# Data-Driven Decision Making: A Reference Model for Organizational, Educational and Competency-Based Learning Systems

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**Abstract :** Data-Driven Decision Making (DDDM) refers to making decisions that are based on historical data in order to inform practice, develop strategies and implement policies that benefit organizational settings. In educational technology, DDDM facilitates the implementation of differential educational learning approaches such as Educational Data Mining (EDM) and Competency-Based Education (CBE), which commonly target university classrooms. There is a current need for DDDM models applied to middle and secondary schools from a concern for assessing the needs, progress and performance of students and educators with respect to regional standards, policies and evolution of curriculums. To address these concerns, we propose a DDDM reference model developed using educational key process initiatives as inputs to a machine learning framework implemented with statistical software (SAS, R) to provide a best-practices, complex-free and automated approach for educators at their regional level. We assessed the efficiency of the model over a six-year period using data from 45 schools and grades K-12 in the Langley, BC, Canada regional school district. We concluded that the model has wider appeal, such as business learning systems.