Development Strategies on Teachers' Digital Data Literacy Competencies

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Introduction

- The range and variety of digital data that are available to teachers are expanding rapidly.
- Parallel to this increase in data is the realization that all educators need to know how to base decisions on hard data rather than anecdotes, gut feelings, or personal preferences.
- Data literacy is a broad term that encompasses components of educational understanding, statistical literacy, assessment literacy, and data-driven decision making.With origins in media literacy, visual literacy, scientific literacy, and statistical literacy, data literacy has become a distinct competence for mastery (Koltay, 2015).
- In this digital era, becoming digital data literate is a skill set that teachers must acquire and nurture throughout their careers

Problem Statement

- The use of data-driven decision-making in education is only likely to increase as massive data sources, machine processing power, and cultural significance of data all rise, underscoring the fundamental significance of data literacy for teachers
- Data-driven decision-making is projected to become more prevalent in the field of education as a result of advancements in technology especially artificial intelligence technologies and processing speeds for massive digital datasets.
- To ensure that teachers are knowledgeable about both digital data gathering and statistical methods as well as how that data is used, it is crucial that teachers develop digital data literacy skills.

Objectives

- Looking into the existing structures in place for teachers' digital data literacy competencies

- Ascertaining how teachers' digital data literacy could be developed and/or improved

Key Concepts

- Data is any information supplied in coded form that is visualized using graphs, pictures, or other analytical tools in order to be analyzed.
- Input data from input devices are processed to create digital data, which are discontinuous binary digits.
- Data literacy is the ability to choose, prepare, analyze, visualize, evaluate, and interpret data. It also includes the ability to tell stories based on data and use data to inform decisions (Wolff, Gooch, Montaner, Rashid, & Kortuem, 2016, p. 23). It incorporates standards, disciplinary knowledge and practices, curricular knowledge, pedagogical content knowledge, and a comprehension of how children learn with an awareness of data (Gummer & Mandinach, 2015, p. 2).

Methodology

- Data source for the study was Google Scholar through keyword searches.
- Search parameters consisting of data identification, extraction and synthesis helped ensure that articles targeted for in-depth reading, via the abstract based on the topic, were included in this review.
- After full text screening, only articles that satisfied eligibility criteria were included for the analysis
- The literature analysis was fused into a narrative review report based on themes.

Findings: Objective 1

- Helping educators to become data literate is not as simple as it may seem.
- Training the existing cohort of educators currently out in schools is an expensive and daunting enterprise
- There are many challenges in providing effective training in digital data literacy to teacher trainees.
  - Substantial variation in the training occurring at institutions.
  - The curriculum is already full and there is not room to add specific courses or instructions that incorporate digital data literacy topics.
  - Lack of lecturers at institutions to teach digital data literacy courses

Findings: Objective 2

System and Developmental Approach to Digital Data Skills Acquisition.

- Teachers must receive systematic training in how to access and use digital data and this must be part of their preparation or training
- Colleges of education must find ways to integrate digital data-driven practices and principles into the training of teachers since they are appropriate places for such instructions (Mandinach & Gummer, 2013).
- Thus, colleges of education must begin to address teachers' digital data literacy by integrating data use throughout their curricula, through stand-alone courses, and in practical experiences. Integration must include digital data use as part of content, pedagogy, and methods courses.

Findings Cont.

- Schools must create a conducive infrastructure to embed and embrace data use that includes data coaches, data teams, common planning time, an explicit vision for digital data use, appropriate technological tools, leadership, and opportunities for professional development and growth.
- As a result, there is a need to include a benchmark framework for the improvement of teachers' data literacy in the digital classroom construction strategy to improve their digital data literacy.

Findings Cont.

Theoretical approach to Digital Data Skills Acquisition

- A novel theoretical method called "Teaching Analytics" (TA) blends teaching experience, visual analytics, and design-based research to provide teachers with the diagnostic and analytical pedagogical skills they need to raise the calibre of their instruction.
- Despite being a recent development, TA is increasingly popular because it provides teachers with a wealth of opportunities. In addition to providing tools and techniques for digital data literacy and visual analytics, research on TA takes particular attention to teachers' professional practices (Sergis et al.2017).

Findings Cont.

- TA is the process of gathering and using information on teaching and learning settings and activities in order to improve teaching practices and achieve particular learning objectives.
- The fundamental ideas supporting TA are teacher digital data literacy and teacher inquiry skill using data. (Kaser and Halbert 2014). Hence, TA has been found to have very high prospects to improving teachers' low efficacy towards digital educational data.

Findings Cont.

Collaborative learning approach to Digital Data Skills Acquisition

- Collaboration has featured in interventions that aim to alleviate anxiety around data use process and to develop communities of practice.
- For examole, Piro & Hutchinson (2014) developed and evaluated a collaborative learning model called Data Chat to reduce preservice teacher anxiety around the experience of collecting and interpreting data.
- Reeves & Honig (2015) found collaboration to be a key component of effective data use leading to teachers clarifying and critiquing assessment practices. ***Use of Consultants***

Conclusion

- An effective model seems to be a college course that teaches data literacy, followed by a practicum where students may use their knowledge and skills, and a subsequent period of reflection on teaching and learning.
- Teacher trainees can acquire authentic exposure to the use of data in the classroom, use and enhance their digital data literacy, and reflect on the learning outcomes for students when data literacy instruction is integrated into supervised professional experience.
- There is a pressing need to foster deep integration of teachers' data literacy and digital classroom design.

END

THANK YOU

QUESTIONS?

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