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Jennifer Lee Suppo
Seton Hill University

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About the Author(s)

Dr. Jennifer Suppo is the Graduate Program Director and Assistant Professor of Special Education at Seton Hill University where she teaches undergraduate and graduate courses in special education. She has taught in both autistic support and life skills middle school classrooms. Dr. Suppo has published articles on topics in the field of autism and special education.

Keywords

Professional Development, Action Research, Data Analysis, Special Education

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Powerful Professional Development Data: A Review of Action Research and Data Analysis and its Implications for Special Education

Jennifer Lee Suppo

Abstract

In today's world of accountability and budgeting constraints, schools are examining how they get the most "bang for their buck" in the area of professional development experiences. Professional development has traditionally been used to keep teachers and administrators abreast of current teaching strategies. In using the traditional model of professional development, typically the school or district would have a speaker, who was knowledgeable on a random topic of education, come in and conduct a one-day seminar. More often than not, there was little accountability to this traditional model; little if any data was taken to see if the knowledge obtained from the seminar was used, and if used, was it effective. However, in today's era of high stakes testing, schools are held accountable for students' scores. Schools that do not meet standards set by the state risk losing precious funding that is necessary for the school's daily operation. Current funding trends are moving towards meeting state and federal deficits by reducing education budgets. Facing further losses in funding, schools must use wisely the meager money they have for professional development.

Concurrently, as the landscape of school needs have changed to meet the new era of accountability and budgeting constraints, so have professional development experiences. Professional development has come to mean a broad spectrum of experiences that enhance teacher knowledge and pedagogy. Professional development is moving more towards a data-driven active entity model that is never stagnant and ever evolving. Within the spectrum of professional development experiences lies action research and data analysis.

Introduction

The researcher identified articles by conducting an electronic search of EBSCOhost, a comprehensive database of scholarly, field-related, journal articles. Key words used in the electronic search of the EBSCO host database included action research, professional development, data analysis, teaching, education, and special education. The search was limited to peer-reviewed articles published between the years 2003 to 2013. The original search using those parameters produced 28 articles. Additional articles were found in the reference list of the articles located through the original search. An additional parameter of the review was that the articles had to be written in English.

The main purpose of the review was to examine action research and data analysis and its implications for special education. The review of the literature consisted of the following themes:
1.   Action research
2.   Data analysis

Action Research

In examining action research and data analysis, a defined meaning of both is required to set each within the context of professional development experiences. Action research will be examined first. Yendol-Hoppey and Dana (2010) define action research as the, "systematic, intentional study by teachers of their own classroom practice" (p. 98). Educators engaging in action research select their focus of student learning, which they are concerned, as the dependent variable, and they select an appropriate, evidence-based intervention, aligned with the area of concern, as the independent variable. Next, the teacher implements the intervention and collects data on the students as to whether or not a change occurred as a result of the intervention. Action research can be conducted as an individual or in collaboration with others. Savoie-Zajc and Deescamps-Bednarz (2007) believe action research and collaborative research is research with and not on practitioners. The conceptual underpinning is that an educator can become the agent for change within the classroom by observing a phenomenon, predicting a positive course of research-based change, implementing the change and reflecting on the change (Yendol-Hoppey & Dana, 2010). The educator evaluates and revises the implemented change if necessary. Engaging in the research process, teachers become active participants in inquiry, gain further knowledge of pedagogy, and become agents for change in the classroom Action research has taken center stage within the changing climate of school accountability.

The climate of school accountability is evolving. This evolution has occurred during the past ten years with the passing of No Child Left Behind (NCLB). Park and Datnow (2009) say that "emphasis on data driven decision-making practice to bring about improved student outcome is a relatively new feature of the education reform landscape" that comes out of the passing of NCLB (p.478). Within the professional development framework of action research, teachers analyze their data to make their own recommendation for positive classroom change (Caro-Bruce, 2008). Teachers can use action research to make both academic and social change. Although teachers engaged in action research prior to the passing of NCLB, its passing brought the usage of action research for positive academic and social change to the forefront of the ever-changing landscape of professional development experiences. The overall assumption is that as educators become active learners within their classrooms, they will also become more effective educators that increase student learning.

In reviewing the literature surrounding action research, several benefits and challenges to its usage emerged. McGee (2008) relayed that action research encourages reflection and collaboration promoting knowledge of one's practice. Educators are in the best position to know what is happening in their own classroom (Caro-Bruce, 2008). Caro-Bruce (2008) believes that this experience can be rewarding, and Savoie-Zajc and Deescamps-Bednarz (2007) believe by engaging in action research an educator can gain a newfound respect for their colleagues. However, in reviewing the literature, some challenges emerged. In Argyropoulos and Nikolaraizi (2009) the researchers believed that the use of additional participants' added validity to their findings. Many action research studies are qualitative in nature, and therefore, are somewhat subjective (Feldman & Weiss, 2010; James, 2006; Savoie-Zajc & Deescamps-Bednarz, 2007). The argument then would be if an educator, who is conducting action research in their classroom, could add validity in their domain of interest through providing the subsequent measurement they used. Also in contention is if the teacher measured an accurate correlation of

the change to the intervention, or could some outside factor be associated with the change that was being measured. There are other challenges to using action research as well. For example, action research is time consuming (Avgitidou, 2009; Feldman & Weiss, 2010; James, 2006; Orland-Barak & Rachamim, 2009). Planning, implementation, data collection and data analysis lead to a lengthy list of work for the already busy educator, and many educators have to conduct the activities associated with action research on their own time (James, 2006). Action research has both benefits and challenges. However, action research is useful in its flexibility of general application that can be conducted on a variety of educator interests.

Souto-Manning and Mitchell (2010) examined the role of action research in a multi-year study in fostering culturally responsive practices in a preschool. The preschool had a culturally diverse population. The researchers, who were teachers and the teacher's course instructor, believed that through reflective journaling, they could analyze the data to make overarching instructional changes to meet the needs of the culturally diverse preschool. The researchers, through examination of the journals, saw a change in the reflective writings indicating instructional practices that were designed for meeting the needs of the culturally diverse preschool population. They acknowledged that the cultural diversity was unique to that particular preschool classroom and the findings of the study might not generalize to other classrooms.

Feldman and Weiss (2010) examined teachers participating in collaborative action research to change teacher practice in the classroom using digital photography. Twenty-eight teachers participated in a two-part workshop. During step one; the educators participated in a summer workshop learning about the use of digital photography in their classroom. Next, the educators wrote reflections on the use of digital photography in the classroom. Step two included a presentation to colleagues on the use of digital photography to enhance instruction in the classroom. However, out of the original twenty-eight participants, only five completed this portion of the study. The researchers acknowledged some of their concerns with the completion of the study, which included the lengthy amount of time during the project as well as the time from start to finish, which was over a year, between step one and step two. Furthermore, many participants did not feel qualified to instruct others, as was a part of step two.

Bartlett and Burton (2006) examined teachers in nine primary schools who taught students between the ages of 5-11. In this study, each teacher evaluated an area of practice that the teacher wanted to change. The teachers met four times a year with a research mentor from a university. The research mentor explained how to conduct a small-scale study within a classroom, which included data collection and data analysis. At the end of the year, teachers were to present their findings to the group. In this study, the researchers stated that teachers began to collaborate with one another through discussions which led the participants to feel as though they gained knowledge of their practice. Moreover, the researchers stated that the validation of the collected data by peers during the final presentation was important in refining the interpretation of their findings. Overall, the findings suggest that collaborative action research is one way of overcoming the challenges of validity that present as a challenge in many action research projects.

Action research has many applications for its use, all of which include the analysis of data. However, throughout many action research studies, the use of reflection is the independent variable in making instructional changes (Argyropoulos & Nikolaraizi, 2009; Avgitidou, 2009; Feldman & Weiss, 2010; McGee, 2008). Additionally, the use of reflection is by its nature, subjective and subject to multiple interpretations. Although the data from reflective practices may be examined within the fold of data analysis, data analysis includes a much broader array of information gathering, in which action research plays a small part.

Data Analysis

The use of data within action research and subsequent analysis of data to guide instructional and organizational change is part of a broader area of professional development; one that action research is a part of, which is that of data analysis. Data analysis is the collection of data, for example, student achievement, demographics, student or community perceptions, which is used to inform school change (Bernhardt, 2008). The source of the data can come from action research data, surveys, questionnaires, tests and other additional sources of information that can be utilized to inform a school or district of the area of interest to which they are seeking information. Data gathering and analysis organized by an individual or a group can be used to examine school-wide information or parts of the whole. However, Geijsel, Kruger and Sleegers (2010) stated that this process is enhanced if conducted with the collaboration of the key members using a "bottom up approach." (p.61) The conceptual underpinning is that if a school or district can gather and analyze the right data, they can use the data to make positive school changes at the desired level of implementation of change (Flowers & Carpenter, 2009).

Examining the right data supports schools in choosing the correct path to take to make positive changes (Yendol-Hoppey & Dana, 2010). Flowers and Carpenter (2009) relays that to use data to inform school-wide changes, schools need to start by reviewing the schools improvement plan and use this plan as a guide to the type of data that needs to be gathered. Next, they need to analyze the data and utilize the data in making their plan of action. However, the process does not stop at this point. The key to the process is a continuation of data collecting on any changes made to inform the school of changes, positive and negative, that occur based on the change or intervention implemented. The process is a continual loop of data collection and analysis to make and keep positive school outcomes. Data analysis in a continual, ongoing process that is used throughout today's professional development experiences, including action research, journaling, mentoring and many other forms of professional development that use data analysis in decision making. Yendol-Hoppey and Dana (2010) say this should be a "naturally occurring activity" is a school (p.115).

Data analysis is not new within the field of education. However, as with action research, data analysis has taken center stage in the changing landscape of accountability with the passing of NCLB. Jacobs, Gregory, Hoppey and Yendol-Hoppey (2009) acknowledge that data and analysis is part of teacher accountability that came out of NCLB. Although, NCLB's original stringent form has certainly leveled off an afforded states some flexibility, school and subsequent teacher accountability has not waned. Today, at the forefront of education, is data-driven decision making for school wide changes in all areas of education (Mingchu, 2008). Wohlstetter, Datnow and Park (2008) say, "The theory of action underlying NCLB requires that educators have the will and know-how to analyze, interpret and use data so that they can make informed decision in all areas of education ranging from professional development to student learning." (p.239) Although NCLB may be a somewhat dated concept, and its long range impact is still not known, it did bring into focus the importance of both action research and data analysis to inform teaching.

In reviewing the literature surrounding data analysis, several benefits and challenges to its usage emerge. Bernhardt (2008) believes that data analysis is "a powerful professional learning tool that can lead to school improvement" (p.130). Flowers and Carpenter (2009) say the use of data-based decision making is necessary to inform change and it can be used as not only a professional but a personal form of teacher growth (Kim, 2013). Furthermore, the authors acknowledge data usage supports educator's decisions in the face of opposition, enables educators to evaluate successes and failures and provides educators with a means to demonstrate

the need for resources. Heritage and Chen (2005) recognize data analysis as a tool to assist in meeting school improvement objectives. Conversely, Flowers and Carpenter (2009) acknowledge that many educators see data usage as a time consuming task that places an additional burden on the educator. Schools also find it a challenge to obtain teacher buy-in to its usage (Park & Datnow, 2009; Wohlstetter, Datnow & Park, 2008). Data analysis has both benefits and challenges. However, the application of data analysis has itself been analyzed by numerous studies.

Blanc et al. (2010) examine improving school achievement data by the collection and analysis of data. The study included 10 out of 86 elementary schools identified as low performing in Philadelphia. The participants in the study included both teachers and other district personal. The researchers examined this phenomenon of low achievement by collecting data through teacher surveys, student achievement records, and interviews with district staff. The researchers relayed that the results demonstrated that the schools needed a structured community of practitioners reflecting on data and making data based decisions on school improvement issues. Additionally, by collecting and analyzing data to inform the need for change, educators could improve their teaching methods to increase student achievement.

Geijsel, Kruger and Sleegers (2010) studied the use of data collection, analysis and formative change within 18 elementary schools. The researchers stated that school leaders needed to know the data to obtain and how to use it to make formative decisions to make change in school improvement. Additionally, they found the usage of data had to be continual to guide schools on decision-making. Furthermore, they found the process was enhanced by collaboration.

Wohlstetter, Datnow and Park (2008) examined using a data driven decision-making system by applying what they term as the principal agent theory. Through interviews, formal observations, and school documents, the researchers found within this system, the principal, who the researchers stated lacked the time and knowledge to conduct change, as a single entity of change. The principal could delegate various parts of data collection, analysis and usage to others within the system and have others become agents of change. Using this system of change allows an educational organization to align the goals of teachers, principals and central office administrators in making data driven decisions based on the needs of all the participants, including the students. The principals need to give information and authority to teachers to collect analyze and implement the changes that are necessary for improvements.

Conclusion

No Child Left Behind changed the landscape of professional development for both general educators and special educators. Accountability is the fundamental word when examining teacher instructional practices and student achievement and although NCLB might be considered passé, it has certainly had an impact on the way schools view the importance of action research and data analysis within the realm of accountability. This new era of accountability encompasses both general and special education teachers. Additionally, the pendulum has swung back from self-contained classrooms to full inclusion of students with disabilities into the general education classrooms. General educators and special educators need to find ways to work together to meet the needs of students with disabilities.

Within this collaborative team, the need for knowledge of pedagogy and content knowledge surfaces for teachers in inclusive and self-contained classrooms. Special educators need to be more attuned to the content knowledge that is part of the general education curriculum and general educators need to be well informed on classroom management procedures that may have fallen more into the realm of special education prior to the shifting landscape of

accountability and inclusion. The question of how to provide both general educators and special educators with the information that is necessary to meet the needs of their students within this new vista of learning emerges.

Action research and data analysis fit within the current landscape of accountability and inclusion. Action research and data analysis professional development experiences encompass the new roles of both the general and special educator as a purveyor of accountability through usage of data and analysis of data to inform both academic and social change enabling the both categories of educators rise up to meet the new horizon of responsibility. Although both can be examined as individual entities when looking through the lens of professional development, upon closer inspection, they are really tied together by inquiry and analysis of data to inform change. Additionally, both can aid in the creation of collegial ties necessary to meet the unique needs of students with special needs both in and out of the general education setting. There are both challenges and benefits to their usage. If teachers are expected to use action research and data analysis, then schools need to first gain teacher "buy in" on their usage or implementation will be futile. Future research should examine ways to overcome the challenges, such as lack of time to implementation because the benefits far outweigh the disadvantages. In moving forward within this new era of change, both action research and its associate data analysis may help general educators and special educators meet the needs of their students.

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About the Author

Dr. Jennifer Suppo is the Graduate Program Director and Assistant Professor of Special Education at Seton Hill University where she teaches undergraduate and graduate courses in special education. She has taught in both autistic support and life skills middle school classrooms. Dr. Suppo has published articles on topics in the field of autism and special education.