the context in which it developed, the theoretical framework in which it is based and its associated technique "Pathfinder Associative Networks". We also describe the software we use in our work (GOLUCA), which has been designed and implemented by our research group, and serves as a support on the analysis and representation of cognitive networks. The TCN has served as a theoretical framework in several theses and ten PhD researchs, which have been communicated at conferences and seminars, publications and book chapters. Its has been applied to fields as diverse as computers and education, evaluation of virtual environments, teaching in various areas (nursing, computer engineering, music education), but especially in research in Teaching of Mathematics (Geometry, Arithmetic, Trigonometry etc.). The TCN, since its inception, has had contributions and improvements both in terms of theoretical framework, itself and its technical partner, leaving many open questions, which are the subject of future research. At the present stage we can say that the investigation on TCN provides more questions than answers.