**Application of Learning Analytics to Investigate Factors in Determining Reading Proficiency[[1]](#footnote-1)[[2]](#footnote-2)**

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**Abstract**

*Author Malcolm Gladwell argues in both his bestsellers books The Tipping Point and Outliers that extreme intelligence is not exclusively responsible for success. Neither is giftedness. One could be extremely gifted, but if the surrounding environment is not supportive, no greatness would be achieved and no endeavor would be successful. Most importantly, Gladwell singled out perseverance as a key element of success and as being far more important than the “intelligent quotient” alone. Can the same thing be applied to school subjects? More specifically, is reading linked to personal choices and preferences? Or can the environment have an effect on reading competence? If so, what factors can sharpen the “gift” of reading?*

*For the last 5 decades or more, these questions have been at the heart of much research around the world. In this study, we used Learning Analytics to study data in novel ways within a big data perspective. Learning Analytics (LA) is defined as the “use of data, statistical analysis, and explanatory and predictive models to gain insights and act on complex issues about the learners “by Diaz &Brown (2012). We used LA to explore factors that influence performance in reading among school children. Using a large data of set (approximately 9000 subjects) from across Canada, we aimed to find out what elements can predict excellence in advanced reading. The data is from the PanCanadian Assessment Program (PCAP), a national achievement test administered by the Council of Ministers of Education, Canada. LA allowed us to go beyond traditional statistical analysis; we were able to use data mining techniques to advance our understanding of reading competence from a big picture perspective. Instead of using only the individual results, we wanted to find what other factors influence reading beyond personal strength or intelligence alone, or more appropriately, we want to find out what contribute to building personal strength in reading.*

*Along with the test results, the PCAP data include responses to three extensive questionnaires: from students/parents, teachers, and school administration. The extensive data, both the surveys and the test results, gave us a unique opportunity to delve into reading competence. Reading is directly linked to Literacy, identified by one of the core competencies for elementary education in Canada. Our findings were interesting since we were able to single out new factors that were not significant in other studies that relied on classical statistics methods. As an educational research tool, LA comes with new innovation at how we look at Data from elementary schools*

1. This study has been funded by a grant from the Social Sciences and Research Council of Canada, and a grant from the Killam Research Funds of the University of Alberta. [↑](#footnote-ref-1)
2. This paper is part of a large project and a continuation of several studies conducted over a period of 4 years (ElAtia et al 2012; ElAtia & Hammad 2011, and Fung & ElAtia 2015) [↑](#footnote-ref-2)