

# **Spatio-temporal data mining with Open Source tools to assess changes in education**

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## **ABSTRACT**

This paper describes recent accomplishments in the development of an on-line education quality assessment tool (EduCal) that introduces substantial flexibility for planners and decision-makers in the geographical selection of initial areas of interest and the subsequent refinement and analysis of selection sets using spatial drill-down and roll-up and temporal drill-across criteria within a three dimensional education database. The new features in the EduCal tool integrate spatial selection and analysis functionality twinned with temporal consistency or change analysis in education quality assessment and planning cycles for primary schools in Peru.

The paper demonstrates the use of Open Source software tools, including PostgreSQL, PostGIS and MapServer Chameleon, to facilitate highly functional spatial selection procedures (e.g., beside/adjacent to, or distance-related) for one or multiple time periods for user-defined hierarchical components of the Peruvian education system. The issues that affect education quality vary significantly between individual schools and communities and across time periods in most countries, and especially in developing countries such as Peru. Thus, with this use of on-line tools such as EduCal education planners and decision-makers stand to benefit from improved access to data and tools for analysis and data mining that enhance knowledge relevant to the objective of improving the quality of education delivery for young children.

***Keywords and phrases:*** on-line education, quality assessment tool, open source, decision-making