

The Benefits of Professional Learning Networks For Technology Integration

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Table of Contents

TITLE PAGE.....	1
TABLE OF CONTENTS	2
TABLES AND FIGURES.....	4
ABSTRACT	5
INTRODUCTION	6
Definition of terms	9
REVIEW OF LITERATURE	10
The Benefits of Professional Learning Networks.....	10
Characteristics of Effective Professional Development	10
Professional Learning Networks	11
Professional Learning Networks Influence on Technology Integration	13
Summary	14
METHODOLOGY.....	15
Hypothesis	15
Research Participants	15
Instruments	16
Design	17
Procedure	18
DATA COLLECTION METHOD AND ANALYSIS	19
Teacher Surveys	19
Teacher Interviews	19
Assessment of Data Collected	20

BENEFITS OF PROFESSIONAL LEARNING NETWORKS 3

TIMELINE 20

BUDGET 22

REFERENCES 23

TABLES AND FIGURES

Table 1 - Results of the initial likert scale survey given to gather basic information on Educators in the Spring-Ford School District, and their possible interactions in Professional Learning Networks.

Table 2 - Table representing the results of the checklist from the initial survey indicating what activities teachers use to learn about technology integration in the classroom.

Table 3 - A Table containing the names of educators who are involved in PLNs and their interview results broken down into data. The table will contain rated and ranked data

Abstract

This two-part survey study seeks to find answers to how educators learn about technology integration in the classroom. The purpose of the study is to identify educators who are engaging in Professional Learning Networks (PLNs) and understand why they are seeking learning opportunities outside of regular Professional Development. This research seeks answers to determine if educators collaborate via PLNs to help provide answers to technology integration. An initial survey aimed to collect quantitative data about technology integration will also identify those educators involved in PLNs. A second survey will then gather quantitative and qualitative data during interviews. The information gathered in this research will help determine the benefits of PLNs and the importance of recognizing them as a part of professional practice and raising awareness of the potential they have for professional development.

Introduction

Technology integration has been an ongoing theme of professional development (PD) in school districts nationwide as schools have been encouraging educators to incorporate different types of technology into everyday practice. It only takes sitting through a PD session where technology is the topic to understand there is a vast difference in technology skills among educators. There is also little unity with how technology is being used. Some educators have fully embraced technology and incorporate it as a regular practice. For others, it is using technology as a paper replacement by working out of an LMS. For others, it means knowing how to work a smartboard or another piece of hardware. There are still teachers working on something as basic as learning how to use a computer effectively for personal planning. While PD has provided a push towards technology integration, there is no one specific way teachers are being asked to use it. That leaves the incorporation up to the teachers. Some educators have taken technology incorporation to a new level, while others have struggled with it. If educators in any given school district all receive the same PD, why is there such a big difference in how it is being used?

Topic Statement and Purpose

The onset of Covid-19 and the sudden shift in teaching have exposed the gap in technology understanding and forced teachers to rethink how they will educate their students. Until the past 2020 school year, there was an incredible range of technology use among educators (Schwartz, 2020). When the Covid 19 pandemic sent our students home starting in March of 2020, educators and the use of technology in the classroom was forced upon the

collective world of education. Within a few weeks, many educators were left scrambling to adapt and develop online teaching skills (Schwartz, 2020).

Knowing the start of the current 2020/2021 school year was going to be virtual for a lot of schools, districts took steps to push out ways to compensate; 1:1 technologies, new Learning Management Systems, and PD opportunities were meant to provide a quick bandaid to the idea of reinventing education "overnight." Teachers had to learn new ways to deliver content and adopt ways to keep students engaged and learning.

Whether education changes forever due to the Covid crisis is not the topic to be discussed. Rather, it is to look at how educators have adapted to the shift education has taken and how they have learned to incorporate technology. Relearning how to deliver content may have been a traumatic experience for some educators; however, as a result, many teachers are reporting their ability to use technology in the classroom has greatly improved (Bushweller, 2020). Learning has not taken place in PD alone. Educators are picking up skills by seeking out their own learning and collaborating with other educators. This is done through collaboration via discussion and sharing within the school setting and through Professional Learning Networks (PLNs) (Anderson, 2015). Therefore, the purpose of this study is to describe the nature of educators' involvement with (PLNs) and to discover what, if any, correlation they have with technology integration in the classroom.

Relevance

Professional Learning Networks offer educators a way to connect about classroom practice, pedagogy, subject matter, and technology integration. They are a resource that allows educators to connect and find answers to their questions via Web 2.0 technologies. One of their biggest benefits is the worldwide collaboration they offer and educators' ability to connect

anytime, anywhere. Educators who participate in PLNs often seek answers to technology-related topics (Larson, 2016). Those who are seeking out these opportunities are doing so to engage in self-directed PD. They desire to improve upon their practice and share with others (Krutka et al., 2017). As technology continues to expand, it is clear that traditional PD can not keep up with the rapid change. If PLNs offer a way to stay connected and network ideas through educational technology's changing landscape, educational leadership must recognize the value that PLNs offer. Engagement in PLNs should be encouraged and integrated into traditional PD.

Hypothesis

Research supports that well-constructed PLNs support multiple areas of professional growth (Trust & Prestridge, 2021). It is also known that educators who engage in PLNs to work reciprocally with others have reported a higher sense of self-efficacy in the classroom and are more likely to implement new instructional practices (Anderson, 2015). Consequently, the hypothesis for this research problem is that Educators who engage in collaboration through Professional Learning Networks will report that PLNs positively influence technology integration in their classroom environment.

Research Questions

To find the relationship between educators' PLN participation and its influence on technology integration in the classroom, it is necessary to ask the following questions to answer the connection they may have.

- How are educators gaining knowledge about technology integration in the classroom?
- What is the percentage of educators that are involved with at least one PLN?
- How will educators belonging to PLNs describe their experiences in these communities?

- Do their connections made within PLNs have any influence on how educators use technology in their classrooms?
- Do educators use the resources gained from PLNs to collaborate and share knowledge with coworkers?

Definition of Terms

Professional Development : “a wide variety of specialized training, formal education, or advanced professional learning intended to help administrators, teachers, and other educators improve their professional knowledge, competence, skill, and effectiveness” (Professional Development Definition, 2013).

Professional Learning Network: Professional Learning Networks (PLNs) can be described as a group of people with a common interest in a particular subject or idea who seek opportunities to improve upon their professional practice. Participating in PLNs is done through Web 2.0 tools and social-based networking apps (Maloney, 2016).

Self-Efficacy: People's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Self-Efficacy Defined, n.d.)

Technology integration - The use of technology resources : computers, mobile devices, social media platforms and networks, software applications, the Internet, etc. -- in daily classroom practices

Review of Literature

Introduction

Professional Learning Networks (PLNs) can be described as a group of people with a common interest in a particular subject or idea who seek opportunities to improve upon their professional practice. Participating in PLNs is done through Web 2.0 tools and social-based networking apps (Maloney, 2016). To better understand the value of PLNs, it is important to consider them in the context of Professional Development (PD). What are the qualities of effective PD, and how does that relate to PLNs?

Characteristics of Effective Professional Development

Quality PD needs to adequately address the expectations of what constitutes student learning. Its goal is to create a collective improvement among educators. Not all PD is equal to the task of improving student learning (Soine & Lumpe, 2014). Many researchers have reported that PD is weak and does not address educators' content areas. It does not devote enough time to share classroom practices and is often presented in a one-size-fits-all approach (Larson, 2016; Barton & Dexter, 2020). Traditional PD allows for verbal persuasion to engage in new ideas that can be valuable but insufficient when presented in isolation. This type of PD often does not align with teachers' needs and lacks alignment concerning classroom application (Barton & Dexter, 2020).

Sims & Fletcher-Wood (2020) identified six characteristics that contribute to quality PD. Sustained learning revisited over time and reflected upon was more effective than PD offered in a single one-day session. Professional Development opportunities that provided a buy-in where teachers saw the value of what they are learning or volunteered for the learning opportunity were

more likely to yield better results. PD that offered training in subject matter, as well as pedagogical techniques, created a connection for educators. PD that involved outside expertise provided fresh input and new ideas, and PD that involved educators' opportunities to apply what they learned was more effective than PD that offered verbal concepts alone (Sims & Fletcher-Wood, 2020). Finally, a wide variety of research agreed that collaboration is a central theme found in effective PD (Goodson & Ralph, 2020; Larson, 2016; Ruggiero & Mong, 2015; Sims & Fletcher-Wood, 2020; Soine & Lumpe, 2014).

Keeping in mind the importance of collaboration, it is important that educators are comfortable with learning and establishing relationships with other educators to improve their classroom practices. The goal of well-designed PD is to aid in the collective improvement of teachers and to provide an opportunity for growth among educators to address students' needs (Soine & Lumpe, 2014).

As research continues to evolve regarding PD and how teachers learn, a greater emphasis is being placed on collaborative learning (Larson, 2016). Teachers revealed formal PD combined with collaborative opportunities chosen and run by educators provided a more holistic experience and contributed to the building of teacher self-efficacy (Jones & Dexter, 2014; Barton & Dexter, 2020). Teachers who had an opportunity to collaborate with their colleagues indicated a higher sense of self-efficacy and were more likely to implement new instructional practices in the classroom (Anderson, 2015).

Professional Learning Networks

When considering the shortcomings of traditional PD, some educators have begun reaching out to PLNs to meet their professional needs and goals within their classroom (Krutka et al., 2017). What is unique about PLNs is that they offer an anywhere, anytime free opportunity

to collaborate with other educators about specific topics or questions (Maloney, 2016). Learning how to take advantage of online PLNs provides educators with valuable resources and helps establish a sense of camaraderie and connectedness (Cook et al., 2017). The research suggested that teachers' professional development interactions on social networking sites completed activities that would fall under effective PD definitions (Larson, 2016).

A PLN, as defined earlier, is a group of people with a common interest in a particular subject or idea who choose to seek out opportunities to improve upon their professional practice. PLN activities are interactions using technology using web-based tools that might include RSS feeds, social networking sites, and blogging tools (Maloney, 2016). They are similar to Professional Learning Communities within schools, where educators are grouped to share and address common goals. The significant difference between the two is that within PLNs, educators choose whom they are working with and seek out their area of interest (Larson, 2016). PLNs are uniquely cultivated systems of people, online spaces, and tools that can help educators improve their teaching and learning. They offer an inexpensive form of open communication. They provide places for synchronous and asynchronous dialogue on a professional level (Harvey et al., 2020). When used effectively, well-constructed PLNs support multiple areas of professional growth (Trust & Prestridge, 2021).

To engage effectively in a PLN, A mindset of collaboration is necessary. Educators must get connected to others with common interests online. Connecting with others means following the correct people and areas of interest to establish relationships that will lead to personal networks beneficial to the individual (Maloney, 2016). PLNs create a flexible framework to help educators reflect on how they might continuously improve (Krutka et al., 2017). This PLN framework aligns with the idea that teachers who have an opportunity to collaborate with their

colleagues indicate a higher sense of self-efficacy and are more likely to implement new instructional practices in the classroom (Anderson, 2015). The self-created learning opportunities found in PLNs can help educators to respond to the continual emergence of the rapidly changing technology environment. Educators who understand the benefits of being connected through PLN activities will be better positioned to apply connected learning in their classrooms (Maloney, 2016).

Professional Learning Networks Influence on Technology Integration

Research indicated that educators sought out PLNs for several different reasons. The appeal of working reciprocally in a group was what drew many educators to find answers to questions they could not find in a formal PD setting (Anderson, 2015; Cook et al., 2017; Harvey et al., 2020; Krutka et al., 2017; Larson, 2016; Maloney, 2016). Larson's research (2016) examined activities through participation in collaborative microblogging on Twitter to answer why educators participated in voluntary PD through the use of PLNs. Educators sought opportunities to acquire new ideas, collaborate with other educators, and participate in educational discourse. Connection and collaboration were recurrent themes in the research findings. Several respondents indicated they used PLNs to find answers to technology resources used in the classroom (Larson, 2016). Another study done by Anderson (2015) found a strong relationship between online collaboration in PLNs and teachers' self-efficacy with technology integration. Educators reported that collaboration within the PLN platform gave them access to resources not found in their schools. They were able to connect with other teachers who had the desire to share and learn together. Educators reported they had found answers to specific technical questions related to apps and software. PLN activities helped them focus on how to fully integrate technology in their classrooms (Anderson, 2015).

Considering technology integration, educators interviewed during a study done by Barton & Dexter (2020) all revealed that formal PD had little impact on their confidence in technology integration. They described self-directed learning efforts as playing a much more significant role in their self-efficacy (Barton & Dexter, 2020). The belief that educators hold about the importance of their ability to incorporate technology into the classroom effectively can be described as a teacher's self-efficacy for technology integration. Educators needed sustained learning experiences to provide a way to conceptualize how technology could be used in the classroom and bolster their self-efficacy for carrying out the skill to do so. Their attitudes toward technology and having peer support seemed to be indicators of success in the classroom regarding technology integration (Barton & Dexter, 2020).

Summary

The teacher needs to understand the importance of technology use in education to be a key stakeholder in the adoption of it into everyday classroom practice (Ruggiero & Mong, 2015). A collaborative approach to informal professional learning that is self-initiated by educators themselves is more effective at improving technology self-efficacy in the classroom (Barton & Dexter, 2020). In collaboration with other educators, self-directed learning experiences play a larger role than PD in helping educators understand technology integration (Barton & Dexter, 2020). Collaboration in PLNs provides educators with an opportunity to learn from one another and improve technology integration in the classroom (Anderson, 2015; Larson, 2016). It is essential to recognize the significance of PLNs. These self-initiated learning environments have the potential to change how knowledge is exchanged. Educators can be actively involved in sharing ideas, trading knowledge, and finding answers to questions. Learning in PLNs is active and ongoing (Maloney, 2016).

Methodology

Hypothesis

The purpose of this research is to discover what methods influence technology integration amongst educators and support staff at the Spring-Ford School District Ninth Grade Center and to discover those educators who are involved in Professional Learning Networks for educational purposes, and then to describe their involvement in those PLNs. The research aims to ascertain if educators are looking to engage in PLNs to help find answers to technology questions or improve upon their practice as it relates to technology integration.

The researcher believes that educators are not learning about technology integration through Professional Development alone; rather, they are finding ways to connect and collaborate with other educators within and outside of the school setting. The researcher believes there will be a correlation between those educators who interact in PLNs and their use of those PLNs to seek ways to help understand technology integration.

Research Participants

The research participants for the beginning of this study will be the entire professional teaching staff of the Spring-Ford School District Ninth Grade Center. The Spring-Ford Area School District is based in Montgomery County, Pennsylvania and expands into Chester County. The district is characterized by small towns, suburban neighborhoods and rural areas. The staff is composed of educators who have a diverse background in years of teaching experience and teachers new to the profession. All subject areas will be represented, including Instructional Assistants. There are 56 classroom teachers and seven Instructional Assistants that will be asked

to participate in the initial survey. The following is the breakdown of the subject areas represented by the educators.

Science - 5	Language - 6	Learning Support - 10
English - 7	PE - 2	Art - 2
Library - 1	Math - 6	Music - 3
ESL - 1	Emotional Support -1	Computer Science - 1
Tec Ed - 1	FCS - 2	Business - 1
Instructional Assistant - 7		

A second sample will be staff chosen by criterion sampling based on their involvement in Professional Learning Networks. If the initial sampling does not yield at least 5 candidates who meet the criteria and will agree to participate, the researcher will expand the survey to include the Spring-Ford School District 10 -12 Center.

Instruments

A cross-sectional quantitative survey will gather basic information about the educators at the Ninth Grade Center. The educational technology survey from the Piscataway Township School District will be used as a reference to build the questionnaire. The survey will be designed using Survey Monkey and will contain demographic questions to determine years of experience and subject area. Likert Scales will be used for educators to indicate how they would rate themselves with overall technology integration, specific technology use in the classroom, and attitudes on technology use in the classroom. Finally, checklist questions will be provided for educators to indicate specifically what items or activities they use as resources for learning about technology integration, including the opportunity to identify specific PLNs. The goal of this survey is to identify the following:

- How do educators rate themselves using educational technology?
- How are educators gaining knowledge about technology integration in the classroom?
- What is the percentage of educators that are involved with at least one PLN?

The researcher will then select a sample using criterion sampling, with the common characteristic being participation in at least one PLN. A second survey will be administered to the PLN group. This survey will be in the form of brief interviews to delve deeper into educators' interactions in PLNs. Interviews rather than a second email survey are preferred to make sure the surveys are completed and glean any additional information relating to the research topic. Likert scale questions will be given to assess the type of PLNs, and the amount of time dedicated to their involvement. Checklists will be provided to indicate the types of interactions taking place in PLN's as well as any references to technology. Based on the answers to the quantitative questions, the researcher will encourage discussion with the participants to draw out additional information about specifics relating to technology integration. The goal of this survey will be to find the answers to the following questions:

- How will educators belonging to PLNs describe their experiences in these communities?
- Do their connections made within PLNs have any influence on how educators use technology in their classrooms?
- Do educators use the resources gained from PLNs to collaborate and share knowledge with coworkers?

Design

This research project will be presented as a survey study that has both quantitative and qualitative information to be gathered. The initial survey that will ultimately identify the sample to be interviewed will also gather basic quantitative data relating to technology integration. The

second survey given in the form of interviews will provide a mix of quantitative and quantitative results. The researcher chose this survey design for the following reasons; to gather information quickly, increase the likelihood of finding willing survey volunteers, and for its ease of use and its ability to be easily replicated.

Procedure

1. The researcher will begin an initial pilot test of the first survey with a group of educators with whom she is familiar. The pilot test will provide evidence of the validity of the survey and identify any problem areas that need to be addressed.
2. The researcher will meet with the Spring-Ford Ninth Grade Building Principal to introduce the research topic and discuss how the research would be completed and to address any concerns.
3. A time frame will be chosen to present the research to the school's faculty. The initial research presentation will be made during a faculty meeting where the study's intent will be explained, including the desire to interview later individuals who meet specific criteria.
4. The initial quantitative survey will be sent out via email to educators with a time frame of two weeks to be filled out and returned. Reminders will be sent after the first week to any educators with a survey that has not been returned.
5. As the surveys are completed, data will be gathered and analyzed. Educators who meet the criteria of participating in Professional Learning Networks will be identified.
6. Those educators who fit the study criteria will be contacted and asked to participate in an interview survey to gather follow-up information.

7. Interviews will be scheduled and take place in person or via zoom call. Responses will be recorded audibly.
8. Data from the interviews will be assessed to see if the information provided provides evidence to answer the hypothesized questions.

Data Collection Method and Analysis

Survey Part 1

The initial survey will be given to gather information and to understand how educators would evaluate themselves on the topic technology in the classroom. The survey will have four sections and will be built using questions from the existing technology survey from the [Piscataway School District Staff Technology Survey](#) as a reference. The first two sections will address educators' self-reflection on technology integration in the classroom, and opinions on technology integration and use the first set of values shown below on the table. The third section will address specific technologies being used in the classroom including interaction in at least one PLN. This section of the survey will use the second set of values shown below. The last section of the survey will be a checklist where educators can indicate what PLNs they specifically interact in.

Likert Scale Values Part 1	Likert Scale Values Part 2
1 = Strongly Disagree	1 = Never
2 = Disagree	2 = Yearly
3 = Agree	3 = Monthly
4 = Strongly Agree	4 = Weekly
	5 = Daily

Survey Part 2

Based on the data gathered from the initial survey, a second survey will be given to those staff members who indicated they interacted within a PLN. This survey will be designed by the researcher. Responses from the first survey will be used as a starting point for interview questions about specific PLNs. These educators will be asked to rate a series of activities that relate to what they feel is most beneficial with regards to technology integration, and then they will be asked to also rank those same items. Then a series of open ended questions will be given and recorded audibly to find answers to what educators do most often in their PLNs, how often they interact, and what they are hoping to learn. The researcher will also seek to find out if the information they learn from PLNs is shared with other educators, or is later used in PD.

Assessment Data

The data gathered and scores from the initial survey will be used to assess overall opinions about technology integration, and how educators would rate themselves with using technology in the classroom. It will also provide a way to see what kinds of technology is used in the classroom and how educators are learning about its use. Finally it will serve to identify research participants for the interview part of the study pertaining to interacting in a PLN.

Answers to interview questions and data gathered from the second survey will be digitally recorded. Information gathered from questions where educators were asked to rate and rank items will be used to graph data that will show overall opinions about what resources are most helpful with learning about technology integration, and to identify if educators seek out interaction in PLNs to network with other educators about the topic of technology integration.

Timeline

August

During the month of August, the researcher will reach out to the building principal to introduce the research topic and ask for specific time to present the survey to staff during one of three days of Professional Development. The research topic will be presented to the staff of the Spring-Ford Ninth Grade Center during one of the three days of inservice where teachers are in the building and present for Staff Development. During this meeting educators will be instructed to look for the survey to be sent via email and be asked to complete it within a time frame of two weeks.

September - October

The month of September will be used to collect the survey results. The goal will be to have all surveys returned by the second week of September. Reminders and a second email containing the initial survey will be sent out if necessary. Results from the initial survey will be analysed and reported upon during the month of October. Also during this time those educators who have indicated their involvement in PLNs will be contacted and interviews will be scheduled. The goal for the total number of interviews is at least five individuals. If this goal is not met through the educators at the Ninth Grade Center, then an additional survey will be given to the educators of the Spring-Ford 10-12 Center. Additional time would also be added to complete the survey. This would require an additional two months to complete the overall survey.

November - February

During the months of November - January the interviews of those teachers involved in PLNs will be conducted. Additional time will be added if there are more candidates than had been expected. Surveys will be handed out to these individuals the week prior to the scheduled interview so there will be time for the researcher to review the answers and prepare questions based on the indicated data.

March - April

Data from the interviews will be compiled into graph charts for information that had been rated and ranked. A formal write up of the findings will be completed during this time period.

Budget

No budget will be needed to complete this research. All materials will be designed digitally using free opensource software. Interview recordings will be recorded on existing iphone software.

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