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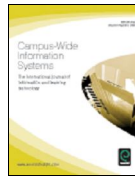
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### Developing visualization support system for teaching/learning database normalization

#### Document Information:

**Title:** Developing visualization support system for teaching/learning database normalization

**Author(s):** [Olusegun Folorunso](#), (Department of Computer Science, University of Agriculture, Abeokuta, Nigeria), [Adio Taofeek Akinwale](#), (Department of Computer Science, University of Agriculture, Abeokuta, Nigeria)

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#### Abstract:

*Purpose* – In tertiary institution, some students find it hard to learn database design theory, in particular, database normalization. The purpose of this paper is to develop a visualization tool to give students an interactive hands-on experience in database normalization process.

*Design/methodology/approach* – The model-view-controller architecture is used to alleviate the black box syndrome associated with the study of algorithm behavior for database normalization process. The authors propose a visualization "exploratory" tool that assists the learners in understanding the actual behavior of the database normalization algorithms of choice and also in evaluating the validity/quality of the algorithm. This paper describes the visualization tool and its effectiveness in teaching and learning normalization forms and their functional dependencies.

*Findings* – The effectiveness of the tool has been evaluated in surveys. It shows that students generally viewed the tool more positively than the textbook technique. This difference is significant to  $p < 0.05$  ( $t = 1.645$ ). The mean interactions precision and calculated value using expert judge relevance ratings show a significant difference between visualization tool and textbook performance 3.74 against 2.61 for precision with calculated  $t = 6.69$ .

*Originality/value* – The visualization tool helped students validate/check their learning of normalization process. Consequently, the paper shows that the tool has a positive impact on students' perception.

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