Evaluating the Effectiveness of Professional Development in Virginia

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May 2020

The Frank Batten School of Leadership & Public Policy

The Virginia Department of Education

UVA | FRANK BATTEN SCHOOL *of* LEADERSHIP *and* PUBLIC POLICY

VIRGINIA DEPARTMENT OF EDUCATION

Acknowledgements

I would like to thank the Secretary of Education, Mr. Atif Qarni, the Deputy Secretary of Education, Mrs. Holly Coy, and the Virginia Department of Education for their constant support and feedback throughout this research and writing process. Secretary Qarni and Deputy Secretary Coy offered a strong vision for this project from the start and made connections with the Virginia Department of Education (VDOE) to make this report possible. I would like to offer a special thank you to Dr. Tina Manglimont and Dr. Jennifer Piver-Renna for their assistance developing the survey and administering it to all 132 divisions. Dr. Piver-Renna not only helped me align stakeholders to finalize the survey questions, but also provided ongoing support during the data analysis phase. Thank you to Dr. Piver-Renna for your expert research assistance and review of my findings.

I would like to thank my APP advisors, Professor Andrew Pennock and Professor Jim Wyckoff, for their honest feedback and constant encouragement. Both Professor Pennock and Wyckoff challenged me in new ways, provided constructive criticism, and pushed me to do my best work. A special thank you to Professor Wycoff for advancing my research and data analysis skills and helping me rethink the entire design of my APP to ensure it provides a valuable analysis to both my client and the greater education community.

I would like to thank my peers for supplying both motivation, support, and company as we all navigated this research and writing process. Thank you to my peers for challenging me in new ways and offering me new perspectives and ideas that furthered my studies. I am beyond thankful for my closest peers who sacrificed time and made the effort to proofread, brainstorm, and think outside of the box with me.

Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Honor Statement

On my honor, I have neither given nor received unauthorized aid on this assignment.

List of Acronyms

VDOE: Virginia Department of Education

BOE: Board of Education

SOA: Standards for Accreditation

PD: Professional development (also referred to as professional learning)

NCLB: No Child Left Behind

ESSA: Every Student Succeeds Act

WWC: What Works Clearinghouse

IES: Institute of Education Sciences

RCT: Randomized Controlled Trial

QED: Quasi-Experimental Design

PLC: Professional Learning Community

VaLIN: Virginia Learning Innovation Network

List of Tables and Figures

Table of Contents

Executive Summary

Professional development (PD) for teachers is a key policy lever for the Virginia Department of Education (VDOE) to utilize in order to improve public school systems across the state. It's critical to provide educators with the support and training necessary to improve their schools and students' performance. **However, VDOE is unaware of the current PD opportunities across the state and whether or not they offer effective learning opportunities for educators, change teaching practices, and align with statewide initiatives.** It's critical VDOE gains a better understanding of professional learning activities occurring within divisions considering teachers are required to receive a total of 270 hours of PD over 10 years in order to meet licensure requirements. Large sums of money are allocated by local school divisions and VDOE each year, yet there's no evidence that the PD administered is effective and/or of high-quality. This is problematic considering about $2.5 billion federally funded dollars are spent on PD each year (Layton, 2015).

In order to identify the needs of local divisions and ensure the allocation of resources goes towards effective PD programs, a survey was designed and administered to local school division Superintendents in all 132 Superintendent offices across the state. The information gained through this survey will inform VDOE strategic planning efforts and improve the effectiveness and relevancy of state-supported professional learning opportunities. For the purposes of this report, effective PD is defined by that which improves teacher instruction and classroom practices and improves student academic achievement. Researchers have developed a consensus that in order for PD to provide effective learning opportunities for teachers and actually change practices and improve academic achievement, it must include these five components: content focus, active learning, coherence, ongoing duration, and collective participation (Desimone, 2009).

We achieved a 65% response rate on the survey of PD in Virginia school divisions, which allowed us to move forward in analyzing results. Overall, 10% of divisions seem to be engaged in what rigorous research deems effective PD. The divisions that make up the 10% figure provided all of the following: ongoing coaching opportunities, ongoing professional learning communities (PLCs), PD during the school day (job-embedded), and more than 40 hours of PD annually. Highlights of the findings include: 13% of teachers across all divisions spend more than 40 hours participating in PD annually and 83% of divisions provide ongoing coaching opportunities.

Given the importance of effective PD and VDOE's hope to support and align professional learning resources to division needs, this report recommends two potential policy options:

1. Provide more opportunities for coaching
2. Improve workshops by providing opportunities for lengthier summer workshops, followed by periodic workshop opportunities and PLCs

These options were recommended after careful analysis to ensure they meet the evaluative criterion of rigorous evidence. Both options are supported by high-quality research methods such a randomized controlled trials (RCTs) and quasi-experimental studies (QEDs) that analyze their effectiveness and offer statistically significant findings. Both coaching and reformed workshops have proven effective at improving teacher instruction and student academic achievement (Kraft, 2017). Either of these two options would encourage adopting effectiveness standards to better evaluate PD and ensure it successfully improves teaching practices and student academic achievement.

Background

Virginia Standards of Accreditation

The Virginia Board of Education (BOE) established the Standards for Accreditation (SOA) in 1970 (VDOE). Since then, there have been multiple iterations to these standards and the most recent amendments were accepted in 2017. The SOA was approved by the BOE in November 2017 and effective as of the beginning of the 2018-2019 school year. The SOA can be found in the Virginia Administrative Code, Title 8, Agency 20, Chapter 131.

According to the Virginia Code (8VAC20-131-10. Purpose) the purpose of public education in Virginia is "to provide children with a high quality education giving them opportunities to meet their fullest potential in life" (VDOE). The SOA for public schools in Virginia are designed to help achieve this goal and ensure an effective educational program is established and maintained in the state. The SOA are intended to:

- Provide an essential foundation of educational programs of high quality in all schools for all students.
- Encourage continuous appraisal and improvement of the school program for the purpose of raising student achievement.
- Foster public confidence.
- Assure recognition of Virginia's public schools by other institutions of learning.
- Establish a means of determining the effectiveness of schools as prescribed in the Standards of Quality at § 22.1-253.13:3 of the Code of Virginia, including student learning and progress and student outcomes for multiple areas affecting school quality.

(Citation: VDOE).

The 2017 revisions express the BOE's vision of continuous improvement for all schools and for student outcomes to be aligned with the expectations of higher education and employers. As a result, the revised SOA implement new career readiness, civic engagement, and school quality standards. For the purposes of this paper, I will be focusing on the revisions impacting students and teachers. The main revision of interest is the "Profile of a Virginia Graduate" (referred to as Profile). The Standards of Learning Innovation Committee, in its 2015 report to the General Assembly, recommended the BOE develop a "Profile of a Virginia Graduate" and adjust Virginia's diploma requirements to conform with the profile. The 2016 General Assembly subsequently approved *House Bill 895* and *Senate Bill 336*, which directed the BOE to create such a Profile. The new standards include knowledge, skills, and experiences identified by employers, higher education, and the BOA as critical for future success in the workplace and college. Embedded within the Profile is the expectation that all students will graduate with foundational skills known as the "Five C's": critical thinking, creative thinking, communication, collaboration, and citizenship (VDOE, 2017). This Profile provides the framework and requirements students must meet to earn a Standard or Advanced Studies Diploma.

Problem Definition

The new standards and Profile were adopted at the state-wide level, and approved by VDOE, the Board of Education (BOE), legislators, and Governor Ralph Northam. These new standards are required throughout local school divisions across the state. Local schools—specifically teachers—felt unsupported and under-resourced in reaching the new standards imposed. Local school divisions request support from VDOE through recommendations of effective PD for educators and other resources. **However, VDOE is unaware of the current PD opportunities across the state and whether or not they offer effective learning opportunities for educators, change teaching practices, or align with statewide initiatives.**

The Need for Effective Professional Development

The revised standards measure performance on multiple school-quality indicators, not just on overall student achievement on state tests. High schools are evaluated on school quality indicators, such as: overall proficiency in English reading/writing, overall proficiency in math and science, and college, career, and civic readiness (VDOE). Teachers are expected to provide effective instruction in order for students to reach proficiency. How can the SOA outcomes be achieved without equipping teachers in the classroom with the necessary skills to achieve its intended outcomes? How can educators help students reach proficiency without PD opportunities that help improve instruction and content knowledge?

In response to these questions, education leaders in Virginia realized it would be unfair to retool graduation requirements and hold teachers and principals accountable, without providing them additional support and training. This realization kickstarted a multi-stage, statewide effort to align all aspects of educators' and leaders' professional experience with changes to student experiences. Stakeholders involved in this statewide effort include: Jobs for the Future, VDOE, the College of William and Mary, George Mason University, Virginia Association for Supervision and Curriculum Development (VASCD), Virginia School Consortium for Learning (VaSCL), local educators, school leaders, and division leaders in central Virginia. Each of these actors played a different role in a four-phase process identifying how to develop and create three more profiles: the Profile of a Virginia Educator, the Profile of a Virginia Education Leader, and the Profile of a Virginia Classroom (the Pedagogy Project).

These profiles were created after engaging education leaders in open and generative dialogue. State and local leaders convened and generated a list of educator and leader competencies, looking for alignment with student outcomes and learning. They also focused intently on alignment with state policy, including professional standards for certification and accreditation. Researchers and educators hope to answer the question, "How are state requirements and division requirements supporting what we want for educators and leaders?"

In response to the development of these Profiles, VDOE seeks to better understand the needs of teachers and how the Department can best support professional learning of both educators and leaders in local school divisions. VDOE identified teacher PD as one way to support the needs of teachers in the classroom and the increasingly complex skills students need in preparation for further education and work in the 21st century. Teachers are not uniform in their skills, and therefore, PD needs to be tailored to the needs of individual teachers. Effective PD helps teachers learn and refine pedagogies required to teach the skills demanded of students. "Research increasingly has identified the continuing development and learning of teachers as one of the keys to improving the quality of U.S. schools" (Desimone, 2009). Therefore, the focus of this report will assess how well divisions are doing in providing effective PD opportunities, how current PD aligns with the needs of teachers at the local level, and provide recommendations of PD programs that are both effective and aligned with the new SOA.

Effective Professional Development

After receiving information from local divisions, VDOE can begin work creating a strategic plan recommending "best practices" and effective PD programs aligned with the revised SOA and the identified needs of divisions. This assessment will allow VDOE to determine how to best offer effective and relevant training programs for teachers and students. A survey will be administered from the office of Dr. Lane, the Superintendent of Learning and Innovation (VDOE), to local educational staff in charge of administering PD in their division. There are approximately 174 staffers in charge of PD for all of Virginia. The survey will provide VDOE with information regarding topics such as:

- Do current PD opportunities align with what rigorous research deems effective?
- Do current PD opportunities align with statewide initiatives and the revised SOA?

- What specific, content-based PD do educators request from the state in order to support their individual needs?

Currently, VDOE has limited knowledge of the PD programs offered throughout the state. From survey data, VDOE hopes to gain a better understanding of professional learning activities occurring within divisions to inform the development of VDOE's Professional Learning Plan. The purpose of this plan is to support and align professional learning resources to division needs.

With limited resources at VDOE and in local school divisions, it's critical to understand what makes PD successful in changing teacher instruction and improving student achievement. PD is considered an essential mechanism for deepening teachers' content knowledge and developing teaching practices. As a result, PD could be a cornerstone of systemic reform efforts designed to increase teachers' capacity to teach to high standards. Because Virginia is reforming their SOA and looking to further support and promote the professional learning of educators, it's crucial to understand what makes PD effective and how to best align PD with statewide education initiatives.

Literature Review

Definition of Professional Development

The Every Student Succeeds Act of 2015 (ESSA) replaced the No Child Left Behind Act of 2001 (NCLB) and redefines standards for high-quality professional development (PD) for teachers and K-12 leaders. ESSA updated the definition of PD by stating, "The term 'professional development' means activities that … are sustained (not stand-alone, 1-day, or short-term workshops), intensive, collaborative, job-embedded, data-driven, and classroom focused" (S. 1177, Section 8002, page 295, paragraph 42). In other words, PD should be an ongoing process that is woven into a teacher's experience throughout the year. Another definition of PD is "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes" (Darling-Hammond et al., 2017). Definitions may vary, but overall the idea that PD can foster improvements in teaching is widely accepted. Because of this, PD is mandated across the U.S. through teacher licensure requirements. As a result, school divisions and state departments invest resources in annual PD.

It's worth noting how tremendously various PD is. ESSA seeks to address this by placing the requirement that PD implemented must be rooted in scientific evidence proving its success at improving teacher learning and student academic achievement (S. 1177, page 127, paragraph E). However, there is no single outline or standard set of practices that every school division implements. PD varies across county, division, and state lines. The most common type of PD, and the type most criticized in the literature, is the "workshop" method (Garet, 2001). A workshop is a structured approach to PD that occurs outside of a teacher's classroom and generally involves a leader(s) with special expertise (Garet, 2001). Participants attend the workshop on teacher-work days, after school on the weekend, or during the summer. Other forms of PD that fall under the workshop category are: institutes, academic courses, and conferences. These are "traditional" forms of PD that share many of the same features as workshops because they take place outside of the teacher's school or classroom; they involve a leader(s) with expertise; and participants attend at scheduled times (Garet, 2001). These traditional forms of PD are quite common, yet they are highly criticized as being ineffective in providing teachers with sufficient time, activities, and content necessary for increasing teacher's knowledge and fostering meaningful changes in classroom practice (Garet, 2001). Therefore, researchers and providers have shifted focus to identifying "reform types" of PD and studying their effectiveness.

Reform types of PD include: study groups, mentoring, coaching, teacher academies offering ongoing seminars or academic courses, school-university partnerships, and local PLCs that develop teaching practices within specific subject areas or grade levels (Garet, 2001). Reform types differ from traditional forms in a multitude of ways. In particular, reform activities take place during the regular school day. Methods such as mentoring and coaching even take place during classroom instruction or during regularly scheduled teacher planning time (Garet, 2001). Reform types of PD may be more likely than traditional forms to make connections with classroom teaching because they locate opportunities for PD within a teacher's regular work day, and therefore may be easier to sustain over time as well. The variation in forms of PD that currently exists places an urgency on researchers to develop empirically valid methods of studying PD and documenting its effectiveness. Because of this, researchers have developed new methods of categorizing PD and analyzing its program design, targeted outcomes, and effectiveness.

Importance of Professional Development

Despite these tensions, PD for teachers continues to be widely supported as it is seen to improve teaching practices and student achievement. PD is defined as effective when it is proven to affect student achievement through three steps: PD enhances teacher knowledge and skills; then, better knowledge and skills improve classroom teaching; and finally, improved teaching raises student

achievement (Kennedy, 2016). However, not all PD results in statistically significant improvements in teaching practices or student achievement. Therefore, What Works Clearinghouse (WWC) was assigned to rigorously study PD and its effectiveness. WWC is an initiative of the U.S. Department of Education's Institute of Education Sciences (IES). IES was established under the Education Sciences Reform Act of 2002 and it is an important part of IES's strategy to use rigorous research, evaluation, and statistics to improve the nation's education system. Therefore, the mission of WWC is to be a central source of scientific evidence for what works in education. WWC has strict research standards and eligibility requirements that literature, studies, and findings must meet in order to be seen as highly regarded, accurate research. Every eligible study is reviewed against WWC standards and WWC uses a structured review process to access the causal validity of findings reported in education effectiveness research. Eligible research designs include: randomized controlled trials (RCTs), quasi-experimental design (QED), regression discontinuity design, and single-case design (IES, 2020). For the purposes of this study, all literature reviewed will only include the analysis and findings of studies that meet WWC standards. When analyzing the effectiveness of different types of PD, reform or traditional, only studies that used RCTs or QEDs were selected.

For instance, a report reviewed more than 1,300 studies to identify the impact of teacher PD on student achievement; researchers selected studies that met WWC standards, and were left with just 9 studies. For studies meeting evidence standards, researchers found that average control group students would have increased their achievement by 21 percentile points if their teacher had received PD (Yoon et al., 2007). This report also identified many characteristics that must be included in PD in order for it to be effective. For instance, programs that have positive statistically significant effects improving student achievement offered teachers at least 49 hours of PD. In contrast, the studies that administered less PD (5-14 total hours) in terms of duration showed no statistically significant effects on student achievement (Yoon et al., 20017).

In 2005, the Council of Chief State School Officers (CCSSO) conducted a study of teacher PD programs in mathematics and science through grant funding awarded from the National Science Foundation. Their goal was to assist education leaders in all states by providing a cross-state analysis of the quality of PD programs and evaluations using a common rubric developed from research on program effectiveness (Blank, 2007). CCSSO reviewed 25 programs from 14 different states that all meet WWC standards. Researchers selected PD programs that evaluated effectiveness using QEDs and found the ones with greatest effectiveness were ones that successfully facilitated collective participation, engaged teachers in more than 50 hours of training, and had a content focus (Blank, 2007).

Although research on effectiveness is mixed, positive findings from high-quality research designs—such as RCTs and QEDs—have stimulated a consensus that effective PD possess these key characteristics: sustained in duration, content focused, incorporates active learning, coherency, and collective participation (Desimone, 2009; Darling-Hammond et al., 2017). The Reading Recovery program is a recent example of a PD program that incorporates these characteristics and found positive student gains. Results from a 2016 evaluation of this program found that students "who participated in the U.S. expansion of Reading Recovery significantly outperformed students in the control groups on measures of overall reading, reading comprehension, and decoding" (D'Agostino & Murphy, 2004). Moreover, these gains were nearly three times as large as average gains for similar broad instructional interventions. Students in the study gained an additional 1.55 months of learning compared to the national average growth for 1st graders" (Darling-Hammond et al., 2017). Because PD has proven both successful and unsuccessful, it's crucial to identify what characteristics of PD make it effective improving teacher and student learning.

Effectiveness Measures

Desimone (2009) offers ways to improve the quality of inquiry into teacher learning and helps develop a method, or "framework," of identifying what makes up high-quality PD. Desimone proposes measuring the core features of teachers' learning experiences is one way to combat this challenge. Desimone identified and developed a core set of features—five features—of effective PD. Desimone bases her argument in the fact that research points to a consensus of characteristics that are critical to increasing teacher knowledge and skills and improving practice, which holds promise for increasing student achievement (Hawley & Valli, 1999; Kennedy, 1998; Wilson & Berne, 1999). She reviewed decades of empirical research that all point to five core features of effective, high quality PD. These core features include: (a) content knowledge, (b) active learning, (c) coherence, (d) duration, and (e) collective participation (Desimone, 2009).

Content Focus

The content focus of teacher learning is said to be an incredibly influential feature. A compilation of evidence in the past decade points to, "the link between activities that focus on subject matter content and how students learn that content with increases in teacher knowledge and skills, improvements in practice, and, to a more limited extent, increases in student achievement" (Desimone, 2009). Teachers lack the content-specific teaching skills needed to promote the academic achievement of their students, which has led to an emerging body of work suggesting PD focusing on subject-matter content and how children learn is an especially important element in changing teaching practice (Garet et al., 2009). PD requires a dual focus on both knowledge of subject matter and an understanding of how children learn specific content.

Many researchers have performed RCTs to study the effects of content-focused PD on teacher learning and student academic achievement. For example, Cohen and Hill (1998) conducted a study of mathematics teaching in California, based on data on teachers' PD experiences and school-level data on student performance on a statewide mathematics test. They found that average mathematics achievement was higher in schools in which teachers had participated in PD focusing on teaching specific mathematics content, compared to the achievement in schools where teachers had not received content-specific PD. Kennedy (1998) also found that compared to general PD, PD focused on specific content and how students learn that content had larger positive effects on student achievement outcomes.

The Science Teachers Learning from Lesson Analysis program (STeLLA) is a PD program focusing on strengthening teachers' understanding of how to teach science productively. This is a content-focused PD program seeking to help improve teaching strategies associated specifically with science curriculum. Through a QED study design, researchers found students whose teachers received STeLLA training achieved significantly greater learning gains on science pre- and post-tests compared to students whose teachers received no training (Darling-Hammond, 2017). Teachers' science content knowledge increased (0.20 SD) and their ability to analyze how their teaching practices impact student thinking improved (0.18 SD) (Roth, 2011). This is one example of many that shows improving teachers' content knowledge and content-specific pedagogy will in turn boost student achievement.

Duration

The most widely supported core feature of effectiveness is duration. Research shows intellectual and pedagogical change requires PD activities to be of sufficient duration, which includes both the span of time over which the activity is spread (e.g., one day workshop or one whole semester of training) and the number of hours spent in a PD activity (Desimone, 2009).

While workshops continue to be the most common type of professional development, research suggests they may not necessarily be the most effective because of their short duration and because they are removed in time from practice or implementation of the ideas contained in the workshops

(Penuel et al. 2007). Therefore, research concludes PD that is longer in duration and time span is more likely to contain the kinds of learning opportunities necessary for teachers to integrate new knowledge into practice (Penuel et al., 2015). Also, PD of longer duration places more of an emphasis on deepening teachers' content knowledge, provides more opportunities for teachers to engage in active learning experiences, and provides more opportunities for teachers to engage in active learning experiences—which are all core features of high-quality, effective PD (U.S. DOE, 2006).

For example, one study found that the programs which had more than 14 hours of professional development showed a positive and significant effect on student achievement from professional development (Yoon et al., 2007). The three PD programs analyzed in this study that involved the least amount of PD (5–14 hours total) showed no statistically significant effects on student achievement (Yoon et al., 2007). Researchers then analyzed 9 studies that met WWC standards—again meaning the research design includes RCTs and/or QEDs—and found that the PD programs with the largest effect sizes offered an average of 49 hours of PD annually (Darling-Hammond, 2017). These models were found effective because their associated average boost in student achievement was 21 percentile points (Darling-Hammond). Research has not declared a "sweet spot" or definitive number of hours PD must span in order for it to be effective, but it has proven the greater the duration, the greater the returns on both teacher and student achievement.

Type of Professional Development

As mentioned, workshops are a method of PD proven to be highly unsuccessful; it is a reform type of PD similar to others such as study groups, mentoring, and PLCs (Garet, 2001). Reform methods have proven more successful because they are sustained in duration, engage teachers in active participation, and are more likely to promote transfer of learning because they occur during the normal workday. Furthermore, Darling-Hammond (1997) argues these types of activities may be more responsive to teachers' needs and goals.

For example, a reform method of PD garnering much support is coaching. Teacher coaching is considered a key lever for improving teachers' classroom instruction and for "enactment," meaning the transfer of new knowledge into new classroom practices. Kraft (2018) defines coaching programs as broadly as all in-service PD programs where coaches (experts in a subject or practice) or peers observe teachers' instruction and provide feedback to help them improve. Kraft (2018) characterizes the coaching process as one where instructional experts work with teachers through individualized, one-on-one sessions that are: intensive (meaning teachers and coaches interact at least every couple of weeks) sustained (teachers receive coaching over an extended period of time), context-specific, and focused. Kraft (2018) conducted a meta-analysis on coaching programs and found that coaching raised student performance on standardized tests by 0.18 SD based on effect sizes reported in 31 studies that included measures of students' academic performance. Even though they did find a positive relationship between coaching and student achievement, researchers acknowledge changes in student achievement appear to require relatively large improvements in instructional quality.

Coaching models can also vary outside of the traditional one-on-one coach and teacher model. For instance, coaching can occur on a web-based PD platform with opportunities for teachers to engage with PD content through videos, forums, and goal-setting, without specified expert support. Teachers also may participate in one- to two-day workshops where they build relationships with coaches and learn the content of the specific PD program. Teachers then engage with coaches via biweekly coaching sessions either in person or remotely (Darling-Hammond, 2007). In a two-year randomized controlled trial, researchers tested the effect of a web-based coaching program called My Teaching Partner-Secondary that was designed to improve student-teacher interactions. Teachers participating attended an initial training workshop followed by twice-monthly coaching from a remote mentor (Pianta, 2011). The sample size included 78 secondary school teachers and 2,237 secondary students in 12 Virginia schools. Researchers found students whose teachers participated in this coaching program demonstrated gains in student achievement of .22 standard deviations, which is equivalent to an average increase from the 50th to 59th percentile (Pianta, 2011). This is just one of many coaching

models that can be implemented in schools to improve instruction, classroom quality, and student achievement.

Alignment with State Initiatives and Division Needs

Coherence is defined as both, "the extent to which teacher learning is consistent with teachers' knowledge and beliefs and the consistency of school, division, and state reforms and policies with what is taught in professional development" (Desimone, 2009). Other researchers also assess coherence as a proven best practice and define it as, "the extent to which it builds on what teachers have already learned; emphasizes content and pedagogy aligned with national, state and local standards, frameworks, and assessments; and supports teachers in developing sustained, ongoing professional communication with other teachers who are trying to change their teaching in similar ways" (Garet, et al., 2001).

Therefore, researchers explain in order for teachers to have coherent PD experiences, they must be consistent with their local school and division goals and other ongoing reform efforts. In order to achieve this, PD that is embedded in the school day and occurs during a teacher's work day has proven most effective (Kraft, 2018).

Conclusion

Overall, many of the programs reviewed highlight the challenge that in order to improve student achievement it requires a relatively large improvement in instructional quality (Kraft, 2018). Literature also reveals that some PD programs are more successful improving instructional quality and/or student achievement than others. Different types of PD have different effect sizes, as seen in Appendix A. The chart provided in Appendix A identifies the effectiveness of different types of PD programs and highlights the variation in design and implementation of PD programs.

Methods

Chosen method of analysis

In program evaluation, findings are often used for ongoing or short-term decision-making purposes and programs can be changed or improved based on the results of just one single evaluation (Lodico, 2006). To conduct a program evaluation of PD activities offered across the state, a survey was administered to local school division Superintendents. Some divisions have individual staff in charge of PD, most often called Directors of Instruction, who will be forwarded this survey in order to provide the information needed. Divisions without this resource completed the survey through other staff in the Superintendent's office. The survey gathered information from questions such: what PD is offered at the local division level, what is the content and form of PD offered, what PD do divisions need from the state, and which divisions' PD efforts most align with VDOE initiatives. For more information regarding the survey design see Appendix B, which provides a complete copy of the survey administered.

Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Desimone, 2004). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. Surveys are a form of data collection supported by research literature as an accepted way to reduce costs and personnel requirements and increase the speed of analysis and reporting. Surveys also prove to effectively measure several key targets of current school reform, such as the type and quality of teacher PD activities (Desimone, 2004). It is the most cost-effective and efficient research method, compared to in-person interviews or RCTs, and therefore, it was the chosen method of analysis.

The survey utilized in this research project was created by Dr. Tina Manglimont, Dr. Jen Piver-Renna, Mr. Michael Bolling, and Ms. Athena Post (author). Questions were derived from the literature gathered in the literature review section. Additional questions were added by members of VDOE to gain more administrative data and constructive feedback from divisions. We administered the survey outlined in Appendix B for multiple reasons. First, we sought to better understand the landscape of PD in school divisions, specifically its alignment with VDOE's high-priority initiatives. Second, the information gathered can be used to inform VDOE's strategic professional development plan, which will align professional learning resources to division needs. Additionally, we hoped to make an assessment of how well divisions are doing in providing effective PD based on the admittedly limited information gathered and what the literature says about effective PD.

This is not the same as assessing whether the PD in each division is effective, because that is well beyond the scope of this project. However, by identifying the needs of school divisions and assessing how well their current PD is aligned with VDOE initiatives and effectiveness provides baseline descriptive statistics that can then be built upon. There are limited resources—both time and money—that VDOE invests in PD activities directly supporting school divisions. Therefore, this information provides information needed to achieve proper resource allocation and division priorities.

Survey Analysis

There are 132 school divisions in the state and each division received a survey. They were given 5 weeks to complete the survey, and after this time period, we had 86 of 132 divisions respond. Achieving this 65% response rate allowed us to continue to the survey analysis phase of the project. The initial step was to clean the survey responses in Microsoft Excel by deleting any duplicate responses. Then, I transferred all of the raw data to STATA to further analyze. After cleaning the data, creating variables, accounting for any missing values, and other baseline analyses, I generated a new data file which was used to generate the descriptive statistics and analysis below.

Findings

Professional Development Priorities in Six Content-Specific Categories During the 2018-2019 School Year

The first question of the survey was intended to gather a baseline analysis of the differences in resource allocation and priority setting of individual divisions. The figures in Appendix C portray the number of divisions that provided PD opportunities in each subcategory of 6 different topics: reading, mathematics, science, computer science, instructional strategies, and student support. Overall these results provide descriptive statistics to help us better understand where divisions are currently investing resources and the types of PD they offer in their divisions.

Trends can be seen in each of the 6 major topics divisions were asked to respond on behalf of. When providing PD opportunities related to reading content, divisions offered literacy and number sense PD more so than any of the other topic in this category. Overall, reading and student support were the most heavily prioritized by divisions during the 2018-2019 school year.

These figures also provide us with trends highlighting the subjects that received the least amount of content-focused PD. For example, roughly 49% of divisions offered computer science PD and 30% of divisions offered science literacy PD. Overall, divisions provided the least amount of PD in the category of science and its 6 subcategories. Eighty-seven percent of school divisions offered PD in literacy, whereas only 38% of divisions offered PD in scientific modeling and 53% of divisions offered PD in science inquiry.

The survey results also highlight a significant number of divisions offering PD in instructional strategies on a very specific topic. Ninety percent of divisions offered performance assessment PD to teachers. In contrast, only 56-57% of divisions offered computer science PD for their teachers.

Measures of Effectiveness

After gathering this baseline information, we asked more in-depth questions to assess the duration and types of PD offered. We did this in order to evaluate the current state of PD using effectiveness criteria. Research on PD in the United States found that most teachers receive PD of short duration, which accounts for less than eight hours on a topic, that occurs in after-school workshops (Darling-Hammond, 2017). This shift occurred during the No Child Left Behind Era and reduced access to more sustained PD opportunities and approaches. However, evidence summarized in the literature review shows PD must be provided in a sustained, ongoing manner in order to be effective. In order to determine the effectiveness of PD in Virginia, we asked divisions to provide a range of hours their teachers partake in PD annually. Table 1 provides the responses.

Table 1: Number of Hours Teachers Spent in PD during 2018-2019 School Year

Hours	Percent
Less than 10 hours	5
Between 10 and 20 hours	41
Between 20 and 30 hours	27
Between 30 and 40 hours	14
More than 40 hours	13

Note: 83 out of the 86 divisions responded

As seen in Table 1, 41% of divisions expressed their teachers spend between 10 and 20 hours in PD. Only 13% of divisions have teachers who spend more than 40 hours in PD. Researchers analyzed nine studies of PD using experimental or quasi-experimental designs and found that the effective PD models examined in these studies offered on average 49 hours of development annually (Darling-Hammond, 2017). These models were found effective because their associated average boost in student achievement was 21 percentile points (Darling-Hammond). However, as noted in the literature review, other researchers define duration effectiveness as 20 hours or more of PD.

There is consensus that both span of time over which the activity is spread and the number of hours spent in the activity are crucial components to effective PD, but the range of 20-49+ hours teachers can spend in PD highlights the failure to identify an exact "tipping point" for duration. Currently, teachers in most school divisions are far below this average with only 13% of divisions providing PD that is ongoing and sustained over 40 hours. However, in summation 54% of divisions provide PD that spans 20 hours or more.

Type of PD Offered

The duration of PD also describes whether or not it is an ongoing experience, or a one-time event. Different types of PD offer different experiences, therefore, in this next section we present findings on both the types of PD divisions utilize and whether or not they are ongoing. The reason we gathered this information is because research has also found that in order for PD to be effective, it must be ongoing. The duration of PD has proven to be associated with stronger impact on teachers and student learning because teachers have the opportunity to refine and apply their understanding of material in their classrooms (Darling-Hammond, 2009). As mentioned in the literature review, Johnson and Fargo engaged teachers in PD that offered summer workshops and ongoing learning opportunities via PLCs during the school year. Results from their RCT revealed this PD model produced significantly larger improvements in science achievement over time relative to students whose teachers were in the control group (Darling-Hammond, 2009). Because of the varying effect sizes of PD, as seen in Appendix A, we asked divisions to provide an overview of the types of PD models they utilize in hopes of gaining a better understanding of the effectiveness of what's currently being offered.

Researchers also discuss the effectiveness of offering PD during the normal workday for a teacher. Research shows PD offered during the school day is more effective because it is job-embedded and more highly regarded as being relevant; PD that is offered during the school day is more likely to change teachers' classroom practice as well (Darling-Hammond, 1997). Models of PD that are more likely to occur during the school day are those that are also proven to be most effective: PLCs, coaching, and study groups. Therefore, the type of PD, it's duration, and when it occurs all influence its effectiveness.

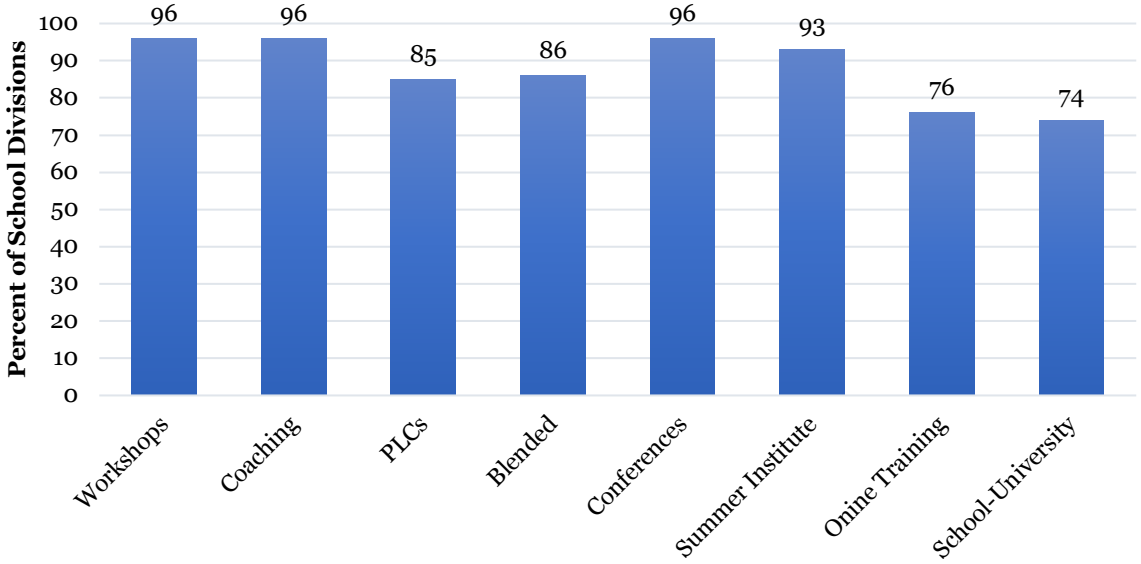
Table 2: Average Number of Divisions Offering PD During the School Day

During	Percent
No	2
Yes	98

Note: 85 out of 86 divisions responded

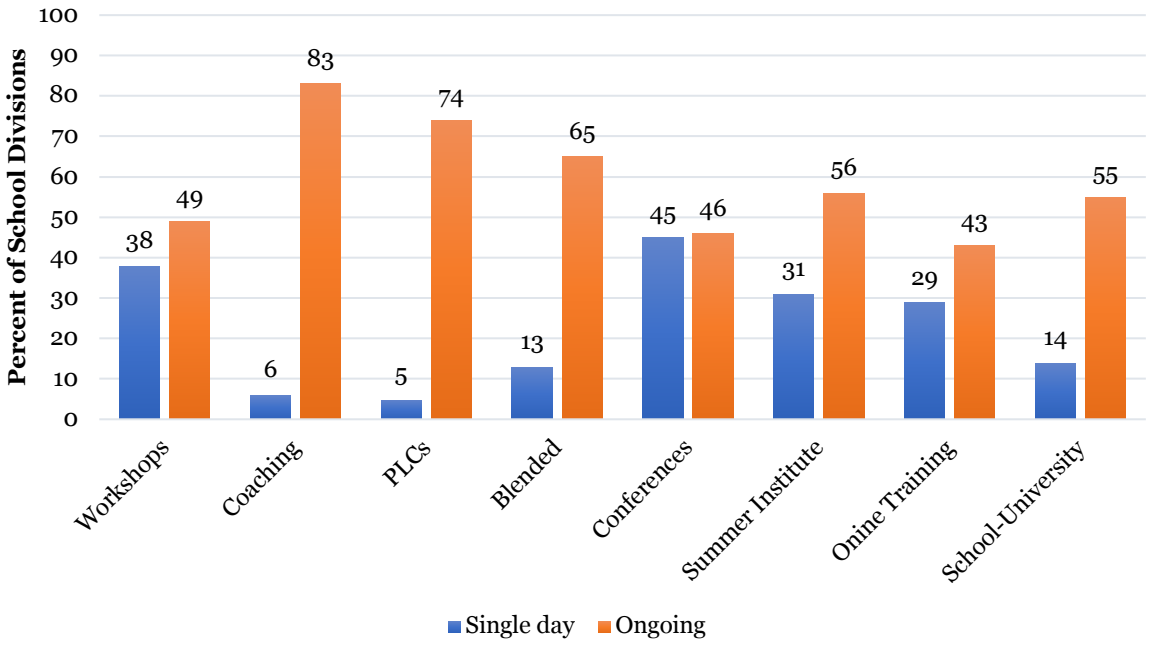
Survey results revealed approximately 98% of divisions offer PD that occurs during the school day. It is unclear what type of PD this is or if there is follow-up conducted to see whether or not teaching practices change, but it is noteworthy that almost every division offers PD opportunities that are job-embedded.

Figure 1. Type of Professional Development Offered During 2018-2019 School Year



Note: "Other" free-response answers were included in the "yeses" count for this figure

Figure 2. Ongoing Professional Development Opportunities Offered During 2018-2019 School Year



Note: "Other" free-response answers were not included in this figure

Figure 1 displays the varying types of PD the 86 divisions could have selected identifying whether or not they provide this model. In order of greatest to least, the most utilized models of PD are workshops, coaching, conferences, and summer institutes. These are encouraging results as coaching is one of the more innovative models of PD, and also one of the most effective types. Coaches play a critical role by modeling strong instructional practices and sharing expertise about content and evidence-based practices teachers may incorporate in their own classrooms (Darling-Hammond, 2007). Literature outlines coaching programs can take many forms, but most often are sustained over time, include one-on-one meetings with teachers either in person or virtually, and provide specific feedback on the unique strengths and weaknesses of teachers. Ninety-six percent of divisions stated they provide coaching opportunities for their teachers. Of the divisions that offer coaching opportunities, many noted they are limited in ability; divisions identified they are only able to provide coaching opportunities to some of their schools/teachers, but not all. Others are only able to provide 1-2 days of coaching for their teachers, but not ongoing opportunities that span over the course of a semester or school year.

Within this analysis, we also analyzed whether or not PD offerings were ongoing and this data is portrayed in Figure 2. If divisions offered the PD service for more than one day, or provided follow-up opportunities to sustain the PD program, then it was considered "ongoing" for the purposes of this report. Still looking at coaching, of the 96% that provide coaching, 83% provide ongoing opportunities.

Workshops were utilized as much as coaching with 96% of divisions providing workshops to their educators. Research has shown workshops to both improve and hinder student achievement, so we asked divisions to specify whether or not the workshops provided were single day or ongoing, sustained workshops. Figure 2 portrays that 38% of the workshops provided across the state are one-day and 49% are ongoing, which means they span over more than one day.

Figure 2 helps portray the nature of each PD program offered and whether or not they meet the criterion of effectiveness. Because duration and the ongoing nature of PD is necessary for its effectiveness, Figure 2 is a necessary element of this report. Figure 1 shows the high percentage of each PD program offered, but Figure 2 expresses whether or not these programs are ongoing. Even though 96% of divisions offer conferences for their teachers, only 46% offer ongoing, sustained conferences. Therefore, the other 45% do not meet effectiveness standards.

The analysis of the ongoing nature of each PD offering is limited in scope. We did not ask divisions to explain whether or not these PD offerings engaged teachers weekly, biweekly, monthly, or annually. We analyzed whether or not the PD they did provide was either a single day type of training (not ongoing) or spanned over more than 1 day (ongoing). Additionally, when asked if divisions provide follow-up or observation after training, few divisions responded in the "other" open comment box and no general themes can be concluded from this minimal data.

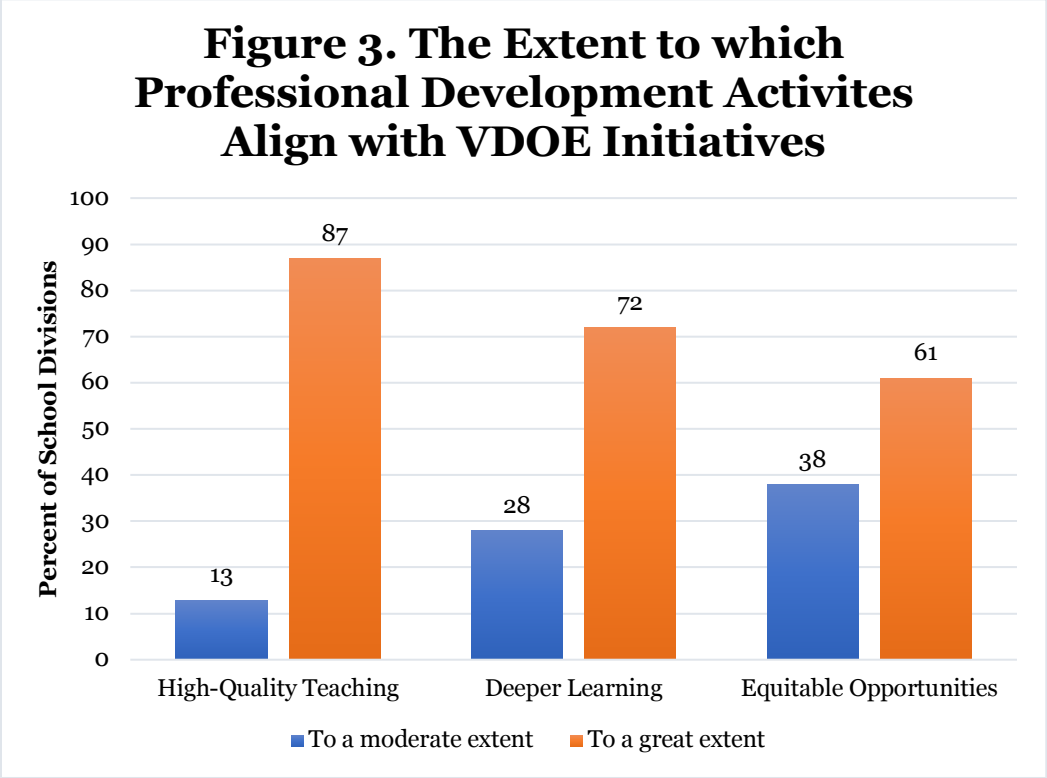
Alignment and Coherence

States, divisions, and schools often conduct needs assessments to identify areas of PD most needed and desired by educators. This is done in order to ensure PD is not disconnected from practice and supports areas of knowledge and skills educators both want and need to develop (Desimone, 2007). Research also indicated PD that is aligned with state, division, and school priorities provides coherence for teachers, as opposed to having PD compete with differing school and division priorities (Desimone, 2007). Content-focused PD programs have proven successful improving teacher instruction as well as aligning with school and division priorities. Content-focused PD is often job embedded, meaning it is situated in teachers' classrooms and not excluded from the teachers' school or division contexts. Therefore, content-focused PD is seen as coherent and more likely for teachers to transfer their learning from PD to their personal classroom (Desimone, 2007). For instance, Roth analyzed the PD program STeLLA, which is a content-based program that links content learning to pedagogies supporting teachers' student practices. This RCT revealed for a typical student taught by a

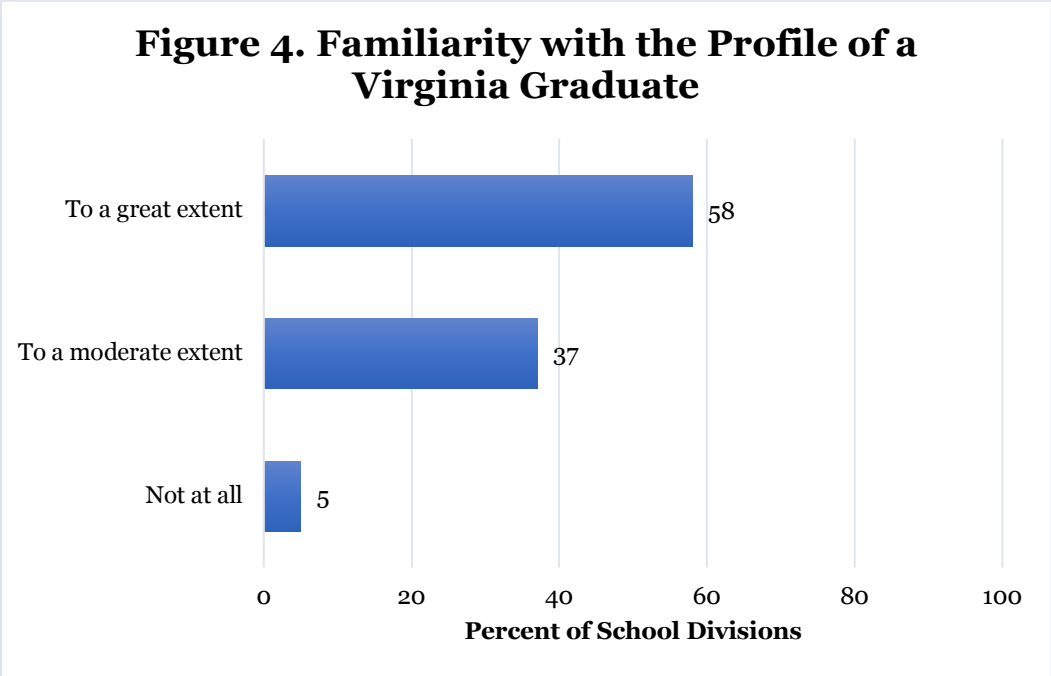
STeLLA teacher, higher average achievement was associated with greater gains in teachers' science content knowledge with an effect size of .20 standard deviations and an increase in teachers' classroom use of learned strategies with an effect size of .32 standard deviations (Roth, 2011).

Because of the positive results of content-based, aligned PD programs, we asked divisions questions regarding alignment and familiarity with statewide initiatives:

1. *Figure 3*: To what extent do the professional learning/development activities in your division align with the following VDOE priorities:
    a. Helping teachers create classroom environments that support high-quality teaching and learning
    b. Focusing on strategies that create environments for deeper learning
    c. Providing equitable opportunities for all students
2. *Figure 4*: How familiar are you with the Virginia Department of Education's Profile of a Virginia Educator?
3. *Figure 5*: To what extent has your division begun implementing professional learning/development activities aligned with the Profile of a Virginia Educator?

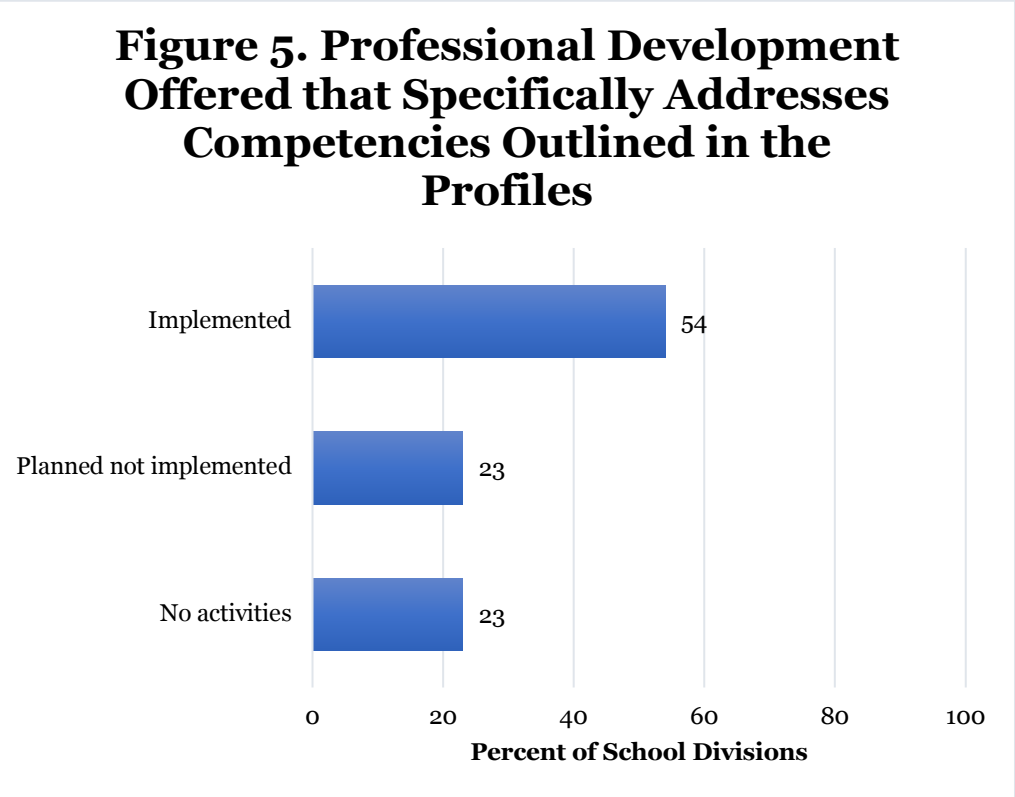


For the first question, divisions were provided a sliding scale to respond: not at all, to a moderate extent, or to a great extent. None of the divisions responded not at all, showing divisions are aware of initiatives promoted from state leaders at VDOE. Figure 3 presents 87% of divisions provide PD opportunities most aligned with providing high-quality teaching and learning environments. Something worth noting from these results is divisions provide the least amount of PD assisting teachers in providing equitable opportunities for all students. One can deduce there is overlap between these three categories, and that high-quality teaching for instance likely considers some element of equitable instruction. Considering this overlap, it is still important to address these findings considering it is a main priority of both VDOE and the Secretary's Office to make education more equitable for all students. This is an area where divisions could provide PD that is specifically targeted at promoting equality in all three of these categories, regardless of overlap.



The Profile of a Virginia Graduate is a newly added component of statewide SOAs, so we needed to analyze how familiar divisions are with the Profiles in order to determine how to best support them. Figure 4 reveals only 5% of divisions are not familiar with the Profiles. Even though it's only 5%, this finding indicates a need for additional communication to divisions regarding VDOE initiatives.

On the other hand, 58% of divisions are extremely familiar with the Profiles, which could be for a multitude of reasons. Some school divisions applied for grant funding and are a part of the Virginia Learning Innovation Network (VaLIN), where individual divisions are provided funding and coaches to help them reform their school systems in order to implement what's necessary to achieve the Profiles. Other reasons for familiarity may be due to geographic location, contact with VDOE, and division priorities.



Of the divisions that are familiar with the Profile, we analyzed whether or not they've made efforts to reform PD opportunities to help educators align teaching practices and instruction to the core competencies outlined in the Profile. Figure 5 reveals 54% of divisions have already implemented activities and 23% have no activities planned or implemented. Figure 5 also reveals approximately 46% of divisions have not made any changes to their PD activities.

Lessons learned from recent, significant shifts in educational policies, such as the implementation of revised SOA or the Profiles, indicate that VDOE should plan to provide more intensive supports to school divisions as needed during implementation. VDOE may use this information to administer their limited resources to either individual divisions who need greater assistance, or to developing PD that specifically addresses the skills outlined in the Profiles.

Division Needs

Not only does VDOE seek to support divisions with the implementation of Department initiatives and the newly developed Profiles, but it also hopes to allocate resources to best meet the needs of individual divisions. Divisions vary in size, demographics, and administration. Public schools across the country are serving more racially, ethnically, and economically diverse student populations than ever before (Parkhouse, 2018). With the growing diversity of this country, it is crucial to adopt school practices that are responsive to cultural diversity and the needs of educators to be adequately prepared to work in diverse settings. Students not only differ culturally, but students present different needs as a result of learning disabilities, traumas experienced outside of the classroom, and mental health issues. In order to promote equity and help all students succeed, teachers must be trained to address the varying needs of their students. After conducting a review of teacher preparation programs, research shows the majority of teachers entering the field lack confidence in their ability to work in diverse settings (Parkhouse, 2018). Therefore, educational leaders need to identify the needs of their teachers and offer PD opportunities catered to these needs.

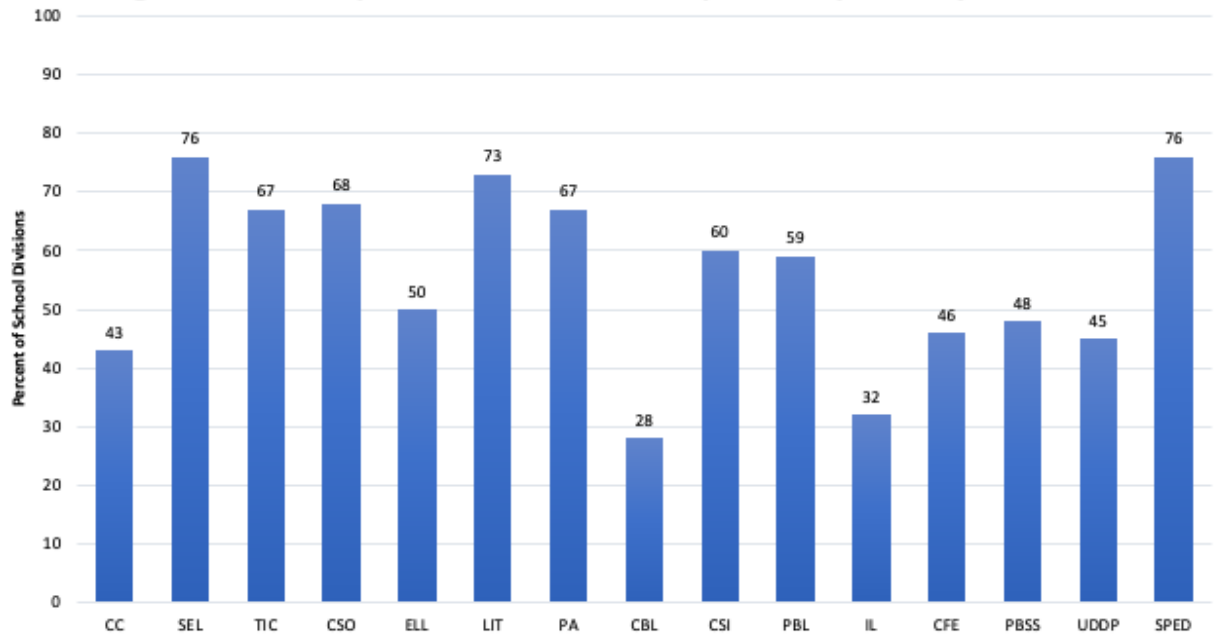
For instance, research shows PD models individualized to the needs of the teachers have statistically significant results improving both student learning and teaching practices. Most often, PD models

catered to the individual strengths and weaknesses of teachers take the form of coaching. Coaches work with teachers individually by observing them in the classroom and offering constructive feedback in a debrief setting. For instance, the Reading Recovery program discussed in the literature review is a PD program developed based off of the identified strengths and weaknesses of both students and teachers. From an RCT, researchers found for each set of student reading scores, the treatment group's performance was one-third to one-half standard deviation larger than that of the control group (May, 2016).

In this study, we recognized the benefit of personalizing PD opportunities to the varying needs of individual educators. Because there's so much variation, we asked Superintendents to identify the specific needs of their divisions and how VDOE can be most helpful providing PD opportunities to satisfy these needs.

We provided a list of 15 different topics of PD that VDOE could offer depending on the requested need. The figure below portrays the expressed needs of divisions.

Figure 6. Content-Specific Professional Development Requested by Divisions



CC: Cultural Competency
SEL: Social Emotional Learning
TIC: Trauma Informed Care
CSO: Content-Specific Opportunities
ELL: English Language Learners

LIT: Literacy
PA: Performance Assessment
CBL: Competency Based Learning
CSI: Computer Science Integration
PBL: Project Based Learning

IL: Interdisciplinary Learning
CFE: Community & Family Engagement
PBSS: Positive Behavior Systems of Support
UDDP: Using Data to Drive Practice
SPED: Special Education

The content-specific PD most requested by divisions were social emotional learning and special education. These results provide helpful information to VDOE and other state leaders. Individual teachers in schools are free to express their need to administrators and Superintendents. However, this information doesn't often make its way to VDOE or the Governor's Office; so, this survey provides helpful information to state leaders regarding the needs of individual division. Moving forward, these results reveal the most desired content-based PD includes: social emotional learning, special education, literacy, content-specific opportunities, trauma informed care, and performance assistance (Figure 6).

Not only can VDOE provide content-specific PD opportunities catered to the identified strengths, weaknesses, and needs of divisions, but it can also reform the type of PD it offers. We then asked divisions to identify the type of PD experience that would be most beneficial to help them prepare and support their teachers. Table 3 reveals these results.

Table 3: Type of Professional Development Requested by Divisions

Type of PD	Percent
Coaching	82
Mentoring	59
Shadowing	39
Site visits	45
PLCs	65
Online	74

Note: 82 out of 86 divisions responded

Divisions most frequently requested greater coaching opportunities, with 82% of divisions responding as so. Online opportunities were requested by 74% of divisions and PLCs were requested by approximately 65%. These results reveal an interesting finding; while 96% of divisions identified they already provide coaching opportunities, 82% of divisions still request more coaching opportunities. Coaching tends to be a more costly method of PD, which makes it difficult for divisions to administer in every single one of their schools. Therefore, VDOE can use this information to inform their resource allocation.

Administrative Data: Follow-up methods

Stakeholders were curious whether or not divisions conducted follow-up methods to see whether or not the PD administered changed teaching practices or student achievement. This question was informed by the research presented in the literature review on the transfer of learning and the enactment of training to the classroom. When studying PD, it's necessary to analyze how PD helps teachers translate new ideas and new knowledge into their own classrooms and practice. It is common knowledge at the state level that most divisions have teachers complete surveys after receiving training, but it is unknown whether or not divisions offer other opportunities for follow-up procedures. The table below shows the varying methods of follow-up.

Table 4: Professional Development Follow-Up Methods Identified by Divisions

Follow Up Method	Percent
No	6
Yes, surveys	62
Yes, other	32

Note: 85 out of 86 divisions responded

The majority of divisions, 62%, conduct follow-up by administering a survey to teachers. Thirty-two percent selected an open comment "Other" response and expressed methods of follow-up that aren't surveys. There were two methods of feedback that were most commonly cited by divisions, allowing us to draw a central theme. Responses revealed a common practice is to directly observe teachers through in-class observations conducted by administrators; most often, principals will evaluate the use and implementation of PD through daily observation. The second most common method of follow-up was direct engagement with teachers asking for follow-up or surveying teachers to elicit feedback and teacher satisfaction. Overall, 94% of divisions provide some method of follow-up, which has the potential to promote enactment and changes teaching practices. VDOE can use this information to continue developing divisions' follow-up methods and advocate for the importance of these practices.

Summary of Results & Conclusion

Overall, 10% of divisions seem to be engaged in what rigorous research deems effective. The divisions that make up the 10% figure provided all of the following: ongoing coaching opportunities, ongoing PLCs, PD during the school day (job-embedded), and more than 40 hours of PD annually. In order for divisions to be included in this 10% figure, they had to provide all of the effectiveness components listed. The effectiveness variable used was defined based on what research identifies effective components of PD and the data that was available from the survey.

Teachers across VA participate in approximately 10-20 hours of PD annually, with 41% of divisions responding as so. Thirteen percent of divisions reported their teachers spend more than 40 hours participating in PD annually. This is a large range across divisions, therefore, more research must be conducted at the local level in order to develop an accurate amount of time educators spend in PD.

When analyzing how PD opportunities in VA align with research on proven methods of effectiveness, it was necessary to study the type of PD offered and whether or not it was ongoing. Overall, the most frequently provided PD opportunities took the form of workshops, coaching, and conferences. Of these offerings, 49% of workshops were ongoing, 83% of coaching opportunities were ongoing, and 46% of conferences were ongoing. From these results, we can see VA is offering effective PD in the form of coaching, and the majority of these programs are ongoing due to the nature of the coaching design. This is encouraging as coaching has proven extremely effective. However, of the other methods of PD offered, less than half were ongoing opportunities provided for teachers. Therefore, it can be assumed these PD opportunities were not as effective as other methods because they failed to meet duration requirements and did not provide proper follow-up methods.

Results also show every division offered PD aligned to some degree with statewide initiatives. Divisions prioritized providing PD opportunities that help teachers provide high-quality teaching over PD focused on developing deeper learning opportunities for students and/or promoting equitable opportunities in the classroom. Within this same analysis of the alignment and coherence of PD, we questioned how to better align PD opportunities from VDOE with individual division needs. From this analysis, the most highly requested PD opportunities by topic were: social emotional learning, literacy development, special education training, content-specific opportunities, trauma informed care, and performance assessment. The type of PD most highly requested by divisions when offering PD programming in these topic areas were: coaching, online opportunities, and professional learning communities.

VDOE may use the data collected from this survey to improve their resource allocation when providing PD opportunities across the state. Having discovered that 10% of divisions offer PD satisfying the effectiveness criteria, VDOE may also better align their PD offerings with methods of effectiveness and increase the number of divisions that provide effective learning opportunities to educators. This will not only increase the quality of instruction and improve student academic achievement, but it will also increase the coherence and relevancy of PD. Most divisions seem to be engaged in some degree of what rigorous research deems effective, however, further analysis is required in order to ensure effectiveness. This study can be built upon by surveying the providers of PD, analyzing implementation methods of various PD programs, and providing follow-up after PD is administered via RCTs or QEDs to study effectiveness.

Policy Implications

Below are recommended ways to best utilize Department resources and provide effective PD opportunities across the state:

Option 1: Provide more opportunities for coaching

Recent literature and research methods suggest coaching can support the effective implementation of new curricula, instructional approaches by educators, and teaching tools. Coaching is individualized, time-sensitive, context-specific, and focused on discrete skills (Kraft et al., 2018). Rigorous research is consistent in its findings that teachers who receive coaching are more likely to change teaching practices, apply them appropriately in the classroom, and show significantly larger student gains and performance than teachers who receive more traditional methods of PD (Darling-Hammond et al., 2017). Therefore, coaches and other expert supporters play a critical role in creating effective PD.

VDOE should provide divisions with the support and programming necessary to provide greater coaching opportunities to their educators. Coaching can take multiple forms whether it's in-person or virtual. Both distribution methods of coaching have proven effective, as noted in the literature review and as seen through programs such as My Teaching Partner. Therefore, depending on the resources available, either in-person or online coaching opportunities can be provided. Because coaching is often more costly than other programs, it is recommended to implement a program similar to My Teaching Partner that provides both in-person and virtual coaching opportunities for educators as online opportunities are generally less costly. Additionally, state and division administrators could identify and develop expert teachers within their schools to serve as mentors and coaches to support learning. These teachers are embedded in their school communities and could dedicate time to helping other teachers in their grade and/or subject area improve their teaching practices.

Because of the proven effectiveness of coaching models, this option is politically feasible. Additionally, Governor Northam has prioritized the improvement of public education across the state, seen by his raise in teacher salary statewide. Therefore, with this issue being on the political agenda in Virginia, it is likely there is room for greater resources devoted to improving PD opportunities. However, because of the cost of coaching, it may be difficult to incur the funding needed, which hinders its political feasibility. Many legislators may say they've already devoted money to teacher and have other priorities where that money should be spent. Despite the monetary invest, coaching is proven to be more effective at improving the quality of teaching and student achievement when compared to more traditional forms of PD. See Appendix A.

Option 2: Improve workshops by providing opportunities for lengthier summer workshops followed by periodic workshop opportunities and PLCs

Ninety-six percent of divisions already provide workshop opportunities for their educators. However, only 49% of these workshops provide ongoing, sustained learning opportunities. Because the duration of PD is a necessary element to its effectiveness, it is recommended that divisions provide intensive two-week workshops over the summer and then continue this training into the school year. Workshops would be continued by reinforcing the training they received over the summer through occasional teacher-workdays throughout the school year and monthly grade-level PLC meetings. For this improved workshop model to effectively align PD with state- and division-wide initiatives, VDOE may provide specific curriculum or recommended specific workshop providers to local divisions. Support and guidance from VDOE is necessary in order to ensure alignment across the state. PLCs encourage teachers to analyze student work collaboratively, which gives teachers the ability to develop a common understanding of high-quality student work and discuss instructional strategies

that may not be working and for whom. Strong PLCs include two main characteristics: shared intellectual purpose and a sense of collective responsibility among educators for student learning (Darling-Hammond, 2018). Overall, PLCs are organized networks that connect teachers around a subject matter or other shared educational concern. This recommendation is adopted from a similar PD model supported by rigorous evidence; using RCTs and QEDs, McCutchen (2002) and Saxe (2001) found statistically significant positive improvements in both instruction and student achievement from teacher who participated in this type of PD.

The additional workshop sessions and development of PLCs would support teachers in deepening their learning and provide opportunities for ongoing support. This option would also improve PD because it would successfully identify the individual needs of teachers and cater learning opportunities to the strengths and weaknesses of educators. PLCs and continued follow-up also allow for the creation of a shared vision of what excellent teaching entails and provides a space for teachers to receive feedback and help in achieving this vision.

This option provides opportunities for ongoing, sustained learning through periodic training days throughout the school year and fostering PLCs. PLCs provide job-embedded learning that is active, collaborative, and reflective. Therefore, a more developed workshop model, that includes opportunities for active learning, meets the effectiveness standards of reform methods of PD. This method of PD is collaborative, provides opportunities for expert support, allows times for reflection, and is sustained in duration (Darling-Hammond, 2018).

Depending on the division and locality, the amount of additional training days may vary; however, it is recommended the number of teacher-training/work days a division provides its schools should be allocated to continuing the PD administered during the summer workshop. Additionally, PLCs within schools will also vary. Teachers may choose to meet daily during their planning time, weekly, or monthly.

Because workshops are already used by divisions, this option is feasible. VDOE does not have to do any convincing whether or not to implement this method of PD, because it is already widely used among divisions, showing their continued support for this method of PD. VDOE would spend its resources offering specific curriculum or adding additional, evidence-based methods of PD to an already established network of workshops offered across the state. Therefore, divisions would not have to uproot their PD models; instead, they would be given additional components to make their efforts more effective. Fortunately, teacher work days are already built into the academic calendar for divisions in VA, so no additional costs will be incurred for the periodic workshop training days throughout the school year. However, it can be assumed costs will be incurred in order to: offer longer summer workshops (two-weeks), compensate teachers for additional training over the summer, receive guidance from expert supports in developing PLCs within school systems, administrative costs at VDOE in order to create a workshop model such as this, and instructional materials for teachers.

These two recommendations encourage VDOE to support and incentivize the kind of evidence-based PD reviewed in this analysis. Both types of PD have been analyzed using rigorous research methods to demonstrate their effectiveness. Researchers have developed a consensus of components that define whether or not PD is effective and high-quality, and this report has provided an overview of these five core components. Both coaching and the reformed workshop model include most, but not all, of these components of effectiveness. Moving forward, researchers need to adopt and establish standards for PD in order to guide the design, funding, and implementation of professional learning provided to educators.

Implementation Considerations

If VDOE chooses to implement either of the policy recommendations above, or some degree of the recommended policy considerations, there are multiple implementation components to consider. Well-designed PD programs must be implemented well to be effective, and because education is contextual and varies so significantly across the state, there's high potential for poor implementation due to barriers such as:

- Inadequate resources including monetary funds and curriculum materials
- A lack of shared vision and implementation design because of the absence of adopted standards for PD
- Lack of time for planning and implementing new instructional approaches; teachers are already pressed for time in the classroom to teach necessary materials, that administrators would have to redesign the use of time and school schedules in order to increase opportunities for professional learning and collaboration, which are both necessary in order to develop PLCs at the school-system level
- Conflicting requirements or activities within and between school divisions
- Lack of administrative capacity at the state-level to develop more effective PD programs and administer them across the state; lack of capacity to research and analyze PD programs through randomized-controlled trials
- Low-quality research
- Lack of information about the reliability of outcome measures
- Lack of flexibility in program designs to respond to the needs of educators and students
- Poor communication between state and local leaders

Common obstacles should be anticipated and planned for during both the design and implementation phases of PD. VDOE must take into consideration the varying demands of stakeholders such as teachers, Superintendents, local administrators, policymakers, education researchers, Secretary Atif Qarni, State Superintendent Dr. James Lane, individuals in the Governor's Office, education non-profits, the private and public institutions that administer PD programs. At the local level stakeholders such as local school boards and PTAs have a significant influence on policymaking and education decisions; therefore, their beliefs and opinions need to be accounted for in order to prepare for any pushback received.

It's important to address the varying roles of state actors, specifically VDOE and local school divisions, when considering implementation. For the purposes of this analysis, I recommend VDOE identifies and recommends high-quality, effective PD to local divisions who will then be responsible for implementation. VDOE should provide support to local divisions by: recommending which PD opportunities to offer based on measures of effectiveness, funding options for implementing reform methods like coaching, and follow-up support by encouraging program evaluation or baseline data on how a specific program was implemented (type, duration, participants, etc.).

Local divisions and Superintendents need substantive implementation support in order to balance the needs of students and educators and to implement the PD as designed. Guidance from state-level leaders will also help organize support and change at the local level, which is necessary in order to promote and facilitate successful implementation. In order to assess whether or not PD was successfully implemented, VDOE, a higher education institution, or research institution may partner with divisions to conduct follow-up analysis on the implementation fidelity of PD programs. For instance, it's important for researchers or PD administrators to collect data on what is implemented, how frequently it occurs, if there is a change in teacher instruction and/or student academic achievement, and so forth. Collecting data at the division level from teachers and principals, is very useful in assessing whether implementation occurred well.

VDOE may also devote resources to conduct a high-quality evaluation of whichever PD program it chooses to promote and/or administer. In order to meet high-quality research and evidence standards, VDOE would need to conduct RCTs and effectively assign teachers or whole schools to control and experimental groups. Proper evaluation is particularly important for PD programs that may vary in design features. For instance, RCTs that successfully randomize teachers or schools to coaching programs that differ in program delivery, such as in-person versus virtual or weekly meetings versus monthly meetings, would make known which elements or entire PD designs are worth taking to scale. The scalability of a PD program effects whether or not it could be implemented at large either across a whole school division or the entire state, which makes proper evaluation and high-quality research essential.

The implementation of new PD programs may receive pushback at the local level due to resource constraints and monetary costs. It's important for VDOE to provide flexible funding and continuing education materials for learning opportunities that include coaching, workshops, and sustained engagement in collaboration (PLCs). For instance, funding is available for technology-facilitated opportunities for PD and coaching under Titles II and IV of ESSA to address the needs of under resourced communities (Darling-Hammond, 2018). Therefore, making this funding known and available, while also offering new grant opportunities or discovering new private funding streams is critical to not only the successful implementation but the sustained implementation and duration of revised PD.

This report provides a baseline analysis of current PD methods and how they align with research on effectiveness and statewide initiatives. However, because of the limitations in this study, it's necessary to continue surveying educators and school divisions in order to continue developing personalized PD. VDOE can conduct these surveys themselves or mandate school divisions to do so, in a similar fashion to the current requirement of conducting teacher evaluation surveys. Because there is already a mechanism in place to enforce surveys, VDOE may expand this requirement to include PD analysis in the teacher evaluation survey in order to collect information directly from educators. This is important to consider in the implementation phase because educators at the local level need to be kept at the forefront of PD program design and implementation.

Limitations

This study has limitations, and it's important to identify potential weaknesses and threats to internal validity. First, there are gaps in both literature and previous research conducted. Within literature, enough research has been done in order for researchers to form a consensus on the five core components of effective PD: duration, content focused, active learning, alignment, and collective participation. However, the terminology as to how they these five components are referenced and/or defined from study to study varies. For instance, ongoing opportunities were defined in this survey as any PD that isn't just a single day event, leaving much variation in how divisions perceive ongoing PD. Coaching was also minimally defined because it can take many forms, and we were mainly interested in a baseline analysis of whether or not this service was provided. In addition to varying terminology, there are other gaps in literature that need to be filled. Researchers identify the duration of PD as one of the most important components when ensuring its effectiveness; however, researchers fail to address the exact number of hours teachers must participate in PD. The duration time frame varies from 20 hours to 49+ hours. Most research gathered from RCTs and QEDs identify the need for PD to engage teachers in 49+ hours of PD, but this isn't a standard every researcher or educator has adopted.

Second, the survey designed is limited due to the time constraints of this project. As outlined in Appendix B, the survey asked 15 questions regarding current PD efforts. The questions gathered the necessary information to answer research questions for this project, but again, are limited in scope. To improve upon this survey for future use, additional questions should be asked on the actual implementation of PD programs. For instance, when studying if a PD opportunity is ongoing, the survey must identify if something is offered for: one day, weekly, bi-weekly, monthly, and so forth. Because of the gap in literature, the term ongoing can also be perceived differently by divisions. Some divisions may believe a two-day workshop is ongoing, whereas other divisions define ongoing to be a service provided to teachers weekly or bi-weekly. Therefore, the actual implementation of a PD program must be further analyzed in order to catch granular detail and clarify what specific terms mean.

Third, quality of the research is also limited in scope. The survey used in this report was administered to Superintendents' offices, and not to teachers or individual providers of PD. This decision was made because of the time constraints and research limitations of this study. Therefore, the data collected is subject to biases that may have influenced the estimates gathered. The sample used in this analysis was limited in size and subject to bias because researchers selected a specific sample from the overall population to question. However, to help minimize bias in self-reporting, we asked no personally identifiable information other than "for which division are you responding on behalf of." Survey results were anonymous to help individuals answer honestly and without hesitation.

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Appendix A

Effect Sizes in Standard Deviations of Various Types of Professional Development

Study (study design)	Type of PD	Duration	Effect Size in Standard Deviations (on teacher or student achievement)	Statistical Significance
Content-Focused/Workshops				
Doppelt et al., 2009 (QED)	Content-based collaborative inquiry; teachers attended 5 workshops	20 hours; five four-hour workshops	1.7 (student achievement)	Statistically significant
Summer Workshop/Institute				
McCutchen et al., 2002 (QED)	Two-week summer institute plus three follow-up meetings; informal interactions and classroom visits with support	About 100 hours over 10 months	.39 (student achievement)	Statistically significant
Saxe et al, 2001 (QED)	Weeklong summer workshop with 13 follow- up meetings	30 hours over 6 months	2.39 (student achievement)	Statistically significant
Sloan, 1993 (RCT)	Summer sessions & seven follow-up meetings	5 hours over 2 months	.63 (student achievement)	Not significant, but substantively important
Roth, K.J. et al., 2011 (QED)	Three-week summer institute, video-analysis, and follow-sup sessions across the school year	102 hours	.20 (teacher achievement)	Statistically significant
Observational Visits & Follow-Up				
McGill-Franzen et al., 1999 (RCT)	Three whole-day sessions and seven two-hour follow-up sessions	About 30 hours over 6 months	1.11 (student achievement)	Statistically significant

Cole, 1992 (RCT)	Eight three-hour sessions over a two-month period with follow-up observational **visits**, plus two half day follow-up conferences	40+ hours over 1 year	.50 (teacher achievement)	Statistically significant
Professional Learning Communities				
Gallagher et al., 2017 (RCT)	The program used a three-part approach that included collaborative professional development, support for the implementation of new curricular resources, and formative assessment.	About 90 hours over 2 years	.20 (student achievement in content) .20 (student achievement in structure) .15 (student achievement in stance)	Statistically significant on all 3 student writing attributes
Gersten, 2010 (RCT)	Teacher study groups that met and discussed readings, how to implement research-based strategies, and collaboratively planned	20 hours; 16, 75-minute sessions over 9 months	.20 (student achievement in reading outcomes)	Statistically significant
Coaching				
Pianta, 2011 (RCT)	My Teaching Partner-Secondary; intensive, year-long program that offers a standardized observational assessment of teacher-student interactions	N/A	.22 (student achievement)	Statistically significant
Kraft, 2018	Review of 31 different coaching programs	N/A	Pooled effect sizes: .49 (teacher achievement)	Statistically significant

			.18 (student achievement)	

RCT is a randomized controlled trial; QED is a quasi-experimental design
Teacher achievement: improved instruction or content knowledge
Student achievement: increase students' academic achievement (mostly standardized test scores)

Citation: Yoon, 2007.

Appendix B

Survey of School Division Professional Learning/Professional Development Activities

January 2020

1. On behalf of which school division are you responding?
   [Drop-down list of school divisions provided]

Current Professional Learning Practices

2. From the list below, select all professional learning/development activities your division offered during 2018-2019 school year, including during the summer of 2019.

Reading
- Phonics
- Phonemic Awareness
- Comprehension
- Fluency
- Vocabulary
- Literacy
- Other (open text)

Mathematics
- Number and Number Sense
- Measurement and Geometry
- Probability and Statistics
- Patterns, Functions, and Algebra
- Computation and Estimation
- Other (open text)

Science
- Environmental Literacy (MWEE)
- Scientific Literacy
- Inquiry
- Scientific Modeling
- Engineering Design Practices
- STEM integration
- Other (open text)

Computer Science
- K-8 Integration of CS into Core Content
- Understanding 2017 Computer Science Standards
- Other (open text)

Instructional Strategies
- English Language Learners
- Performance Assessment
- Competency Based Learning
- Project Based Learning

Interdisciplinary Learning
Using Data to Drive Practice
Other (open text)

Student Support
Cultural Competency
Social Emotional Learning
Trauma Informed Care
Community & Family Engagement
Positive Behavior Systems of Support
Other (open text)

3. What forms of professional learning/development activities are currently offered in your division (check all that apply):
Workshops (outside the normal school day)
If yes, does this activity offer:
Single day training on a specific topic/skill
Ongoing training on a specific topic/skill
Coaching (provides an ongoing mentorship relationship for an educator)
If yes, does this activity offer:
Single day training
Ongoing training
Ongoing Professional Learning Communities
If yes, does this activity offer:
Single day training
Ongoing training
Blended (some mixture of in-person and online/virtual)
If yes, does this activity offer:
Single day training
Ongoing training
Conferences
If yes, does this activity offer:
Single day training on a specific topic/skill
Ongoing training on a specific topic/skill
Summer institutes and/or summer training
If yes, does this activity offer:
Single day training on a specific topic/skill (training is completed once summer institute finishes)
Ongoing training on a specific topic/skill (continued throughout the school year)
Online training course
If yes, does this activity offer:
A single course
Ongoing training course with multiple series
School-University Partnerships
If yes, does this activity offer:
Single day training
Ongoing training

4. What is the modality of professional learning/development ***most often utilized*** in your division? (Check all that apply)
    - In-person only
    - Online/virtual only
    - Blended (in-person and online/virtual)
    - Other (open text)

5. Does any of the professional learning/development offered in your division take place/work with teachers during the regular school day?
    - Yes
    - No

6. After the professional learning/development activity, do you assess its impact on the skills of your teachers?
    - No
    - Yes, we solicit feedback through surveys
    - Yes, we use another method for feedback (open text)

Professional Learning/Development Resources

7. Estimate the average amount of time teachers in your division spent in professional learning/development during the 2018-2019 school year?
    - Less than 10 hours
    - Between 10 and 20 hours
    - Between 20 and 30 hours
    - Between 30 and 40 hours
    - More than 40 hours

8. Who is responsible for developing the Professional Learning/Development Plan for your division?
    - Superintendent
    - Assistant Superintendent
    - Human Resources
    - Director of Instruction/Curriculum
    - Director/Coordinator for Professional Learning
    - Building Level Principals
    - Director of Special Education
    - Finance Director
    - Self-Selected
    - Other (open text)

9. What percent of an FTE (full-time equivalent) do you dedicate towards coordinating or planning professional learning/development in your division?
    - None
    - Up to 0.50 FTE
    - Between 0.51 FTE and 1.0 FTE
    - More than 1.0 FTE

10. Select the ways in which you partner for professional learning/development in your division? (select all that are applicable)
    - Higher education
    - Non-profits (such as VASCD, VSTE, VaSCL, VASS, SURN)

Vendors (If checked, list vendors used in 2018-2019 school year)
N/A
Other:

Future Professional Learning/Development Needs

11. The Virginia Department of Education is developing a 2021-2022 Professional Learning Plan to support school divisions' professional learning/development needs. What professional learning opportunities would **best meet the needs of your educators?** (check all that apply)
    Cultural Competency
    Social Emotional Learning
    Trauma Informed Care
    English Language Learners
    Literacy
    Performance Assessment
    Competency Based Learning
    Computer Science Integration
    Project Based Learning
    Interdisciplinary Learning
    Community & Family Engagement
    Positive Behavior Systems of Support
    Using Data to Drive Practice
    Special Education

12. To what extent do the professional learning/development activities in your division align with the following VDOE priorities:
    a. *Helping teachers create classroom environments that support high-quality teaching and learning*
    b. *Focusing on strategies that create environments for deeper learning*
    c. *Providing equitable opportunities for all students*
    Not at all
    To a moderate extent
    To a great extent

13. How familiar are you with the Virginia Department of Education's *Profile of a Virginia Educator?*
    Not at all
    Moderately familiar
    Extremely familiar

14. To what extent has your division begun implementing professional learning/development activities aligned with the *Profile of a Virginia Educator?*
    We do not have any activities planned
    We have activities planned that are not yet implemented
    We have implemented activities

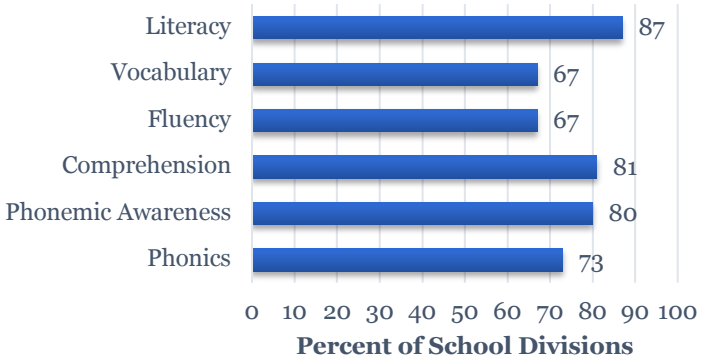
15. What types of professional learning/development experiences would be most beneficial to help prepare and support your teachers? (check all that apply)
    Coaching

Mentoring
Shadowing
Site visits
Professional Learning Communities
Opportunities for Personal Development

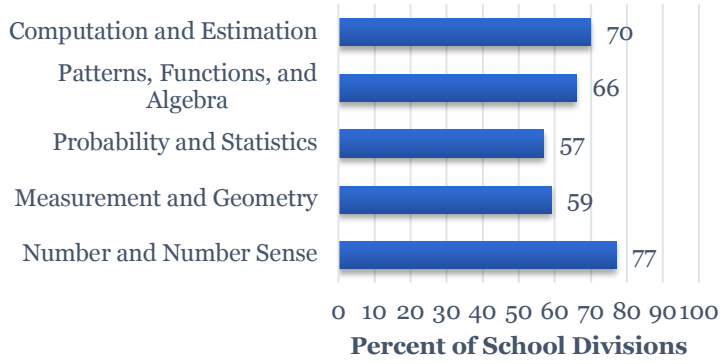
Appendix C

Content-Specific Professional Development Offered During the 2018-2019 School Year

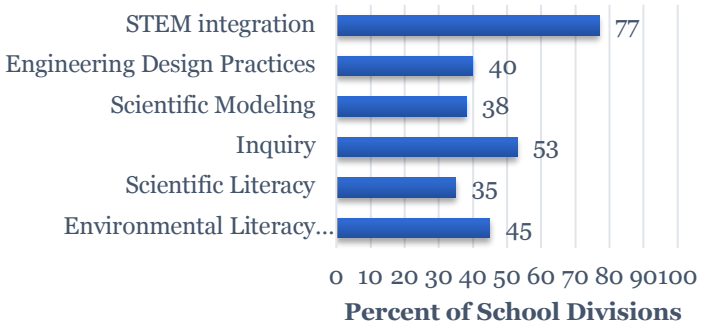
Reading



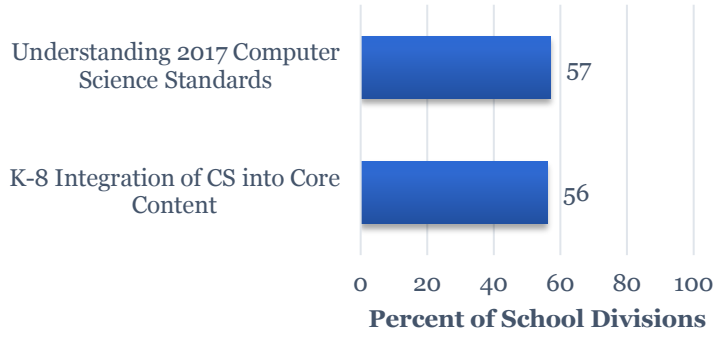
Mathematics



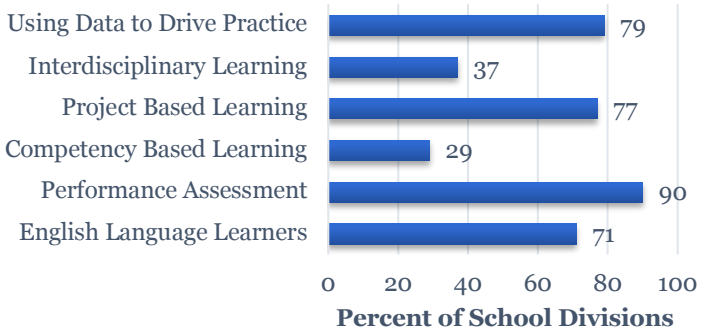
Science



Computer Science



Instructional Strategies



Student Support