A Study of Technology Professional Development in Education

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Chapter 1: Introduction to the Study

Background

The demands of educators have changed drastically over the last century and to stay current in and improve upon their qualifications, teachers of students in grades K-12 are required by Act 48 of 1999 to partake in ongoing professional education (Dept. of Ed.). Areas of focus in professional development (PD) are typically contingent upon district initiatives; however, a common concentration in public schools is 21st Century skills. Given evidence indicating that "30 hours of focused professional development, on average, is required to change teachers' professional practice," it is important to understand that the duration of PD affects its implementation (Harris 18). Other factors to consider in PD efficacy are its presentation and assessment.

A current initiative of the xxx School District is technology integration and a plan for educational technology professional development (ETPD) is in place. The format for district PD offerings is on-campus and attendance is a few times throughout the year. Sometimes, ETPD takes place after a school day, other times it takes place during a scheduled in-service day. It is safe to assume that the participating teachers balance PD with instructional and personal responsibilities which include grading, coaching, parenting, schooling etc. Teachers attend different sessions in different cohorts based on who chooses to participate in the specific PD offering. These typically diverse cohorts contain teachers with varied digital literacy skills and of different content areas and grade levels; so, the topics are broad and inapplicable to a specific subject. Time for discussing

or utilizing the learned theories and tools takes place within the same single session. At the end of the session, a survey is administered through an online PD tracker as follow-up.

Problem Statement

The xxx School District provides professional development in technology; however, there is inconsistency in the format and the follow-through. The process leads to a questionable return on investment of educational technology professional development.

Significance of Problem

The way xxx School District structures its educational technology professional development can trickle down from poor teacher implementation to poor student achievement. On a larger scale, understanding how ETPD is currently conducted and perceived by educators can provide insight into its improvement. More specifically, research of this problem will add clarification to what constitutes sustainable and relevant ETPD for teachers. “Teachers who have successfully integrated technology in the classroom have reported experiencing PD that helps them to understand how technologies can connect to curriculum and standards and provides a sound pedagogical Approach” (Martin, Strother). Taking an in depth look at this issue can lay the groundwork for an improved learning process for teachers and students alike.

Purpose of Study

The intention of this study is to cast light on the professional development experiences of teaching professionals. Specifically, the study will obtain insight on the correlation between technology PD and instructional practices.

Research Questions

Guiding this study are the following inquiries:

1. What are the beliefs and values of teachers and administrators concerning professional development?
2. How does the present PD model address teachers' personal and instructional concerns?
3. What supports and/or challenges influence the effectiveness of ETPD?
4. What role does communication and collaboration play in the technology PD model?

Limitations of Study

The study will focus on one school, possibly even one department within the district. Data collection will be mixed to include quantitative surveys, observations, and personal interviews. Depending on the participant level, the inputs for qualitative research are at risk for being lower than 10 teachers; thus, limitations might exist regarding validity, specifically Guba's criteria for transferability and credibility (Mills 74-75). The activity and willingness of the participants might affect the researcher's

ability to “take into account the complexities that present themselves” because less and fewer inputs skew the context for the reader.

Definition of Terms

- Digital Literacy: A skill set enabling one to navigate and evaluate (to varying degrees) current technology.
- Educational Technology: The use of 21st Century tools and practices by teachers for the purpose of enhancing the academic success of students.
- Professional Learning Community (PLC): A collaborative model of professional development that involves teachers as active and reflective participants.

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A Study of Technology Professional Development in Education: Chapter 2: Review of the Literature

An Introduction to the Problem

Educational technology professional development (ETPD) is currently presented as single sessions during which teachers are passive participants. The present PD model is unsympathetic to customization and comprehension of content which affects how teachers progress, perceive, and apply it. Consequently, lack of consistency and assessment makes the value of this professional development format questionable. The review of this literature will serve as a contextual framework for the study of professional development, specifically ETPD, by synthesizing relevant historical and current research surrounding the following three themes: collaboration and professional learning communities (PLC), teacher perceptions and concerns, and technology integration.

Collaboration and Professional Learning Communities

Current research, which indicates that learning is social and that people learn best via collaboration, also suggests that technology PLCs lead to active and reflective teacher involvement in digital initiatives.

According to Arlene Borthwick's case studies, the correlation between the PLC model of ETPD and teacher acquisition of 21st century instructional tools exists because a collaborative approach "reduced isolation [of technology learning] through improved communication" (29). This built-in support format serves to assuage educators who are uncomfortable with experiencing the tools individually. For example, the learning community established by the University of Vermont found that "preservice student mentors of faculty/teachers grew both intellectually and emotionally by participating in conversations about course design and goals, course assignments, learning outcomes and

assessment strategies" (Borthwick 31). The single-session PD format in the problem scenario leaves teachers detached from the technology initiative, for they are not provided with opportunity to engage with each other or the tools.

Also in contrast to the problem model, Professor Judi Harris, Educational Technology Chair at the College of William & Mary, proclaims that effective professional learning supports "hands-on workshops [and] large-group and small-group interaction sessions" that are ongoing (22). While continuity is somewhat feasible (but likely less convenient) in the face-to-face problem scenario, the online PLC format can further benefit the outcome of PD by mirroring the desired results. In other words, teachers apply the same collaborative tools and constructivist context that promotes learning in their own students. The collaboration and continuity at the core of PLCs promotes the reflection, inspiration, and growth lacking in the single-session model. Harris' "one size [of PD] does not fit all," notion is supported by the success of PLCs that are differentiated with technology to engage and support teachers. Whereas the teachers in the problem scenario are at least one step removed from technology PD, technology PLCs put teachers in the trenches of it.

Teacher Perceptions and Concerns

Research related to teacher perceptions and concerns as they relate to professional participation reveal that professional and personal concerns contribute to their involvement. With PD structured to their concerns, there is a high success in active participation. For instance, in Vince Ham's *Participant Directed Evaluation* research, he concluded that teacher-researchers, despite setting different goals and questions, learned

through involvement and were more likely to participate in evaluating the PD program. While not being specific to PD, ISTE supports this idea with its LoTi survey, which is not only a technology needs assessment, but validation of the student-centered, active model of teaching.

An evaluation of eMints, a program designed to enhance Missouri's Instructional Networked Teaching Strategies, suggests PD efficacy is influenced by coherence with educator knowledge and beliefs as well as relevant education policies. "Perhaps most important for coherence, the instructional specialist responds to participant requests for support and tailors visits to the teacher's interests as well as the requirements of the school or grade" (Martin 56.) Mixed-method research results revealed a "significant correlation between overall PD fidelity scores and the quality of the lesson plans teachers created" proving that PD fidelity impacts teacher output (64). Research put out but The Curry School of Education at the University of Virginia also associates teacher participation (based from survey responses) with improved perception of PD, although, it is unclear whether this is a reflection of the face-to-face format or web.

Technology Integration

"Difficulty securing adequate professional development (PD) has long been a barrier to the effective implementation of educational technology" (Niederhauser p. 38) Following this articulation with insight regarding the speed at which schools are changing, the researcher also points out "teachers must have technological knowledge, pedagogical knowledge, and content knowledge, all synchronized in ways that support the teacher as a multifaceted learner." According to research done by Lawless and

Pellegrino, technology integration improves instructional practices and student learning, but there needs to be more investigation regarding the impact. Basically, they argue that there needs that ETPD needs to be coupled with a systematic evaluation of whether it is working. Digital literacy is a growing skill in an increasingly global world, and research indicates that students are more receptive to real-work instruction that involves technology integration. How ETPD is conducted mirrors the results that are desired in the classroom.

In the aforementioned eMints evaluation, student performance was linked to higher-quality lessons, leading researchers to detect a positive relationship between student achievement and PD.

Summary vision

The model and application of educational professional development is changing and technology is becoming an increasingly larger focus, not only as an integration initiative, but as a teacher tool for enhancing professional growth. As it stands, professional development is proven by studies to be more conducive to teacher implementation of learning if it is active and collaborative. Teachers need to share their ideas and construct their own knowledge rather than passively listening to a presenter. Another factor in the efficacy of professional development how teachers perceive what they are doing and learning. Professional development must be teacher-driven and directed around concerns that teachers find relevant in order for the professional development to be successful. Finally, technology integration in staff growth is essential,

since digital literacy is becoming a basic skill that teachers need to foster in the classroom. Students are learning differently and they can be better reached with relevant instruction if teachers restructure their pedagogy. In order to move toward that shift in thinking, teachers should be actively involved in learning strategies to integrate technology. This literature encompasses the idea that people learn by doing and that teachers are more likely to effectively learn technology integration if they practice it as professional development.

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A Study of Technology Professional Development in Education:
Chapter 3: Research Methodology

Review of Purpose

The researcher has a background in education, having worked within three different school districts in the last five years. From the vantage point of a teacher, she has observed professional development sessions in each district to have similar inconsistencies in focus and follow-through. While topics were not always relevant to every participating teacher, a more noticeably contradiction of PD sessions is teachers' level of involvement. Unlike the learner-centered activities that teachers construct for student achievement, the typical professional development model entails less interaction and technology is usually used more as the presenter(s) visual.

In light of growing digital literacy initiatives in education, the complication with current professional development lies in its effect. Do the topics, means, and follow through of professional development improve classroom instruction? The purpose of this research is to investigate the effectiveness of teacher professional development, specifically the correlation between technology PD and instructional practices. Active study into this issue can provide insight for a system of professional development that can lead to teacher and student improvement.

Constituent Selection

The researcher's previous work with xxx Academy's gate-keeper, Xxx Xxx, allows for a richer study of professional development at the site since Xxx herself is the staff developer. The teachers participating in professional development sessions educate a special needs population of K-12 students. These teacher constituents range in

experience. Of the approximately 30 vocational and classroom teachers in the PD cohort, most have been with GPA for years, while some are new to the school and new to teaching in general. Aside from excellent communication with the staff developer, this site was partially selected so that the researcher could obtain information about how a diverse set of teachers respond to professional development. Another determining factor in the selection process is GPA's particular student population and the school's possession of SmartBoard technology in every classroom. Given this context, there are many reasons and opportunities for professional development to help advance teacher differentiation of instruction. A pilot study of this site selection will continue with the completion of a demographic profile (see Appendix A).

Ethical Considerations

Although students are not the subjects of the study, any examination into matters at xxx Academy will be done during teacher in-service days and/or after-school hours so as not to disrupt the special needs population of the school. Moreover, this study will not harm the teachers or administrators who will take part in the data collection of interviews and anonymous surveys. The presentation of this information will be coded to protect participant identity. While the research questions have the potential to affect the staff developer's PD performance, the researcher will not breach confidentiality. To assure consideration for xxx faculty, the researcher will inform participants of the research measures in advance and data will be collected and/or recorded on a volunteer basis. Upon the request of participants, results or data documentation will be made available.

Research Methodology and Instruments

Framing the researcher's approach to action research are the following concepts as they pertain to professional development: beliefs and values of faculty, the effectiveness and support of the format, and the roles of communication and technology. Since qualitative data will not be enough to address these issues, the researcher will use mixed methods (Creswell, 2003, p. 552).

A mixed methods approach will balance the data by providing a wider view of teacher experiences with the topic while also fitting into the projected research timeframe. The data instruments used in this investigation will be a combination of discussions, observations, surveys, and interviews. To detach from the constituents, the researcher will first conduct quantitative research in the shape of observation and survey to get a general idea of constituent reaction to PD. Since there are various aspects to focus on during staff development training, the researcher will use a self-made observation chart to focus on qualitative data that addresses the concepts of the research (see Appendix B). As a follow-up to the observed PD session, the researcher, with the staff developer's approval, will distribute, collect, and analyze surveys in which the participants rate their applicability of the PD training (see Appendix C). Designed with a Likert scale, the survey is meant to be filled out in a short time, so it is hoped that several volunteers will participate. The surveys will serve as a formative snapshot for each of the three anticipated sessions and the survey data collected will be analyzed separately and in conjunction with one another.

These statistics will serve to justify or offset potential biases from teachers' personal accounts of PD. The later data, which will bear more in-depth responses through

discussions and one-on-one interviews, will endow the researcher with qualitative information that can be examined for deeper meaning. Interview participants will be chosen on a volunteer basis and, with the participant's consent, they will be recorded for transcription. With the staff developer's assistance, the researcher wishes to make the protocol available to teachers in advance. In hopes of obtaining a higher amount of inputs, the protocol is designed around a few essential questions so that the estimated time for the interview is 10-15 minutes (see Appendix D). Of course, this timeframe is contingent upon how thorough the teacher interviewee is in responding. The researcher is adopting Wolcott's strategy of "Talk Little, Listen a lot" (Mills, 2000, p. 80). Under this philosophy "the trustworthiness of our inquiries will be enhanced." Also, the researcher has noticed that some of the best information derived during interviews happens when the interviewee is allowed to have a discussion about topics that are not necessarily on protocol. This qualitative practice is open to allow the teacher interviewee to talk about what he or she cares about, so long as it remains professional and pertains to education.

Validity and Reliability

While the use of both quantitative and qualitative methods aims to uncover a wider range of perspectives on professional development, this mixed methods approach also operates as a means for assessing data stability.

To verify the validity of qualitative interviews, the researcher will use triangulation in deciding if data corroborates. Specifically, the quantitative data will be "factor analyzed" to produce themes which are to be compare with themes analyzed in the qualitative approach. The use of triangulation will also expose the consistency of participant responses and reduce the likelihood of bias in study's conclusion (Creswell,

2003, p. 564-565). Although reliability is uncertain regarding qualitative data, it can be supported if the outcomes of various types of data are compared and reflect regularity. To avoid marring PD observation data with opinion, the researcher will collect artifacts to correspond with the observations that she will log into a pre-made chart. This will provide an additional avenue for interpretive analysis.

Projected Timeline

	Week										
	Pre-Co-op	**1** 9/24 9/30	**2** 10/11 0/7	**3** 10/81 0/14	**4** 10/15 10/21	**5** 10/22 10/28	**6** 10/29 11/4	**7** 11/5 11/11	**8** 11/12 11/18	**9** 11/19 11/25	**10** 11/26 12/2
Proposal & Pilot Study Continued											
Data Collection											
Cross Analysis											
Chapter 4 Results											
Chapter 5 Conclusion											
ePortfolio Design											

Appendix A: Demographics Profile Sheet

1) School:

_____

2) Principal:

_____

3) Administration:

_____

4) Amount of Teachers:

_____

5) Amount of Support Staff:

_____

6) Amount and type of mobile technologies:

_____

7) Amount and type of instructional technologies:

_____

8) Current School Initiatives:

_____

9) Resources for PD topics

_____

10) Staff Developer:

- Background of Experience: _____
- Years With Current School: _____

Appendix B: Observation Log Sheet

Date: **Topic:** **Presenter(s):**

Evidence	***Format***	***Collaboration***	***Technology***	***Engagement***
Type				
Length of Time				
Level (1-5) with supporting example				
Modifications made by presenter regarding… (include rationale if explicitly stated)				
Anecdotal Responses from Staff on the subject of… (direct quotes or summary)				

Appendix C: Survey

A. Circle area(s) that apply to your position.

- Classroom Teacher Vocational Teacher Learning Support

- Grades K-3 Grades 4-8 Grades 9-12 Grades K-12

For questions B-F, use the scale below to rate the PD session within each domain.

Not at all. Neutral Very Much!

0 1 2 3 4 5 6 7 8 9 10

B. How applicable was the session to your instruction?

_____

C. What was your level of interest in the session topic?

_____

D. How comfortable was the physical environment of the session?

_____

E. How often did you collaborate with your peers and session leader?

_____

F. Rate the use of technology. (Did it improve your understanding of the topic?)

_____

G. Name a topic on which you would like more professional development.

_____

Appendix D: Interview Questions

1. Can you please describe a lesson in which you incorporated skills or knowledge that you obtained through professional development?

2. How is the current model of professional development effective? Explain any advantages or disadvantages.

3. Please tell me how you feel about the frequency and amount of time you invest in professional development within this school setting. If you also participate in PD elsewhere, feel free to elaborate.

4. When you converse or collaborate with your fellow teachers, what is your preferred mode of communication and about what do you communicate professionally?

5. Regarding instructional technology, can you describe the advantages and disadvantages of a typical staff workshop?

6. How important is technology in your instructional practice? Express anything you would like to learn or improve upon in this context.

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