

1. Purpose of the Study/Problem Statement:

The purpose of this study is to determine the measure of learning analytic effectiveness in developing teacher pedagogy for improving student achievement and increasing overall school performance.

The purpose of this study is to explain how learning analytics can be applied to support student achievement, predict future achievement, improve teacher pedagogy and boost overall school performance.

Literature supports data collection and analysis has been used by education policy makers for decades in evaluating effective pedagogical practices. Research is increasingly emerging to look at the application of data and its relation to measuring what effective teachers do when intelligent data is provided regarding their students' knowledge, process development, and prior performance. Additional research will attempt to explain how learning analytics can be used to support student achievement, predict future achievement, improve teacher pedagogy and increase overall school performance.

a. Variables

Teacher pedagogy

Student achievement

Student knowledge

Quality/Nature of data (descriptive/formative/summative/evaluative)

b. Subjects

Students

Teachers

Administration (I don't think so ... anymore)

c. Setting

Participating New York/Long Island secondary schools

2. Research Question:

Research Question 1

How are learning analytics used by teachers in their pedagogy?

Research Question2:

How are learning analytics used to predict student achievement?

Research Question 3:

Does the use of learning analytics increase overall school performance?

3. Methodology

a. Setting

- i. Participating New York/Long Island secondary schools

b. Subjects

- i. Students
- ii. Teachers

c. Proposed methodology

- i. Quantitative Experimental - Solomon Four Group Design
- ii. Statistical analysis reports
 1. Teacher pedagogy reflection
 2. Learning analytics tool procedures and applications
 3. Student achievement
 4. School performance data

4. Literature Review Critique:

Ham, V. (2010). Participant-Directed Evaluation: Using Teachers' Own Inquiries to Evaluate Professional Development in Technology Integration. *Journal of Digital Learning in Teacher Education*, 27(1), 22-29. Retrieved from EBSCOhost.

Problem Statement

What specifically should evaluations of professional development in technology integration look at?

Sub-problems

What should evaluations of technology integration in professional development look for?

Who is best qualified to seek methods of evaluating technology integration in professional development?

Literature Review

Teacher professional development is a vital component to schools ability to promote learning and overall success. Various models of professional development exist with different design elements. This study investigates three approaches that include technology integration and action research with extensive evaluation:

- a large-scale national program of professional development for teachers on integrating new technologies known as the Information and Communication Technologies Professional Development (ICTPD)
 - mixed methods study including quasi experimental with pre and post testing and content analysis
- small-scale project that took place more than 2–3 years in one educational institution
 - quasi experimental time series design with small group post testing
- collaborative sabbatical known as E-Learning Fellowships
 - quantitative case study-one shot posttest only design

This study evaluates the effectiveness of three existing professional development programs for technology integration and their impact on teacher practices and student achievement. The study defines evaluation as “the process of deciding to what extent predetermined educational objectives are actually being realized.” (Nevo, 1989)

The research study found professional development experience and design needs to be clarified by characteristics and criteria. Doing so yields varying levels of procedure and description as they relate to effectiveness, participant, time, method of training, and level of teacher commitment. The key characteristics they found core in effective professional development are:

- Formal organization
- Content
- Raft of PD strategies employed by the PD facilitators
- Interpersonal dynamics and interactions

Additional characteristics discovered were the uniqueness and non-universality of many professional developments as a result of the complex nature of teachers and school systems. Lastly, the study concludes that more research needs to be done regarding effective evaluation and analysis of professional development.

Major variables

- Time spent engaged in professional development
- Level of teacher commitment
- Method of training – online/sabbatical/action inquiry

Selection of subjects

1. groups of three to five schools clustered together to provide 3-year program for teachers in across the curriculum for approximately 20,000 teachers in school clusters nationwide
2. 15 teachers in online, technology-based distance education of isolated students dispersed around the country
3. up to 10 teachers in their classes work with their own students

Additional Literature citations:

Fulton, Theodore. (2009). High school principal instructional leadership behavior in high and low need and high and low achievement schools. (Dowling College). ProQuest Dissertations and Theses, Retrieved from

<http://search.proquest.com/docview/305168802?accountid=10549>

- Quantitative study
- Purpose-teacher perception of principal leadership behaviors
- Conclusion-HS principals should increase PD especially as it relates to curriculum that focuses on student achievement

Henning, J. E. (2006). Teacher Leaders at Work: Analyzing Standardized Achievement Data to Improve Instruction. *Education*, 126(4), 729-737. Retrieved from EBSCOhost.

- Quantitative study
- Purpose-determine how teachers use standardized assessment data
- Conclusion-all teachers used some form of data from within 4 years to seek trend analysis of their students

Jackson, S. A., & Lunenburg, F. C. (2010). School Performance Indicators, Accountability Ratings, and Student Achievement. *American Secondary Education*, 39(1), 27-44. Retrieved from EBSCOhost.

- Quantitative study
- Purpose-examine diverse schools on four performance indicators and relate to students achievement
- Conclusion-significant differences exist between the schools as measured by academic excellence, developmental responsiveness, social equity, and organizational structures
- Recognizes need for further study regarding impact of culture, principal leadership, curricular differences, and student/teacher/parent experiences

Nodine, T. R., & Petrides, L. A. (2006). ISKME Special Series Part 4: Using Data to Improve Instruction. *T.H.E. Journal*, 33(10), 46-51. Retrieved from EBSCOhost.

- Case study
- Purpose-recognize the impact of NCLB assessments on school districts
- Points of Interest-student achievement requires a feedback loop
 - self-monitoring
 - analysis
 - action
- Findings- school performance and student achievement, must be linked to providing “important information to teachers”