Career Growth through Action Research: Outcomes from a Structured Professional Development Approach for In-Service School Librarians

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Abstract

The school librarian has a critical role to play in the 21st-century school learning environment. However, because of the constant changes in K–12 school environments and the difficult decisions administrators must make about allocating money to best help students, school librarians must rigorously document their professional growth and impact. Prior research demonstrates that action research is a promising vehicle for the professional growth of K–12 educators. This paper reports on a qualitative investigation on the outcomes of a year-long structured professional development approach that engaged in-service school librarians in action research. Findings demonstrated that action research gave the participants in this study a viable way to pursue professional growth. Results from thematic analyses indicate that the participants experienced improved collaboration with stakeholders, increased support for their school library programming, purposeful reflexivity (that is, intentionally thinking about their own feelings and thoughts in the context of how these could affect their own actions), and personal validation of their roles at the school. We also offer insights to practitioners who may wish to design similar professional development initiatives. Specifically, we have identified potential barriers that school librarians may encounter during the action research process, and have included recommendations for embedded scaffolds and supports for school librarians doing action research and changing their practices based on the results.

Introduction

The relationship between high-quality school library programs and increased student achievement has been well documented over the past several decades (Lance and Hofschire 2012; Small, Shanahan, and Stasak 2010). However, the position of school librarian is in a precarious and changing state (Johnston 2015; Kachel 2018). Across the United States cuts to educational funding and the wide-spread adoption of high-stakes testing in core subject areas have led many school districts and states to reduce funding for school libraries and librarians, and, in some cases, eliminate the position of school librarian (Lance 2018). At the same time, advancements in technology and digital information sources, as well as a national focus on STEM subject areas (science, technology, engineering, and math) have altered the role of the school librarian at the school level (Johnston 2012; Kachel and Lance 2018). Because of all of these shifts and changes school librarians must document and publicize the impact of their work. Thus, to secure their positions they should provide evidence of how their programs serve the academic needs of their students in alignment with school and district goals for school improvement and student achievement (Todd 2015).

Purpose

Research has consistently found that school librarians contribute significantly to improved student outcomes (Lance and Hofschire 2012; Small, Shanahan, and Stasak 2010). In addition to improving students' reading skills and test scores, critical roles of the school librarian include fostering students' development of research and inquiry skills, enhancing student reading interests, supporting teachers with curriculum development and delivery through collaboration, and integrating current technology (Small, Shanahan, and Stasak 2010). These latter roles align with the standards and guidelines recommended by the American Association for School Librarians to prepare students for 21st-century success by empowering "students to be critical thinkers, enthusiastic readers, skillful researchers, and ethical users of information" (AASL 2018, 14).

Considered to be "practitioner research," action research (AR) has been increasingly adopted by educators as a means of improving their professional practice and enhancing their role in the school improvement process (Auger and Wideman 2000; Calhoun 2002; Merriam and Tisdell 2015, 49; Stringer 2014). To take advantage of these benefits of AR, a district-level supervisor of library programs in a mid-size school district in the southeastern United States added AR to the 2016–2017 professional development (PD) agenda for the district's school librarians. The program required that all thirty-six librarians in the district conduct AR as part of their planned practice for the school year. Through qualitative inquiry, this study examines how the addition of AR as part of their role at the school influences the ways in which librarians engage with institutional stakeholders, plan and execute new or improved programs, and, influence student learning.

This study was guided by the following questions:

1. How does the use of action research influence school librarians' professional practices?

2. What are obstacles that school librarians encounter when implementing action research?

3. What supports are necessary to guide school librarians through the action research process?

Literature Review

PD for School Librarians

Providing educators with opportunities for professional growth is a critical component of improving students' learning experiences and academic achievement (Desimone 2011; Dotson and Clark 2015). As an integral part of the school community, the school librarian must frequently engage in high-quality professional learning activities. However, often school and district-wide PD opportunities are focused on meeting only the needs of classroom teachers and fail to meet the professional needs of school librarians (Moreillon 2016). Additionally, in the United States PD for teachers is still largely provided as an isolated event with a one-size-fits-all approach that fails to meet educators' personalized learning goals (Glazer and Hannafin 2006; U.S. Dept. of Ed. 2019).

After surveying a sample of in-service school librarians, Carol A. Brown, Lana Kaye Dotson, and Elaine Yontz (2011) found that school librarians favored PD opportunities that:

- provided content that was immediately applicable to their own contexts and aligned with the goals of their schools,

- allowed them time to practice their new skills in a supportive environment, and

- enabled collaboration with colleagues.

Increasingly, today's school librarian is looking for professional experiences that are personally and contextually relevant (Moreillon 2016).

Action Research for Educators

Defined

Action research is becoming a popular means for enabling educators to improve their professional practice (Auger and Wideman 2000; Calhoun 2002; Merriam and Tisdell 2015; Stringer 2014). Action research as a research methodology for educators was first introduced by Stephen M. Corey in the mid-1950s, when he formally described it as "the process by which practitioners attempt to study their problems scientifically in order to guide, correct, and evaluate their decisions and actions" (1953, 6). Many argue that traditional research is regarded as having little value to practitioners who fail to see a personal connection between the results of empirical studies and their own localized practices (Corey 1953). In contrast, AR allows educators to study their own practice and local context, and enables them to assess the effectiveness of their own programs and practices to meet student and staff learning needs (Calhoun 2002).

Action research is considered an iterative process that typically cycles through the phases of identifying a problem of practice, collecting and analyzing data, and then modifying practices based on those results (Hendricks 2013; McNiff 2002). Reflection is a key component of the process, as ongoing results are continuously used to modify and enhance practice (McNiff 2002; Stringer 2014). Other major components of action research are the engagement of participants as co-investigators, the use of multiple forms of data, and the recognition of the positionality of the lead investigator as an insider or outsider in the context of the group being studied (Herr and Anderson 2014; Merriam and Tisdell 2015).

Applied by Classroom Teachers

Action research has increasingly been adopted by teacher preparation programs and in-service classroom educators as a means to improve their professional practice and enhance their role in the school improvement process (Auger and Wideman 2000; Calhoun 2002). Rita Hagevik, Mehmet Aydeniz, and C. Glennon Rowell (2012) found that action research was an effective strategy for pre-service teachers to learn critical self-reflection skills that enabled them to better address a diverse range of student needs. Likewise, studies on the outcomes of structured action research with in-service teachers have demonstrated positive results such as increased teaching efficacy (Cabaroglu 2014), better on-the-job problem-solving skills (Briscoe and Wells 2002), and increased pedagogical and content knowledge (Goodnough 2016). Furthermore, Marilyn Cochran-Smith and Susan L. Lytle have argued that action research can be a powerful tool that empowers practitioners to become "agents of change" for effective school reform (2009, 118).

Applied by School Librarians

Fewer empirical studies have investigated the value of action research for educators in a position such as school librarian (Jones and Dotson 2010). School librarians have markedly different job responsibilities than classroom teachers. School librarians must negotiate with various stakeholders within their working environments to meet their own teaching and learning needs as well as the learning needs of their students. A few studies do show that AR has great potential to aid school librarians in developing critical skills such as reflective practice and school-wide leadership abilities (Ballard 2015; Gordon 2006; Robins 2015). A study by Jennifer Robins found that in-service school librarians who conducted AR as part of their graduate program studies demonstrated that it offers a practical and valuable approach for enhancing professional practice (2015). Carol Gordon found AR to be particularly effective when integrated as a part of a structured PD program (2006).

Because school librarians must strive to continually adapt their school library programs to meet the ever-changing needs of their students and school environments, AR seems like a viable tool to enable them to meet these goals. Given the potential importance of PD and AR for school library professionals, we were motivated to explore how school librarians planned and implemented action research studies aimed at improving student learning when the librarians were supported by ongoing, experience-based PD opportunities.

Methods

Study Context

The changing landscape for school librarians motivated us to explore ways that school librarians in one district could rigorously document the work they do to foster student learning and influence student outcomes. Therefore, we (a district supervisor of school librarians, an educational researcher who was formerly a school librarian, and another researcher who specialized in qualitative methods) teamed up to design a year-long PD initiative in which each school librarian was required to engage in his or her own AR study throughout the 2016-17 school year.

The action research PD program was integrated as part of monthly meetings throughout the school year for all school librarians in the district. The action research PD sessions were typically

scheduled for two or three hours of the full-day district meetings. We primarily facilitated all of the sessions. Three other members of the district media and technology staff who were familiar with AR methodology also assisted with facilitation of the PD when additional support was needed.

To build context and rationale for the AR projects and related PD, we provided the school librarians with a full day of PD activities before the end of the previous school year. One of the activities was inspired by the work of Ross J. Todd (2015) and his advocacy of school librarians engaging in evidence-based practice. The activity at the end of the previous school year challenged school librarians in the district to answer four questions (see figure 1) about their library program's impact on student achievement. The activity also underscored the need for valid data derived from the librarian's own practice for two purposes: 1) to improve their practices through a continuous cycle of planning, action, and reflection, and 2) to illustrate the library program's impact on student growth. Then AR models and examples were presented, and the librarians were given time to practice writing research questions for common areas of need. At the conclusion of the previous year-end PD, they were encouraged to continue reflecting upon their practices over the summer so that each could identify a specific need to be addressed through AR during the upcoming school year.
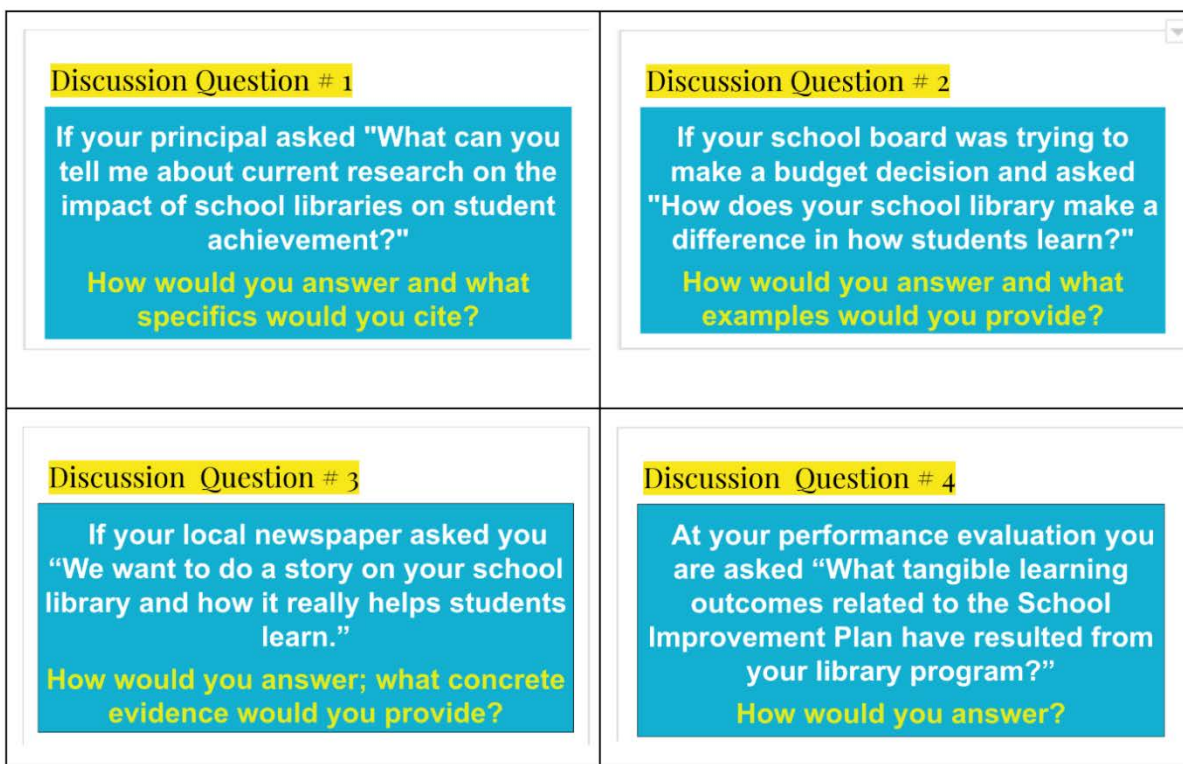

Figure 1. Discussion question slides from PD.

Launch, Schedule, and Expectations

At the first meeting of the 2016–2017 school year in August, the school librarians reviewed the AR process and engaged in a more in-depth discussion of the steps at the end of the previous school year. Additionally, they were each given access to a digital template that outlined the steps of the AR process, contained links to supplemental resources, and could be used as a tool to document each phase throughout the year. At the end of this meeting, librarians were given time to brainstorm ideas with their peers.

Between meetings, the school librarians were expected to work on their AR projects independently. However, they were encouraged to reach out to PD facilitators for individualized support as needed. Prior to each meeting, we e-mailed each of the librarians a link to an online survey so they could assess their individual progress. (Appendices B and C contain the survey prompts.)

We then used this data to inform the design of each PD session based on what supports the librarians needed. For example, at an early meeting "action research tips" were shared with the group when survey responses revealed that several of the librarians were still having trouble conceptualizing at least some component of AR. At other times the formative data was used to help differentiate supports or to structure the librarians into working groups (for example, by topic area or stage of the action research process).

At every meeting, time was provided for the school librarians to work in groups to ask questions, solicit advice, and share ideas with peers and facilitators. As a culminating activity, the second half of a full-day meeting in April 2017 was devoted to the school librarians' sharing their action research results formally with their peers. A timeline of the PD sessions held throughout the year and their agendas are detailed in table 1.

Table 1. PD timeline and agendas.

Date	Duration	Agenda
Spring 2016	All day	Foundational meeting: Introduced the concepts evidence-based practice and action research; provided the rationale for the importance of action research as reflective practitioners
August 2016	Half day	More in-depth exploration of the action research process; digital template shared; time provided to reflect and brainstorm ideas with peers
September-November 2016	2–3 hours	Planning and discussion time for action research projects with small groups of peers and facilitators grouped by topic area (for example, STEM learning, increased reading achievement, flexible access to library)

Date	Duration	Agenda
December 2016	3 hours	Facilitators shared tips for action research; school librarians grouped by stage of action research process to work with peers and a designated facilitator
January-March 2017	2–3 hours	School librarians had time to work on their projects either in groups or individually with facilitator assistance provided as needed
April 2017	Half day	School librarians shared their action research projects with their peers and facilitators

Participants and Their Students

All thirty-six school librarians employed in the district participated in the PD and the research study. The school district is considered medium-sized and is located in the southeastern region of the United States. Most of the schools in the district are classified as "high-needs schools" and are located in rural areas. District proficiency rates on 2017–2018 end-of-grade reading and math assessments are 51.4 and 50.8 percent respectively. In addition, the majority of students served by the schools are from demographic backgrounds that are traditionally marginalized in K–12 schooling experiences (for example, low socioeconomic status, African American, Latinx, English language learners). Of the thirty-six librarians, fifteen were at elementary schools (grades K–5), seven were at middle schools (grades 6–8), eight were at high schools (grades 9–12), and six worked at schools that served students in grades kindergarten through eighth grade. These participants varied in years of experience as a school librarian from being early in their careers to being seasoned professionals with decades of experience. Thirty-two of the participants were employed as the sole school librarian at their respective schools. The two largest high schools employ two school librarians. Of those four participants, two worked individually on their own AR project, and the other two worked collaboratively on a project.

Table 2. District student demographics in 2016–2017.

Description	Total/Percent
Total students	23,432
African American	47.0%
White	35.7%
Latino	11.6%
Multi-race	3.7%
Asian	1.5%

Description	Total/Percent
Indian/Native American	0.2%
Pacific Islander	0.1%
Eligible for free or reduced-price lunch	61%

Data source: National Center for Education Statistics 2019

Data Collection

Several data sources were used to address the research questions. The research team used data from open-ended surveys and exit tickets, researcher field notes, the school librarians' action research artifacts, and in-depth semi-structured interviews with six of the thirty-six participants. The six participants were selected based on the quality of their AR projects as judged by their peers through a final exit ticket and their availability to participate in the interviews.

In addition to the formative surveys that were sent to the school librarians prior to each PD meeting throughout the year-long PD, the school librarians were asked to fill out an exit ticket at the end of each PD session. The exit ticket asked: "In a few sentences, describe the progress you made today on your action research project?" Participants also filled out an exit ticket at the final meeting when they were asked to nominate a peer to present at an upcoming meeting of district principals. All exit tickets were used as data sources. A final survey was sent to each participant after the final PD session. See Appendix D for the survey.

Each school librarian was asked to create an artifact of his or her AR projects to share at the final PD meeting of the school year. The format of each final product varied. However, the majority consisted of electronic presentations that were displayed on laptops and tri-fold boards with paper images and text. All of the school librarians shared these final artifacts with the research team for analysis.

At the conclusion of the AR projects, six of the school librarians were asked to participate in individual post-PD interviews. The interviews were conducted by the two of us who are researchers. We used a semi-structured interview protocol and each interview lasted between thirty and forty-five minutes. Interviews were audio-recorded and transcribed for analysis. The full interview protocol is included in Appendix A.

Data Analysis

A constant comparative approach was used to analyze each data source independently for the purpose of answering the first research question: How does the use of action research influence school librarians' professional practices? The team began with first-cycle, manual open coding to look for and document emergent themes that seemed to address the research question (Miles, Huberman, and Saldana 2014; Patton 2002). As our team developed a codebook and shared notes, we looked for agreement among the coders and areas where codes diverged. Ultimately, we grouped codes into categories that later emerged as four major themes (Bernard and Ryan 2010; Miles and Huberman 1994; Saldana 2013).

A similar approach was then applied to all of the data sources for a second round of analysis to answer the remaining two research questions: What are obstacles that school librarians encounter when implementing action research? and What supports are necessary to guide school librarians through the action research process? However, the structure of these two research questions on the surveys and the interview protocol enabled a more-focused approach to analysis as we noted reoccurring themes within the participants' responses to these questions.

Findings

Introduction

Considering that the goal of any PD initiative is to enhance an educator's ability to perform his or her job, the primary focus of this investigation was to evaluate the efficacy of the approach in the context of the first research question: How does the use of action research influence school librarians' professional practice? Findings that aligned with this research question centered around the four themes listed in table 3 and discussed in the subsections that follow. These themes have important implications for the future of the school library profession (see table 3). All names used in the finding and discussion sections are pseudonyms to protect participant confidentiality.

Table 3. Outcomes of action research process and implications for practice.

Theme	Implication
enhanced collaboration with stakeholders	AR stimulated relationship-building among students, teachers, and community members essential for future growth of the school library program.
increased support for library programs	AR can be a vehicle for program advocacy as school librarians were able to secure resources and support through project implementation.
leveraging data to inform practice	School librarians learned how to better use data to inform ways to enhance their programs and professional practices.
promoting reflexivity and validation	Data analysis through AR promoted self-reflection and served as an important source of professional validation.

Enhanced Collaboration with Stakeholders

Analysis of all of the data sources revealed that participating in AR provided the school librarians an opportunity to increase their collaborative efforts with multiple stakeholders (for example, teachers, students, administrators, parent groups) at the schools and even beyond. One participant worked with a counterpart in Switzerland to execute a global citizenry program for her students.

We found the AR process to be a highly effective tool for these school librarians to engage in relationship-building, as every one of the AR projects required collaboration and coordination at some level. These levels of collaboration were varied; some of the school librarians coordinated with teachers at a minimal level to schedule time with certain groups of students for data collection purposes. However, many participants worked directly with colleagues to design and execute new programs at their schools.

A good example of this high level of ongoing collaboration was Annette's AR project in which she worked with all of the eighth-grade teachers to design and implement a reading game that rewarded students for reading nonfiction books. Annette described how she initially worked with teachers to identify a problem of practice: "I met with eighth-grade science and social studies teachers, and they said, 'Hey, we want our kids to read more nonfiction'." Annette then worked with all of the eighth-grade teachers to get their assistance with mapping books in the school library's collection to the curriculum. Reading one of these books would earn students a square on the game card. Annette explained that working with these teachers was pivotal in helping her to identify existing books in the collection that were directly tied to the eighth-grade curriculum, as well as helping her to strengthen the library collection by pinpointing gaps in certain areas. Annette commented:

> [The project] helped me being [in a new position], sitting down during the summer with the science and social studies teachers and mapping out each category and seeing those numbers and seeing what books we needed to order. I wasn't a science or a social studies teacher before, so having them come in and help me out was nice because they are the experts of what they want the kids to read.

Annette continued to collaborate with these teachers throughout the AR cycle as she collected anecdotal data from them to improve the project. She described:

> At mid-year point, we all were sort of reflecting. The English Language Arts teachers said, "Let's add some fiction." The math teacher [said], "Let's add some math." So we did add a math [choice] for the third and fourth marking periods. And then that free space [on the game card] became any nonfiction or fiction book. And we saw a definite increase in participation from the first semester versus the second semester.

While all school librarians are expected to work directly with students to meet their learning needs, the projects coupled with AR fostered more purposeful interactions with students and kept students engaged. Nearly all participants indicated that they worked closely with student groups to form learning communities and/or facilitate student-led projects. Some of the participants designed their projects to support the learning needs of at-risk students. Participants who did work directly with at-risk students expressed appreciation for having the opportunity to work with students with whom they sometimes have few opportunities to interact.

Marlene, an elementary school librarian, worked with fourth-grade and fifth-grade teachers to identify students who had consistently been showing little interest in reading and low reading test

scores. These students were invited to a new walking club in which students would listen to audio-recorded books as they walked. Marlene would meet with the students twice a week, provide them with mobile audio players, and together they would walk around the playground and gain exposure to popular books. Marlene expressed her gratitude for having this opportunity to focus on high-risk students with whom she would not typically interact because previously they had not been regular visitors to the library. By tracking the students' reading data through an online software program that monitors students' reading practices, Marlene saw that majority of the participating students showed overall growth in their reading engagement and reading levels. She shared, "I love being able to focus on a small group of students and make a difference in their lives and learning."

Other participants, like Annette, who targeted problems with larger groups of learners appreciated being able to see more students and develop stronger relationships with them. For example, Annette shared, "It was cool to see the motivation in the kids....they were constantly in the media center and excited to show [my assistant] and I their [game] cards."

Increased Support for Library Programs

Results indicate that in many cases participation in the AR projects enabled several of the school librarians to get more support for either the programs that were the focus of their AR or for their school library in general. In some instances principals afforded funds to make the projects possible once the school librarians pitched the idea. Annette explained how this led to ongoing commitment from her principal, "We couldn't have done this without Mr. [Principal]. He almost gave me $4,000 worth of books in August. And has already said to me, 'Hey, focus in on what you need for next summer and we'll do it again.' "

Serena was able to leverage outside community support for her project, a new robotics club, when she shared some of the mid-year data results at a local rotary club meeting and obtained a grant to further support her efforts. Heather, who formed a boys' book club aimed at motivating at-risk middle school boys' reading interests, was informed by her principal about unintended results of her project. He had found data to indicate that the student members' incidences of behavior infractions had decreased and their school attendance had increased throughout the year. He is now arranging for her to present the results of her program next year at a full staff meeting and has committed to additional funds to sustain the project.

In addition to improved financial support, some of the school librarians noted an overall increase in general support of their library programs and greater recognition for their capabilities as a school librarian. An analysis of the focus areas of all of the participants' AR projects showed that many of the school librarians used the opportunity to target student achievement beyond increasing reading test scores or other more traditional librarian roles. These projects covered a variety of focus areas such as development of 21st-century skills (e.g., information literacy, digital citizenship, and creativity), improved attitudes relevant to specific academic disciplines such as STEM or social studies, and an increasing awareness of global citizenship. By focusing on areas that are out of the scope of the traditional and stereotypical role of a school librarian, in many cases the projects attracted the attention of school leaders, faculty, and staff. As Serena explained, her principal is changing the library curriculum that she teaches next year to include coding and programming:

> "I think because of this [broad focus], Mr. [Principal] wants me to take on computer science in my classes. So my curriculum is changing. I'll be still be doing literature and

things like that, but I'm adding in more computer science skills. It's been very helpful in helping me show my worth other than just this reading teacher. I don't just sit here and check out books."

Thus, AR enabled these participants to not only introduce projects that benefitted students, but also to increase visibility of their programs as they engaged in indirect advocacy that enabled others to recognize librarians' contributions to the mission of the schools.

Leveraging Data to Inform Practice

For all of the participants, the AR process presented important learning experiences for the school librarians as they were able to better use data to improve their own professional practices. In addition to enabling them to collect more-purposeful data, the data results afforded them with opportunities to engage in more-targeted programming, better documentation of results, and the ability to evaluate their programs to optimize future planning and implementation efforts.

While school librarians regularly use data such as circulation statistics and reading test scores for program evaluation, the PD AR process encouraged them to go beyond these traditional data sources and collect qualitative and quantitative feedback from students and teachers. In particular, several of the librarians stated that, although they had been familiar with quantitative data, over the year-long PD project they learned how to collect and use qualitative data to enhance their practice and improve student outcomes. Heather relayed this experience to us:

> My biggest eye opener was that results and data can come from places where I wasn't really looking for it to start with. Because I was so focused on their [reading] scores, that it wasn't until somebody else who looked at the project, my principal, and several of the media coordinators at the showcase thing [asked] "What were the students thinking and how did their behavior change?" And the fact that [students] were actually doing the work and completing the work; I had not looked at that. I had not thought about that. I was just so focused on the actual [reading] data.

In many cases the PD AR process enabled the participants to collect more-deliberate and informative data as Pam described, "It made me think about what should I be collecting for data, what do I want to know in terms of what I want this program to impact." Pam further explained that this forward thinking motivated her to put more investment into her global citizenship program: "I put a lot more effort into it since I was measuring it. I wanted to see results!"

Many of the librarians reported that better documentation of library program results led to additional benefits. For example, two of the librarians used early data results to apply for and receive grants to further their programs. Additionally, some of the participants noted that they were able to share their projects and the resulting data with administrators as part of their annual performance reviews. At a local educational technology conference Pam plans to share information about the success of her electronic global pen pal program.

The data that many school librarians collected and analyzed enabled them to apply a new evaluative lens to their work, and helped to inform modifications and additions that they plan to make to their programs. Heather shared her ideas with us for improving the boys' reading groups, "I really want to follow this same group of kids next year into eighth grade and do something similar, but instead of using texts that are at their current reading level, use the grade level texts that they should be on and see if we can grow them up to the level they are supposed to be on." Likewise, Jacqueline explained how she plans to incorporate changes to improve her

program to teach high school seniors information literacy and research skills. "It might need to be a little more of a continuous process. We did it [taught the skills] up front, and we need to provide additional support throughout the process checking in with the students throughout the school year."

Reflexivity and Validation

Our analyses found that through conducting AR, the school librarians were able to collect valuable data that enabled them to reflect on and enhance their professional practice in several ways. The result of this reflexivity was a stronger validation of their role at the school and how it was impacting students. As one librarian explained, "[The PD and the AR project] made me think about how all of the other things that I am doing, how [are they] really affecting the students?" Furthermore, the successes that these participants experienced with the programs that they implemented as part of their AR projects were personally and professionally rewarding.

Several of the librarians remarked in their interviews that they appreciated having the time to critically reflect on their practices. Serena's comment captures this sentiment, "I'm glad we did the final project because it forced me to look at the data and really think about what I was seeing." She went on to explain, "I do a lot of data collection anyways, but the analyzing, I never [had] the time to analyze it." For Lisa, that reflection enabled her to identify a problem of practice, "Making me kind of reflect, it does make you stop and think about your program and what is a problem. Instead of just continuing to deal with the problem or complain about it, what is something that can be done about it?"

For others, the opportunity for reflection was beneficial for validating their efforts. Jacqueline explained, "Some of the results provided validity of what I was doing and the time I was taking [students] from the classroom to be able to provide that instruction." She went on to explain that the results illuminated how to improve the program to better meet students' needs for next year. "And [the experience has] given me some ideas on what to modify and tweak based on those results to be more effective to help make students more successful and make better choices in what they're using for their research."

Almost all of the participants noted that they achieved some level of success with the programs that were the focus of their action research. This notable success was important for their professional enthusiasm and motivation, as Marlene noted, "I am excited about the impact I can make with struggling readers, especially in working to close the gap [for] our low-performing subgroups." Another librarian Kelsey, who had added a bilingual section to her library for her English language learners, was also excited to share her results with us, "I was happy with the results. Most students' [reading] scores grew. They met their [reading] goals for the first time this year. I want to continue this research and see where it goes."

This enthusiasm was especially evident at the final showcase event when all of the school librarians were able to share the findings from their AR projects with their colleagues. Heather was overheard telling her peers that the boys in her reading group eventually didn't care about participating in the reward makerspace activities she had designed to incentivize their reading; "They wanted to keep reading!" Hearing about the successes of one another's projects proved to be a valuable opportunity for all of the participants to share ideas and see the potential of what they can accomplish at their own schools. Below are some examples from exit tickets filled out by each school librarian at the final project showcase event when they were asked to nominate a colleague to present at the district principals' meeting.

"MakerSpace is a great way to show the Media Center moving in the direction of 'New Ways' of technology."

"Shows how the librarian can reach outside of the Media Center and connect other subjects."

"This proposal addresses the needs of one of the county's lowest-achieving subgroups, highlights effective collaboration between a school librarian and teacher, and shows the impact a SL can have on student learning."

Thus, sharing and celebrating their collective successes was an important part of this process.

Obstacles and Support Measures

Introduction

The findings reported in this section have practical implications for others who may wish to implement a similar PD initiative. The two research questions that guided this component of the inquiry sought to illuminate the barriers and challenges that the school librarians encountered, as well as any resources and supports that were needed for success. The questions were:

What are obstacles that school librarians encounter when implementing action research?

What supports are necessary to guide school librarians through the action research process?

Challenges

Although AR served as a catalyst for many new and exciting things, the librarians did have some challenges. One of the problems that was noted was that although half of the participants were able to either write grants or obtain funds from their schools to financially support their projects implemented for the year-long AR PD, others did not have sufficient resources to adequately implement their projects. Thus, they were forced to creatively work with little or no budget.

When asked on formative surveys during the school year about obstacles that they had encountered, a lack of time was the most frequently cited barrier. Responses like the following were not uncommon, "Time, training a new assistant, being pulled for various duties, school website, etc. Not trying to make excuses, but very overwhelmed this year."

In addition, due to busy and often unpredictable school schedules, some of the librarians had trouble coordinating with teachers in their buildings to implement participants' designed projects. Post-project surveys from two of the school librarians depict how this lack of coordination ultimately led to unsuccessful projects.

"You need reliable partners for successful collaboration. I did not have a reliable partner, so this was not a valuable experience this year."

"The data shows that learning occurred; however, due to behavior issues with classes and the fact that children were constantly pulled for testing or absent, the growth in learning wasn't very much."

Although having the opportunity to work with data proved to be helpful for many participants, a few of the librarians struggled to understand how to collect and use meaningful data and, at first,

felt the learning curve was a bit steep. This feeling was something Jacqueline was able to articulate to us in her interview, "I was a little apprehensive in the beginning, just from the lack of knowledge. When you go through courses in college you think 'research, okay, I need a control group, I need to do this, I need to do that.' Once I got that [model] out of my brain I was able to move forward and figure out what to do."

Likewise, a few of the school librarians noted that they would have liked more training on how to design surveys and how to collect and analyze more-reliable data. At least one librarian commented being disappointed participants didn't get to "share research in a more formal setting." This suggests that planning for future AR-focused professional development efforts should include thinking about ways to encourage participants to share results beyond their immediate school librarian colleagues.

Supports

Our data suggests that participants found useful some supports embedded in our PD approach, helping participants carry out their AR projects and understand the AR process itself. We share insights from the participants about ways the structured PD sessions aided their efforts. Most critically, the PD was seen as a valuable opportunity to learn the steps of the AR cycle in a supportive context.

Several of the participants shared that they found the structured, step-by-step presentation of the AR process through the PD design a useful schema for novices to conceptualize its cyclical nature. They appreciated being furnished with an initial template that guided them through the explicit steps of the AR cycle and that could also be used to document each step. Heather explained in her interview how she approached the process as someone new to AR, "Basically I just went off of what [the district supervisor] had sent us, the questions that she sent, and the plan [of] what she told us to follow—that made sense. It was very easy to follow." Pam echoed these sentiments, "I loved the way we did it sort of step by step. First think about this, okay next once you've identified that, now think about that, or this piece."

Lisa commented that she appreciated that the PD facilitators emphasized AR as a process to identify a problem of practice. "I like how it was pitched as 'what is a problem you need to address?' That was really helpful in making me reflect on a topic to address."

The time provided at each meeting for the school librarians to discuss their projects with the facilitators and their peers were viewed as important resources. Serena explained, "The best thing for me was just talking this through with [the facilitators] during our meetings. And talking to each other." In particular, as seen from the formative responses below, the participants appreciated being able to meet monthly to work in small peer groups on the specific stage of the research process with which they were currently engaged and to interact with other participants with similar project topics.

> "After talking with my group I am taking a new angle."

> "I was able to work with others who are formulating a survey. I was able to make the survey more concise so that the results are easier to understand."

> "I'm really interested in adding [my colleague]'s idea about incentives."

> "Realizing I am not alone in the 'wanting to start over' and tweak it process!"

"This time to run ideas by other [librarians] working on similar subjects was very helpful!"

"Being able to talk about it with peers was very helpful with troubleshooting some issues I was concerned about."

"Great help from my team! They gave me good questions that I could use for pre data and post data."

One respondent commented that AR was "Scary at first but once started it is an easy process." This comment suggests that, as time went on, participants' confidence in their abilities to conduct AR and find usable results increased.

Discussion

Introduction

Findings from this study helped to extend results from earlier investigations on how AR can positively influence school librarians' practices and their roles within the schools (Ballard 2015; Gordon 2006; Robins 2015). In particular, we found AR to be extremely useful for providing evidence of how school librarians uniquely contribute to student success in 21st-century learning environments. Additionally, this study offers advice for embedded structural supports within a PD design to facilitate positive learning experiences for participants. This study also identifies potential challenges. These results have important implications for school librarians' professional community because AR can become a vehicle by which the school librarian is perceived as an integral member of each local school community—an important benefit in these unsettled times.

Collaboration

Collaboration with classroom teachers has long been seen as an important practice for school librarians to improve student learning outcomes (Copeland and Jacobs 2017; Gavigan 2012; Lance, Rodney, and Hamilton-Pennell 2000). School librarians need to demonstrate their abilities to serve as instructional partners in 21st-century schools (Montiel-Overall and Jones 2011). Fortunately, the AR process has been shown to be a promising strategy for demonstrating these competencies. Participants in our study reported that the execution of their AR projects facilitated increased collaborative opportunities with various members of their school communities (for example, teachers, students, administrators).

The collaboration with teachers and other faculty also positioned those individuals to explicitly see how library programs met the students' academic needs. As a result, members of the school community strengthening their support for the programs and the school librarian position at their schools. Additionally, because the participants purposefully engaged with stakeholders to collect data and feedback on the design and execution of their AR programs, those programs more-precisely met teacher, student, and school needs.

Advocacy

Advocacy for local school library programs is now seen as critical to the stability of the school library position (Todd 2015). Through the AR process these school librarians gained important

knowledge about their practice and their programs that ultimately led to more-effective programming. Simultaneously, they became equipped with robust data and evidence that enabled them to garner increased support for their library programs. Todd (2015) has argued that "local evidence that showcases the work of individual school libraries" is needed to augment the national data that correlates quality school library programs with increased student achievement. Dissemination of results and evidence that is generated by school librarians' AR projects to larger audiences (for example, school, district, beyond) can help to fill this void.

Habit of Reflection

Furthermore, participants learned to actively engage in deliberate reflection, which Jami L. Jones and Kaye B. Dotson (2010) have argued is an important disposition for school librarians to develop and model for their students as they learn inquiry skills. Our study also suggests that the reflection component of the AR process became an important precursor for enabling our participants to feel valuable and recognize the potential that they have at the school level to impact students' well-being. Participants were able to conceptualize an enhanced role for themselves within the larger academic and social culture of the school.

Support for STEM

Mega Subramaniam (2015) challenged school librarians to collect evidence on how they contribute to student learning in STEM subject areas. In this study, the action research PD provided an opportunity for many of the school librarians to collect and analyze data on how their efforts contributed to STEM literacy, affording them an opportunity to envision their own worth beyond impacting reading scores. These experiences will be necessary for school librarians as they continue to navigate the waters and find their niche in the changing learning environments of 21st-century schools.

AR in PD

Finally, this study implies that AR has practical value as a PD approach for in-service school librarians. As Susan Ballard has argued, action research provides essential tools for school librarians to "ask critical questions, gather and navigate through rich evidence, and transform what [is] learned from evidence into action" (2015, 45). Because AR is situated within the practitioner's context, the participating school librarians were able to choose problems of practice that were important to their schools. This local focus is in contrast to traditional PD approaches in which the content is determined by external sources and often fails to target local school needs (Zeichner 2003).

Extensive research on the effectiveness of in-service teacher PD has found that sustained and supported models are much more effective than one-time, isolated events (Hennessy and London 2013; Martin et al. 2010). Through participants' involvement in an AR project over the course of a school year, participants were supported by other school librarian colleagues and support personnel. As the school librarians reflected on results, this support motivated them to become more invested in what they were doing. The PD also provided a way for school librarians to share ideas with their peers, serving as inspiration for other school librarians' future programming efforts.

Challenges and Supports

The AR process can also pose challenges to practitioners. These challenges deserve consideration by those who wish to adopt AR as formal PD so that necessary supports can be embedded. In this study, some obstacles cited by the participants that hindered successful execution of their projects included:

- lack of time due to other professional responsibilities,

- an inability to effectively collaborate with colleagues in their schools to coordinate implementation,

- inconsistent school schedules, and

- a lack of funds for needed resources.

Therefore, securing the support of school administrators may be prudent before district personnel begin PD efforts so that essential school-level support for the school librarians is available.

In terms of challenges posed by the AR process itself, our results demonstrated that, while school librarians have already had decades of experience using data (such as reading test scores) to support their current style of programs, they may need support in how to collect and use nontraditional data sources such as qualitative interviews and surveys of stakeholders.

Study Limitations and Future Research

This study has limitations that provide opportunities for future research. First of all, this study followed these school librarians through only one year of the AR process. Our research indicated that these participants became more confident with the process over the course of the school year. Future longitudinal studies would be of value to understand how AR can become a more efficient, effective, and regular component of school librarians' professional practices.

We also encourage more practicing school librarians who engage in AR to share results more formally and widely, as Todd (2015) argued that these local narratives are much needed as a form of professional advocacy for school librarians. Practitioners' results can also be significant additions to the current knowledge base of how school library programs contribute to student success in today's learning environments.

Implications and Conclusion

This study indicates that AR is not only a feasible but also an effective strategy for equipping school librarians with the skills necessary to meet 21st-century professional demands. While other studies have investigated AR as a PD approach only to enhance practice, this study also provides an in-depth characterization of the many ways that it helped these in-service librarians expand their roles within the schools to meet current teaching and learning needs. The participants in this study successfully engaged in the AR process and became energized to try out and refine new programs that enabled them to get more involved and integrated within these evolving learning environments.

The benefits that resulted from employing the AR process have important implications for the design of PD models for in-service school librarians. Educators of pre-service and in-service school librarians should provide opportunities for school librarians to regularly engage in AR.

These educators should also provide ongoing scaffolds throughout the process with the goal of building the skills school librarians need to make AR a regular component of their professional practice. Educators and supervisors of school librarians can provide opportunities to collaborate and share ideas with colleagues, as well as to disseminate results to larger audiences. If empowered and given the appropriate resources, school librarians have the potential to impact student achievement at their schools in unique and creative ways that will prepare students for 21st-century success.

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Appendix A. School Librarian Interview Protocol

1. Can you describe the action research project that you completed this school year?

2. Why did you decide on this particular problem to investigate?

3. What challenges did you encounter while trying to conduct your action research?

4. What support or resources were helpful to you in conducting your action research?

5. Were you able to share your action research project results with an audience outside of the district media coordinators? (e.g., your administration, teachers at your school)

6. What did you learn or gain from this process?

7. What actions (if any) will you take based on the results of your action research study?

8. Are there any other comments that you would like to share with us about the professional development that guided you through the action research process or the action research process itself?

Appendix B. Fall Action Research Status Survey

What is your action research topic or focus area?

What stage are you at in your Action Research project?
- o   Determining my goal/forming a research question
- o   Consulting current research/developing an action plan
- o   Assessment/data gathering
- o   Implementation
- o   Analyzing data and preparing results to share

Explain any obstacles you have encountered.

What steps do you feel you need additional support or instruction on?
- o   Determining my goal/forming a research question
- o   Consulting current research/developing an action plan
- o   Assessment/data gathering
- o   Implementation
- o   Analyzing data and preparing results to share

Appendix C. Winter Action Research Status Survey

What is your action research topic or focus area?

What stage are you at in your Action Research project?

- o Determining my goal/forming a research question
- o Consulting current research/developing an action plan
- o Assessment/data gathering
- o Implementation
- o Analyzing data and preparing results to share

Explain any obstacles you have encountered.

What would help you to feel more prepared to share your project at the April PD meeting?

- o Time to brainstorm with peers at the Feb. meeting
- o Time to work on my own at the Feb. meeting
- o I would like to meet one on one with [district supervisor] at another time.
- o Nothing, I feel good about my progress.

If you chose 1, 2, or 3 on the previous question, please explain what you would like to discuss or work on.

- o Determining my goal/forming a research question
- o Consulting current research
- o Developing an action plan
- o Assessment/data gathering
- o Implementation
- o Analyzing data and preparing results to share
- o Preparing results to share

Appendix D. Final Action Research Survey

Title of your Action Research Project:

Please provide a brief explanation or description of your project.

Which standards does your project exemplify?

Share a link that contains your supporting documents. If you used the planning template I shared with you in August, include that.

Please share any conclusions or lessons learned from the results or process of your action research.

What are your thoughts on doing future Action Research or assisting teachers in conducting Action Research?

Cite This Article

Boulden, Danielle Cadieux, Lauren Pellegrino, and Joanna Gerakios. 2019. "Career Growth through Action Research: Outcomes from a Structured Professional Development Approach for In-Service School Librarians." <http://www.ala.org/aasl/slr/volume22/boulden-pellegrino-gerakios>

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