



Identifying Core Issues in Concept Map

Thanasis Giouvanakis¹, Evangelos Kehris¹, Asterios Mpakavos¹,
Haido Samaras², Maria Tsourela¹

Technological and Educational Institute¹, Anatolia College² (Greece)

thgiouv@uom.gr, kehris@teiser.gr, asterbak@msn.com, hsamara@anatolia.edu.gr, mt@teiser.gr

Abstract

A concept map is a graphical tool for organizing and representing knowledge, theories or part of our real world. Concept maps are diagrams that show the relationships between elements (concepts). However, the reality we are called upon to comprehend and to express does not directly emerge from the connections among the elements but from the connections of structures which consist of elements [1]. In accordance with this line of thought, in this paper we define as a “core issue” every distinctive part of a concept map containing significant information content.

Preliminary informal investigations carried out by our research group suggest that concept maps often contain a small number of identifiable core issues. Studying several concept maps which were referred in various sources [2] as typical examples of maps which were created by expert and novices, the result remains strikingly the same: The higher the expertise of the person who created the map, the easier the identification of these core issues seems to be.

In this paper we attempt to formally investigate this statement. More specifically, in this paper we test two hypotheses: (a) concept maps are built around a small number of core issues and (b) core issues may be identified by human evaluators and specialized software.

These hypotheses are tested by examining 72 concept maps developed by students of different ages. The students of the sample are 27 high-school and 45 postgraduate students, while the concept maps examined are related to computer science and marketing.

This is an on-going research project. At this stage we have collected the student-developed concept maps and we are examining them in order to identify the core issues. At the same time we are investigating network-specific algorithms and metrics that may be employed for automatic identification of the core issues.

References

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- [2] Pellegrino, J. W., Chudowsky, N., & Glaser, R. (2001). Knowing what students know: The science and design of educational assessment. National Academies Press.