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PERCEPTIONS OF HIGH QUALITY PROFESSIONAL DEVELOPMENT: DO TEACHERS
AND ADMINISTRATORS AGREE?

DANIEL L. BROWN

146 Pages

This study used a survey research design to gather educator perceptions about a particular professional development (PD) event they deemed effective. Responses were used to measure HQPD characteristics by PD event, across roles, grade levels and the combination of roles and grade levels. Authors of Garet et. al. (2001, Winter), granted permission to use the Teacher Activity Survey (TAS), so it was modified for this study (Appendix B), mapped to the HQPD characteristics (Appendix D) and was used to collect participant responses. Work by Garet et. al. (2001, Winter) and Sappington et. al. (2012) were used to create the Structures, Processes and Features (SPF) model (Appendix A). SPF is a three-dimensional model used to display levels of duration, collaboration, and core features to identify a resultant frame classification for the PD event. Emergent themes were identified through statistical analyses that included descriptive statistics, factor analysis, ANOVA, MANOVA, correlation studies and X^2 (Chi-squared) tests. Findings were reviewed to determine accuracy of the modified TAS and SPF instruments. Additionally, the impact of leadership was evaluated as one component of the core features characteristic. Finally, recommendations for improvement and further research were offered.

KEYWORDS: administrator, characteristics, development, professional, quality, teacher

PERCEPTIONS OF HIGH QUALITY PROFESSIONAL DEVELOPMENT: DO TEACHERS
AND ADMINISTRATORS AGREE?

DANIEL L. BROWN

A Dissertation Submitted in Partial
Fulfillment of the Requirements
for the Degree of

DOCTOR OF EDUCATION

Department of Educational Administration and Foundations

ILLINOIS STATE UNIVERSITY

2023

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PERCEPTIONS OF HIGH QUALITY PROFESSIONAL DEVELOPMENT: DO TEACHERS
AND ADMINISTRATORS AGREE?

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CHAPTER I: INTRODUCTION TO THE STUDY

The current mission of P-12 public education fails to align with the reality of the needs to educate all students for a global system. Fraser (2001) declared “Students in the United States have always been a diverse lot.” and goes on to state “How the schools have handled this diversity has changed dramatically over the years” (p. 180). Curiously enough, Fraser was referring to the student population and school change between the start of education in the United States up to 1960. With student populations and curricular standards changing, it is paramount school districts maximize professional development (PD) opportunities for educators.

The Illinois State Board of Education (ISBE) adopted Culturally Responsive Teaching and Leading Standards for educators Wednesday, December 16, 2020 (ISBE, 2020). The initiative is to be implemented in educator preparation programs no later than October 1, 2025. However, in the meantime, there will be an extensive need for in-service educators to receive PD to implement the new standards in practice. This research attempts to gather participant reactions related to educator beliefs of the characteristics of high quality professional development (HQPD). Understanding the perceptions of the various groups may help better situate educators in space and time so that PD programs are created to meet this important standards implementation effort. Educator reactions will be compared using two variables: (a) position (teachers and administrators) and (b) grade bands (elementary, middle school and high school). In addition, perceptions will be compared to the literature base that identifies the characteristics of HQPD.

Along with the new Culturally Responsive Teaching and Leading Standards for a diverse student population, educators have been called upon to implement rigorous curricular standards

such as Principles and Standards for School Mathematics in 2000 and Next Generation Science Standards (NGSS) in 2013. Combined with increased federal accountability systems under the Every Student Succeeds Act (ESSA), the need for HQPD is important if standards are to be the basis of school improvement and teacher instruction that leads to student learning. “One of the most persistent findings from research on school improvement is, in fact, the symbiotic relationship between PD and school improvement efforts” (Hawley and Valli, 1999, p. 129). Hattie (2009), Hawley and Valli (1999) and Marzano (2003) promoted PD in curricula and instructional practice as areas having significant impact on school improvement. Timperley et. al. (2008) wrote, “Notwithstanding the influence of factors such as socio-economic status, home, and community, student learning is strongly influenced by what and how teachers teach” (p. 6). Joyce and Calhoun (2010) agreed, “One way to look at school improvement initiatives is that improvement in student learning will not take place unless procedures, including curriculum and instruction, are altered” (p. 37). They went on to emphasize the great effort needed to successfully deliver PD in curriculum and instruction.

In an attempt to measure educators’ perceptions of the characteristics of HQPD, this researcher creates a three-dimensional model -- Structures, Processes and Features (SPF) -- that can be used to quantify the levels of duration, collaboration, and core features by utilizing works by Garet et. al. (2001, Winter) and Sappington et. al. (2012) as the primary artifacts. The work is also heavily supported by Desimone (2009, 2011), Desimone and Garet (2015), and Desimone et. al. (2005). A modified survey instrument from Garet et. al. (2001, Winter), the Teacher Activity Survey (TAS), is mapped to the characteristics of HQPD (Appendix D) and will be used to collect and code participant responses.

The core literature base is supported further by Hirsh (2019). Hirsh identified four key areas: (a) coaching, (b) collaborative learning, (c) content-focused professional learning and instructional materials, and (d) leadership development. Hirsh, citing research from Kraft et. al. (2018) credits coaching as a method of professional learning that can accelerate trajectories for teachers as they move from novice to veteran status.

Hirsh (2019) continues to cite professional learning communities (PLCs), action research, and lesson study as viable forms of collaborative learning. These practices continue to be relevant forms of professional learning when implemented with fidelity and purpose. To achieve the best outcomes, educators must understand the significance of commitment of resources to these endeavors. The model used by this researcher utilizes content-focused professional learning as a characteristic to identify HQPD.

Finally, leadership development remains relevant and is a characteristic used by this researcher to identify HQPD as it involves collaborative commitment horizontally and vertically across the educational organization. Strong building and district level leadership is a must to create exploratory environments where teachers are encouraged to challenge the status quo through implementation of skills learned and knowledge gained through HQPD.

As such, a potential baseline of successful professional learning is dependent on the perceptions of, or the ability to identify, exactly what the characteristics of high-quality professional learning are and then how to implement those in professional learning plans across educational organizations. The logic being that if all educators in the organization can identify high-quality professional learning, then all levels of the organization can work collaboratively to implement effective PD programs.

Statement of the Problem

As this project contains a focus on teachers and administrators, it is appropriate to discuss teacher retention and, what many in education and politics call, teacher shortages across Illinois.

Highlighting retention challenges, Rogers and Skelton (2014) provides:

Research shows that novice teacher assignments are likely to involve the most challenging students and courses outside his or her certification or comfort areas (Brown,2004). Many novice teachers are ill-prepared to handle the rigorous school day, challenging students, academically, and behaviorally (Stansbury and Zimmerman, 2002). Novice teachers who exit education in the first year is due to the lack of leadership support (Stansbury and Zimmerman, 2002; Inman and Marlow, 2004). Public schools employ a higher percentage of novice teachers, yet in the first five years or less, 40% leave the profession. Legislation requires novice educators to take part in training and mentoring programs. (p.8)

Leadership and HQPD provides educators opportunities to connect as professionals and remove feelings of isolation leading to better teacher retention (Rogers and Skelton, 2014).

According to the Illinois State Board of Education (ISBE), Unfilled Positions 2020 user interface, as of August 20, 2020, there were 1,858.2 full-time equivalent (FTE) teaching positions unfilled across Illinois. In 2019, Illinois lawmakers passed legislation to address the teacher shortage. However, as reported in an interview (Gaines, 2019), according to Mark Klaisner, president of the Illinois Association of Regional Superintendents of Schools, “school districts across the state are still struggling to fill open teaching positions.” On the Illinois Association of School Boards (IASB) website, in Andrews’ commentary (Andrews, 2019, July/August) one can find the statistic, “89 percent of central Illinois districts and 92 percent of

southern Illinois districts had issues with staffing their teaching positions with qualified candidates.” As reported by Fazio (2020, May 14), Advance Illinois provides five things that impact the teacher shortage in Illinois. Impacts are:

- (a) “The state has lost half of its educator prep programs since 2012”;
- (b) “The shortage is most acute in special education, followed by elementary education, bilingual education, and science, math and technology (STEM)”;
- (c) “The state can’t tackle the teacher shortage without addressing teacher turnover”;
- (d) “Teachers of color enter teacher prep programs but don’t end up getting hired”; and
- (e) “There’s not going to be a quick fix for the issue.”

As of March 2023, this appears to continue to be a topic of conversation has Illinois' governor, J.B. Pritzker, has proposed \$70 million program be added to the State's 2024 budget to hire and retain teachers amid Illinois teacher shortage (Smylie, 2023).

However, when one drills down in the data in the ISBE user interface, there are some interesting facts in Southern Illinois. Of the 1,858 unfilled teaching positions in IL, there are 108 unfilled mathematics and 92 science unfilled science positions. Encouragingly, in the region contained within the state borders on the east and south, interstate 70 on the north, and IL Route 4 on the west, there are 8 mathematics and 2 science positions unfilled. Therefore, it appears the school districts in the region defined are able to recruit mathematics and science teachers to fill positions. The important step now is to address the turnover impact identified by Advance Illinois by providing HQPD for those teachers, so they can continue to grow individually and positively impact student learning in mathematics and science. As many PD programs are one-size-fits-all, this research may help identify what teachers and administrators, within and across grade bands, think HQPD is to them. This research is significant because it may help better shape

the one-size-fits-all model if there is agreement, or it may identify reasons why the one-size-fits-all model is outdated. This researcher posits that the first problem to address is the extent to which educators show agreement when describing characteristics of PD events they deemed effective. It is this researcher's belief that before educators can implement HQPD they must first share common understanding and vocabulary of what HQPD is and how it is fielded. Following Wenger (1998), we do not want get stuck using models that are dichotomous, rigid, or sacred, but use the best PD designs for the given situation to meet the needs of our educators and, ultimately, our students.

Purpose of the Study and Significance

The purpose of this research is to determine if educators identify PD events that contain HQPD characteristics by collecting educator perceptions about a PD event they believe to have been the most effective form of professional learning. Secondly, to determine if perceptions differ in relation to position or grade level or the combination of position and grade level. Data about those experiences will be collected using The Teacher Activity Survey (TAS) (Appendix B). The targeted audiences comprise mainly of STEM educators that regularly participate in PD through Southern Illinois University (SIU) -- a Tier I research university in Illinois. The first group of educators will be teachers. The second group of educators will be administrators. Data will also be collected by grade band: (a) 3-5, (b) 6-8 and (c) 9-12. All will be asked to complete the same survey to collect their perceptions. The TAS mapped (Appendix C) to the SPF (structures, processes and features) dimensional model (Appendix A) will be used to gain insight about the types of PD educators deemed effective.

This study's significance is supported by Desimone and Garet (2015) as it attempts to translate the "broad features into specific, effective activities in varying contexts" (p. 260) by

surveying educators to determine their perceptions of PD activities in which they have participated, and then identifying details about those the various activities marked as successful events by the educator participants. With that, this researcher will attempt to collect and analyze data utilizing a participant list provided by SIU to determine educator perceptions regarding PD activities they deemed effective. The study will have six main focus groups determined by position type (teacher, administrator) and grade level (k-5, 6-8, 9-12). Participants will be asked a series of questions pertaining to the aforementioned characteristics of HQPD. The data will be analyzed to check for agreement about characteristics of HQPD between the groups.

This study design, in part, is based on a rationale that agreement in perceptions between teachers and administrators is important for the success of a PD program within a school district. In Sixel (2013), key finding number two addressed the PD plan and process. In summary, teachers identified the importance of return on investment (ROI) of time spent in PD against time spent on instruction in their classrooms. Therefore, it is important for educators to agree on a definition of high-quality PD so that all can agree on the ROI of time to attend such PD events. A first step to ensure agreement is to determine current perceptions.

Further, Kasemsap (2017) wrote, “The most critical factor within the school in facilitating student learning is the teacher and the ability of those in leadership positions to shape a collaborative, motivated, and effective teaching community” (p. 112). To inform this effort, one must first understand educator perceptions of the characteristics of HQPD in order to determine if a common definition is understood or needs to be derived so all can move forward in the same direction with shared goals.

Finally, Canedela (2017) took a similar approach to give voice to teachers about their perceptions of effective PD to implement cognitive demanding tasks in their mathematics

instruction. The teachers surveyed were able to identify several characteristics of HQPD that align to the framework used in this researcher's proposed study. Canedela (2017) used a model of PD that overlaps with the framework used in this researcher's study. Commonalities are: (a) collaboration, (b) content knowledge, (c) pedagogical growth, (d) connections to classroom teaching practices (job-embeddedness), and ongoing support (leadership support).

Research Questions

This study attempts to answer the following set of questions:

1. When asked to describe a professional development experience they believe to have been most effective to their learning, to what extent do educators identify characteristics of high-quality professional development such as:
 - a. Duration
 - b. Collaboration
 - c. Core features
 - i. Content knowledge
 - ii. Active learning
 - iii. Coherence
 - iv. Time
 - v. Leadership?
2. To what extent do educators' perceptions differ by their position?
3. To what extent do educators' perceptions differ by their grade band?
4. To what extent do educators' perceptions differ across the combinations of position and grade band?

Conceptual/Theoretical Framework

The model used for this study, Structures of Training, Processes of Implementation, and Levels of Core Features Employed (SPF – structures, processes and features) (Appendix A), combines concepts from Structures of Training and Processes of Implementation model (STPI) published by Gardner et. al. (2005) and the levels of Core Features of high-quality PD identified in Garet et. al. (2001, Winter) and more recently Desimone (2011). Also, this researcher incorporates a leadership component as an additional core feature because without leadership participants might not have the supportive work environment to put into practice what is learned in PD and explore the impacts on student learning.

Sappington et. al. (2012) describes the STPI frames well. The four frames are labeled (a) short-term, solo practitioner, (b) short-term, group practitioners, (c) long-term, group practitioners, and (d) long-term, solo practitioner. The Core Features from Garet et al. (2001) are: (a) content knowledge, (b) active learning, (c) coherence, (d) duration, and (e) time. SPF combines the two 2- dimensional models into a three-dimensional typology that has eight frames as identified in the Table 1 below. This approach is similar to what Desimone (2011) did. She changed the Core Features to (a) content focus, (b) active learning, (c) coherence, (d) duration and (e) collective participation. However, SPF maintains both the Garet et al. and the Sappington et al. models as its base.

SPF has three dimensions: (a) x- axis = Level of Duration, (b) y-axis = Level of Collaboration and (c) z-axis = Level of Core Features (content knowledge, active learning, coherence, time and leadership) (see Table 1 for definitions). These axes result in eight frames that reflect the levels of duration, collaboration and core feature characteristics within the PD system. The eight frames and their characteristics are shown in Table 2.

Definitions of the Study

Table 1

Definitions of the SPF Dimensions

Dimension	Definition
Duration	The span of time over which the activity takes place.
Collaboration	The degree to which multiple people and levels of the organization participate together during or the activity.
Core Features	The use of features identified as important metrics of high-quality professional development (content knowledge, active learning, coherence, time and collaboration).
Content Knowledge	Leads to expansion of subject matter knowledge (teacher understanding of content), pedagogical knowledge (teacher understanding of instructional practice), and understanding how students learn the content (the convergence of teacher content knowledge and instructional practice).
Active Learning	Participants are engaged in practice and implementation of what they are learning or have learned.
Coherence	Systemic, intentional arrangement of activities across all levels of the organization that are aligned to teacher goals (knowledge and beliefs), state learning standards, and promote ongoing communication among educators.
Time	The number of hours spent on the activity. Desimone (2009) sets the mark of at least 20 hours of contact time.

(Table Continues)

(Table Continued)

Dimension	Definition
Leadership	Leadership decisions that lead to support of the implementation of what was learned and when professional development is designed to include the other dimensions (I include leadership as a core feature as supported by Desimone and Garet (2015) and Guskey and Sparks (1991b)).

Table 2

Characteristics of Professional Development

Frame	PD Characteristics		
	Duration	Collaboration	Core Features
A	Short-Term	Solo	Low
B	Short-Term	Group	Low
C	Long-Term	Group	Low
D	Long-Term	Solo	Low
E	Short-Term	Solo	High
F	Short-Term	Group	High
G	Long-Term	Group	High
H	Long-Term	Solo	High

Frame A - Short-Term, Single, Mundane Information

Frame A consists of activities in which participants attend on an individual basis and complete the training in one setting with no ongoing support. Commonly, these activities are

workshops, conferences, and presenters. The effectiveness and direct impact on increased student achievement of these activities are criticized by the field (Sappington et al., 2012) as they tend to be procedural, verse conceptual, in nature (Hochberg and Desimone, 2010) and lack an ongoing network support system. In addition, these activities would be weak in core features—not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership.

Frame B - Short-Term, Group, Mundane Information

Frame B consists of short activities that are attended by groups of people from more than one level of the school’s organization (Sappington et al., 2012). Common examples would be the mandated school level training like blood borne pathogens and automated external defibrillator (AED) operation and region-wide institutes. Like Frame A, these activities share the lack of ongoing network support. In addition, these activities would be weak in core features—not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership.

Frame C - Ongoing, Group, Lacks Focus

Frame C consist of ongoing activities that include multiple educators and levels. The training is often work embedded and linked to improvement in instruction (Sappington et al., 2012). Examples could be professional learning communities (PLC) meeting on an ongoing schedule that is embedded in the workday; however, due to lack of training or knowledge, educators fail to discuss content related topics, so these activities turn out to be weak in core features. That is, the activities are not focused on content knowledge, utilize passive learning, are disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership (as evidenced by lack of administrator guidance,

support and participation at meetings). This might be the case where personnel believe they are doing PLCs but are truly not maximizing the benefits of PLCs.

Frame D - Ongoing, Single, Lacks Focus

Frame D consist of activities that are ongoing and embedded, but do not maintain a collaborative multilevel participant approach (Sappington et al., 2012). These activities may be individual PD in non-content related fields of education. These activities would be weak in core features— not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership. An example might be an individual taking coursework at an outside institution in a field other than education or his or her area of concentration--a teacher pursuing a degree in administration perhaps.

Frame E - Short-Term, Single, High Quality

Frame E consists of activities in which participants attend on an individual basis and complete the training in one setting with no ongoing support. Commonly, these activities are workshops, conferences, and presenters. These activities would be strong in core features— focused on content knowledge, active learning, connected to the systemic PD process at the school or district level, and actively supported by school and district leadership. An example might be an administrator attending a national PLC conference, but without ongoing district support to implement due to lack of resources that are outside the control of school and district leadership.

Frame F - Short-Term, Group, High Quality

Frame F consists of one-time activities that are attended by groups of people from more than one level of the school's organization. These activities have high levels of core features.

They will be focused on content knowledge, utilize active learning, will be aligned to district and school initiatives, and will have active support of school and district leadership. An example may be a district wide institute day that is conducted once a year to review large-scale summative test results in the morning session, followed by discussion groups in the afternoon session, and a return to whole group to dialogue about small group conversations. Another example may be the initial exploratory team attending a national conference to determine if the program could be implemented in the school or district, and then determining it could not be so adopted, so the initiative is not pursued further.

Frame G - Ongoing, Group, High Quality

Frame G consist of activities that are ongoing, include multiple educators and levels, and demonstrates high core features. The training is often work embedded and linked to improvement in instruction. Examples could be PLCs meeting on an ongoing schedule that is embedded in the workday, with proper levels of training and knowledge, that are focused on content knowledge, that utilize active learning, that is connected to the systemic PD process at the school or district level, and that have active school and district leadership support.

Frame H - Ongoing, Single, High Quality

Frame H consist of activities that are ongoing, generate networks of support, are embedded, but do not maintain a collaborative multilevel participant approach. These activities may be individual PD in content related fields of education – mathematics teachers pursuing advanced degrees in mathematics or mathematics education for example. These activities would be strong in core features—focused on content knowledge, active learning, connected to the systemic PD process at the school and district levels, and have active school and district leadership support.

Limitations of the Study

This researcher anticipates the study results will be limited by the nature of self-reported responses from educators during the survey process as the PD activities may have taken place in the past and may impact participant recall. However, this researcher is confident that the overall results will be valid and reliable as the events in question are not related to participant evaluation and use of a comprehensive survey instrument that seeks information on behavioral and descriptive questions instead of evaluation of personal practice situations (Desimone, 2009). The delimitations of the study include the researchers' closeness to the work, as the researcher is the primary person responsible for coding participant responses. As with all studies, more analyses can be conducted than those used in the study.

Summary

This research attempts to take a pulse check regarding educator perceptions about the characteristics that identify high-quality PD and if those perceptions are in alignment between teachers and administrators and across three grade bands of educators: (a) 3-5, (b) 6-8 and (c) 9-12. This researcher posits that agreement of definition is important to ensure the success of district, school and individual PD plans thus maximizing the return on investment of time outside the classroom to improve student achievement inside the classroom. The next chapter provides a lengthy review of relevant literature.

CHAPTER II: REVIEW OF LITERATURE

The review of literature for this project began in 2010. Using Google search, the University of Illinois at Urbana Champaign (UIUC) and Illinois State University (ISU) online libraries, and the references within the books and journal articles read by this researcher, an initial literature base was constructed. The searches included educational leadership, school improvement, professional development, staff development, program evaluation, and professional development for science and mathematics education. The results were combined with the personal materials collected during the researcher's experience as a central office administrator, studies to obtain advanced degrees in Technology (training and development), educational leadership, and curriculum & instruction. Finally, this information was combined with additional resources compiled during doctoral studies in educational leadership.

Symbiotic Relationship Between School Improvement and Professional Development

The Equity and Excellence Commission (the Commission), a federal advisory committee chartered under the Federal Advisory Committee Act (FACA); 5 U.S.C., App.2., in a report to the secretary titled *For Each and Every Child: A Strategy for Education Equity and Excellence*, wrote, that because we have raised standards, have more diverse classrooms, and implemented Common Core State Standards (CCSS) the need for PD to support teachers is of increased demand (p. 22). Further, the Commission defined that PD be/do:

embedded in the workday, deepen and broaden teacher knowledge, be rooted in best practice, allow for collaborative efforts, be aligned to the Common Core State Standards and provide the supports, time and resources to enable teachers to master new content, pedagogy and learning tools and incorporate them in their practice.” (p. 23)

The Commission's PD requirements appear to align with the Core Features of PD identified in Garet et. al. (2001). The core features include content knowledge, active learning, and coherence.

Leadership Impact on School Improvement and Professional Development

The literature base is replete with resources on how leadership impacts school improvement. More recent works by Coburn et. al. (2013), Fullan (2014), Hargreaves and Fullan (2012), Hochberg and Desimone (2010), and Perie et. al. (2009) appear to indicate the days of the heroic, all knowing, leaders are gone. DuFour and Marzano (2009) and Fullan (2014) posit that even the role as instructional leader is off-base. Today's educational leaders must be versed in curriculum, instruction, assessment, evaluation, data analysis, organizational development, PD, finance, community relations, and school law—and by all means, this is not a comprehensive list of skills and abilities. As the role shifts from heroic leadership to more collaborative approaches, so too must the actions educational leaders take to complete work and the cadre of people that fill the positions of educational leaders. Educational leaders must become the learning leader (DuFour and Marzano, 2009; Fullan, 2014), system leader and agent of change (Fullan, 2014) and shift from past role as principals being removed from curriculum and instruction and focused on supervision (Leithwood and Montgomery, 1982) to the new function of capacity building.

Summarizing Fullan (2014) that the wrong policy drivers are accountability, individualistic solutions, technology, and fragmented strategies...all of which one could argue are heroic leadership venues. Instead, Fullan claimed the right drivers are capacity building, collaborative efforts, pedagogy and systemness [sic]. These appear to be distributed (Spillane, 2006), constructivist (Lambert et. al. 2002) and adaptive (Heifetz et. al., 2009) leadership styles. The ideals of shared leadership and decision making to resolve challenges is used to grow

capacity, improve pedagogy and achieve better system efficiencies through the use of collaborative problem solving and decision making. Basically, leaders must set a culture that can manifest into communities of practice (COP) (Wenger, 1998) or professional learning communities (PLC) (DuFour and DuFour, 2010; DuFour and Eaker, 1998; DuFour et. al., 2004; DuFour and Marzano, 2009; Hord, 2009; Hord, 1997, and Hord and Hirsh, 2009) in such that common practices, language, and norms are observed and a focus on student learning becomes the critical filter by which success is evaluated. These communities can better improve the professional capital of the organization and lead to improved student achievement (DuFour and Marzano, 2009; Fullan, 2014; Hargreaves and Fullan, 2012; and Marzano, 2003).

Distributive Leadership allows time to be spent in the most effective manner (Spillane, 2006). As such, educational leadership is expanding to include teacher leaders (Firestone et. al., 2007). Teacher leaders have the ability to reach peers on personal and informal levels which increases facilitation effectiveness and individual learning. DuFour and Marzano (2009) acknowledged the merit in administrators investing time observing in classrooms of teachers both new to the building and, in my opinion, especially those new to the profession, but cited research identifying reasons why administrators' time spent observing in veteran teachers' classrooms contributes minimal return of investment and can be better spent enhancing levels of professional interaction in the organization. In addition, if given the time, PD to expand their own knowledge and expertise, and the adoption of a culture of personal development and growth—not one of evaluation and judgment—teacher leaders can become trusted, effective assets in building professional capital (Firestone et. al. 2007). The use of teacher leaders appears a better fit this PD need. The teacher leader approach appears to align with Emery and Trist's Socio-Technical Design Theory (Trist, 1981) in that it allows those individuals closest to the

work, the teachers, to be the ones to improve the PD system to improve instructional practice and increase student learning. This leads the discussion to techniques to evaluate professional development.

Evaluation of Professional Development

Historical

Guskey defines evaluation as “the systematic investigation of merit or worth” (p. 41). Guskey (2000) provided a short review of evaluation models that dated back to Ralph W. Tyler in 1930s and 1940s. Tyler’s model (1942) had seven steps: (a) establish broad goals or objectives, (b) classify or order the goals or objectives, (c) define the goals or objectives in observable terms, (d) find situation in which achievement of the objective is demonstrated, (e) develop or select measurement techniques, (f) collect performance data, and (g) compare the performance data with the stated objectives. It is important to draw attention to the fact that, even in 1942, Tyler’s model resulted in measuring performance data vs. stated objectives. Basically, Tyler looked for changes in behavior and how much those behaviors were related to the stated outcome objectives. Tyler emphasized that the objectives should be well-defined, but that they should not be set in stone, and should be reexamined in terms of importance and meaning. Tyler’s philosophy is still relevant as mathematics education in general grows. For example, the new Common Core State Standards (CCSS) are a result of paradigm shifts in what students should know about mathematics to be college and career ready. Illinois adopted the CCSS in June 2010. The last set of Illinois Learning Standards had been in place since 1997. The change took thirteen years to evolve, or at least, become realized. Likewise, new Illinois Learning Standards for Science we adopted by ISBE in 2014 and last updated in 1997-98.

Twenty years after Tyler, Michael and Metfessel (1967) extended Tyler's work. They focused on two important parts: (a) stakeholder groups involved with the evaluation and (b) an expansion of the methods of data collection. Their eight steps were: (a) involve the total school community as facilitators in the evaluation process, (b) formulate a cohesive model of goals and specific objectives, (c) translate objectives into a communicable form applicable to facilitating learning in the school environment, (d) select or construct instruments to furnish measures allowing inferences about program effectiveness, (e) carry out periodic observations using content-valid testing, scales, and other behavior measures, (f) analyze data using appropriate statistical methods, (g) interpret the data using standards of desired levels of performance over all measures, and (h) develop recommendations for the further implementation, modification, and revision of broad goals and specific objectives. They stressed the use of evaluation tools that could be used by all members of the school community, so all stakeholders could take active roles in the process. This approach appears to meet the major goal in Patton's Utilization-Focused Evaluation (UFE), "intended use by intended users." (2012, p.4, 2011, p. 4) The evolution of Tyler's work continued with Hammond.

Hammond (1967) proposed a more detailed structure for evaluation. Hammond added the focus of why goals were attained in addition to merely evaluating whether or not programs provided the desired outcomes. Basically, Hammond wanted to attempt to rule out dumb luck. Hammond wanted to know why. Hammond's model had three dimensions. The model was structured like a rectangular prism. The base of the prism was the institution dimension. The height of the prism was the instruction dimension. The depth of the prism was the behavior dimension. Institution was further broken into six subcategories, instruction had five, and behavior had three. Student, teacher, administrator educational specialists, family, and

community made up the institution category. Organization, content, method, facilities, and cost made up the instruction category. Cognitive, affective, and psychomotor made up the behavior category. The user would plot scores across the three dimensions. The (x,y,z) coordinates would spark various questions. For example, (a) is the content of the program or activity sufficient to accomplish the cognitive goals, (b) was the adequate information about the program or activity provided to teachers, (c) do teachers have the background knowledge and experience necessary to implement the content of the program or activity, or (d) to what degree and how well are teachers using the content of this program to achieve the cognitive goals are potential questions one might ask to determine the why of a result. A limitation of the model would be coming up with particular questions for each of the 90 possible outcomes of the 6 x 5 x 3 matrix. However, the details may provide better insight into the results, and may provide more defined measurement tools and ideas because the creation of the evaluation tool may incite a lot of discussion as the questions for all 90 results are created. This model could do a lot for identifying the root cause of a situation and may flesh out myths and misunderstandings that might otherwise diminish the impact of the evaluation. Again, this model might work within the UFE constructs as it would require evaluation users to dig deeply into the intended goals and outcomes of the evaluation, thus making it more usable to the users. Although not mutually exclusive of each other, Scriven's Goal-Free Evaluation Model takes a much different approach.

Scriven (1972), Goal-Free Evaluation Model, was concerned that too much detail or focus on goals might cause the researcher to become biased. The researcher should be open to observe and report. He believed the goal-free model would increase the likelihood that unintended outcomes could be identified and noted (p. 53). The true goal should be to look at everything that is happening, not just what you thought you should observe or what you thought

might happen. The goals should also be evaluated throughout the process. This model is illustrated by the passing of NCLB. The legislation has had a lot of unintended outcomes and is only now being revisited in the political dialogue as to whether or not the goals and techniques are valid. Patton (2012, 2011) addresses this in Chapter 6 when he challenges the users to not only finding use of the final results, but in also establishing process to gather knowledge during the evaluation itself. Stufflebeam appeared to agree that goals were not the only piece to the puzzle.

Stufflebeam's CIPP (Context, Input, Process, Product) Evaluation Model focused on decision-making instead of program activities or goals. It centers on decisions made by policy people and administrators and what information they will need to make sound decisions. The evaluation is set up to collect data to illustrate advantages and shortcomings. The bosses then make unbiased decisions based on the data. Stufflebeam's work dates back to 1969 (Stufflebeam, 2007, 2003).

Kirkpatrick's model has passed through time from 1959 to 2007. A third edition of *Evaluating Training Programs* was published in 2006, and an implementation of the four levels in 2007. Kirkpatrick's work is still referenced in a lot of the research read for this project. Kirkpatrick and Kirkpatrick have four levels in their model: (a) reaction, (b) learning, (c) behavior, and (d) results. The reaction level measure how participants felt about the training. Questions can range from temperature of the room to how important the participant felt the training was to his or her particular job. The information is collected as short surveys at the time of training. The learning phase measures the knowledge, skills, and attitudes acquired by the participant as part of the training. Pre-Post tests are commonly used to determine a delta measurement in learning. The behavior phase measures how well the participant uses the new

knowledge, skill, and abilities in his or her job. The results measure the impact of the new knowledge vs. the bottom line. Again, this appears to follow UFE ideals in that the journey is just as important as the destination. The reactions and learning levels can tell you a lot about your PD in a formative manner and may provide insight into the final outcomes during data review and provide context as to what may have impacted the final results. The model started in business and industry but is easily adaptable to education when one wants to focus on student achievement outcomes--results. Over time, some have wanted to add a fifth level.

Guskey (2000) inserts a level at number three. He adds organization support and change after “participants’ learning” and before “participants’ use of new knowledge and skills”. Guskey also links the results phase to “student learning outcomes” thus making the transition from business and industry to education.

21st Century

Guskey (2000) is a potential one-stop-evaluation resource. Guskey defines (PD) as the intentional, ongoing, and systematic process of learning. PD has to be for individuals and organizational development in order to realize improvement. PD provides a way for individuals to improve and organizations to solve problems and renew. Guskey stresses PD for any individual that affects student learning. As Guskey’s model can be used for PD overall, Loucks-Horsley et. al. (2003) provided one for teachers of mathematics and science.

On page one of their book, *Designing Professional Development for Teachers of Science and Mathematics*, they wrote, "changes in accountability and educational practices have produced a need to clearly connect PD to student learning and, more particularly, to closing persistent achievement gaps between rich and poor and white and African American and Hispanic students." The need to change is what prompted them to revisit their original work and

produce a second edition. Their PD Design framework has six phases impacted by knowledge and beliefs, critical issues, context, and strategies at various time throughout the process. The design follows a Baldrige Model of Plan, Study, Do, and Act. Obviously, they went into great detail about how and why they would follow the model.

Good Evaluation

Guskey (2003, April) analyzed thirteen of the better-known lists of characteristics for good PD. The lists he developed from 1992 to 2003 by various groups such as teachers' unions, college professors, governmental groups, and professional organizations. His study looked at whether or not the lists were derived in comparable ways, common characteristics across the lists, and how the characteristics matched up to the revised *Standards for Staff Development* published by the National Staff Development Council in 2001 (outlined below). Some of the results were that the characteristics were not unique to a particular time period. The characteristics appeared across time in a consistent manner—none were buzz-words of the time. The consistency across time of Guskey's model for evaluation combined with the fact that it is grounded in Kirkpatrick's work and Loucks-Horsley because the basics of PD and evaluation appeared to remain similar may make it an appealing model. Guskey did point out that the lists could be described as research based, but that they did not make strong connections between characteristics and improvement instructional practice or student learning. The common characteristics are the same as one would find in the recent literature and will support the decision to adopt the two models as baselines for PD and evaluation.

Enhancements of teachers' content and pedagogic knowledge appeared in 10 of the 12 lists and the NSDC Standards (2001, p. 9) and PD based on higher-order thinking skills. The studies around higher-order thinking skills did link evaluation to student learning and were

exclusive to studies in mathematics and science. Sufficient time and other resources appeared in 9 of 12 studies; however, the length of time was contradicted in the research. Birman et. al. (2000) advocated more time; while Kennedy (1998) and Wenglinsky (2002) showed evidence that the amount of time was unrelated to student outcomes—especially in mathematics education. Basically, the quality of the PD impacts results more than the amount of time spent in PD. Collegiality and collaborative exchange appeared multiple times, but also contained caveats about how quality and purposeful efforts to shape the conversations discussed in PD impacted effectiveness. Most of the list called for the inclusion of specific evaluation procedures—prior planning on how a program would be evaluated. The majority of the lists in Guskey's review called for PD to be aligned with reform initiatives (Guskey's intentional requirement) and to model high-quality instruction. There was some debate on whether PD should be school based, determined by the district, or both. There was debate on whether or not PD needs should be identified by teachers themselves or experts conducting formal needs assessments. Oddly, only three studies called for PD to be based on research evidence (Guskey, April, 2003, p.12). Guskey identified three things in his summary and conclusions.

First, there appeared to be little agreement among PD researchers on criteria for “effectiveness”. He said that it may have been because the researchers had different purposes and that that may have led to different characteristics. One might agree with his assessment because much research about PD emphasized the context in which an evaluation would be conducted directly influenced how it was setup and completed. Which leads to his second comment that effective PD can at best be described as “Yes, but... statements” because on context and situations. “The nuances of context are difficult to recognize and even more difficult to take into account within the confines of a single program” (Guskey, April, 2003, p. 15-16). Finally,

because data typically show more variation between classrooms in the same schools than with other schools in the districts, the use of effective PD, that is setup within the context of a single school, may lead to larger gains in student learning. Oddly, his third conclusion appears to support a decentralized approach to PD even though his study results mentioned the debate on centralized or decentralized approaches. Guskey presented this information in a paper at a meeting of the American Educational Research Association in Chicago, IL. The following information is from his book, *Evaluating Professional Development*. Much of the information also appears in ERIC document ED 430 024 from 1999, ERIC document ED 369 181 from 1994, an article from 2003, *Closing the Knowledge Gap on Effective Professional Development* that appeared in a 2009 edition of *Educational Horizons* (87(4), 224-233).

Guskey (2000) focused on three types of evaluation: (a) planning, (b) formative, and (c) summative. The standards of good evaluation were identified in 1981 by the Joint Committee for Educational Evaluation. The standards were revised in 1994. The committee defined standard as “a principle mutually agreed to by people engaged in professional practice, that, if met, will enhance the quality and fairness of that professional practice” (p. 61). The standards were set into four categories: (a) utility, (b) feasibility, (c) propriety, and (d) accuracy. The utility standards are meant to ensure the data collected will meet the needs of the intended users. The feasibility standards are meant to ensure that the evaluation will be realistic, prudent, diplomatic, and frugal. The propriety standards are meant to ensure the evaluation will be legal, ethical, and with due regard of those involved. The accuracy standards are meant to ensure the evaluation will be technically sound and determine the worth or merit of the program being evaluated (Guskey, 2000, p. 63-64). After defining PD (intentional, ongoing, and systematic) and evaluation (systematic investigation of merit or worth) Guskey outlined his guidelines for

evaluating PD. He had five basic issues regarding the evaluation of PD: (a) how should we begin thinking about PD evaluation, (b) what is the relationship between PD and improvements in student learning, (c) what are the critical levels of PD evaluation, (d) what is the difference between evidence and proof, and (e) what are the practical guidelines for evaluating PD? (p. 68).

In my review of the literature I data mined Guskey's references and transitioned from Guskey back to Sparks. Sparks led me to The National Staff Development Council (NSDC), now, Learning Forward, which revised their standards in 1994, 2001 and more recently in 2011. Learning Forward is an association devoted to educator PD.

Professional Development Standards Crosswalk

Below in Table 3 is a crosswalk between Learning Forward's standards (2011) and Hirsh (2012), the Core Features found in Garet et al. (2001) and the importance of leadership in Hochberg and Desimone (2010), and the Elements of Effective Professional Development set forth by the National Council of Teachers of Mathematics (Mirra, 2003). As shown below, these appear to have the similar core features as Garet et al. (2001). The crosswalk shows what I think are commonalities in the various sets of standards represented in the literature. Therefore, the Garet et al. (2001) Core Features are still relevant given the newer references still link to the same ideals.

Table 3

Core Feature Nomenclature Crosswalk

Learning Forward (2011)	Garet et al. (2001) Hochberg and Desimone (2010)	Mirra, (2003) National Council of Teachers of Mathematics (NCTM) and NCTM (2010)
Standards	Core Features	Elements of Effective Professional Development Programs (2003) Goals of Professional Development (2010)
Organizes adults into learning communities whose goals are aligned with those of the school and district. <u>(Learning Communities)</u>	Group Participation	Models examples of high-quality mathematics teaching and learning, reflecting on teaching, collaborating
Requires skillful school and district leaders who guide continuous instructional improvement. <u>(Leadership)</u> (Table Continues)	Coherence Time Duration	Connects to a comprehensive long-term plan that includes student achievement

(Table Continued)

Learning Forward (2011)	Garet et al. (2001)	Learning Forward (2011)
Requires resources to support adult learning and collaboration. (Resources)	Leadership	Actions taken by Administrators Systemic support
Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement. (Data)	Coherence Time Duration Leadership	Systemic support
Uses multiple sources of information to guide improvement and demonstrate its impact. (Data)	Content Knowledge Coherence Time Duration Leadership	Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices, is long term and systemic support is provided

(Table Continues)

(Table Continued)

Learning Forward (2011)	Garet et al. (2001)	Learning Forward (2011)
Prepares educators to apply research to decision making. (Implementation)	Content Knowledge Coherence	Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices and is long-term planning
Uses learning strategies appropriate to the intended goal. (Learning Designs)	Active Learning	Models examples of high-quality mathematics teaching and learning and has Opportunities for active learning

(Table Continues)

(Table Continued)

Learning Forward (2011)	Garet et al. (2001) Hochberg and Desimone (2010)	Mirra, (2003) National Council of Teachers of Mathematics (NCTM) and NCTM (2010)
Applies knowledge about human learning and change. (Learning Designs)	Content Knowledge Active Learning Coherence	Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices
Provides educators with the knowledge and skills to collaborate. (Learning Communities)	Content Knowledge Active Learning	Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices and is long-term with opportunities for active learning

(Table Continues)

(Table Continued)

Learning Forward (2011)	Garet et al. (2001)	Learning Forward (2011)
Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement. (Implementation)	Content Knowledge Active Learning Coherence Leadership	Models examples of high-quality mathematics teaching and learning Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices and is long-term with opportunities for active learning

(Table Continues)

(Table Continued)

Learning Forward (2011)	Garet et al. (2001) Hochberg and Desimone (2010)	Mirra, (2003) National Council of Teachers of Mathematics (NCTM) and NCTM (2010)
Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately. (Learning Designs)	Content Knowledge Active Learning Coherence	Models examples of high-quality mathematics teaching and learning Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices and is long-term with opportunities for active learning

(Table Continues)

(Table Continued)

Learning Forward (2011)	Garet et al. (2001)	Learning Forward (2011)
Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Learning Communities)	Content Knowledge Active Learning Coherence	Models examples of high-quality mathematics teaching and learning Develops teachers' knowledge of, (a) mathematics content, (b) students and how they learn mathematics, and (c) effective instructional and assessment practices and is long-term with opportunities for active learning

The Learning Forward Standards are meant to outline the characteristics of professional learning that leads to effective teaching practices, supportive leadership, and improved student results. This ultimately, should lead to school improvement.

Comprehensive School Reform Models and Characteristics of HQPD

The United States Department of Education (USED) authorized the Comprehensive School Reform (CSR) Program in 1998 via Title I, Part F of the Elementary and Secondary Education Act. The act was signed into law January 8, 2002. The CSR program utilizes scientifically based research to identify effective practices to raise student achievement: especially in the most at-risk student groups. The models focus on schoolwide reform efforts that incorporate many characteristics of high-quality PD. Competitive grant programs at the state

level required school districts to provide narratives and data to demonstrate their ability to implement 11 components of CSR programs: (a) employ proven methods of scientifically based research, (b) integrate a comprehensive plan across all 11 components, (c) provide ongoing, high-quality PD for teachers and staff, (d) include measurable goals and benchmarks for student achievement, I have “buy-in” from teachers, administrators and staff, (f) support teachers, administrators and staff, (g) provide meaningful stakeholder involvement, (h) use external experts for technical support, (i) conduct program evaluation annually, (j) identify resources needed to sustain the effort, and (k) utilizes methodologies that have been found to significantly raise student achievement. (USED, 2004)

CSR models included the characteristics of high-quality PD used in this study. Mainly, the models include emphasis on collaboration, duration of study, focus on content knowledge, active learning, maintain coherent efforts of PD tasks, include built-in time for PD efforts, and include leadership to foster a supportive environment. Similarly, as with the research within this review of literature, the end goal of CSR is to significantly increase student achievement.

However, Lee and Min (2017) indicate “the actual impact of CSR programs on student achievement has turned out to be inconsistent” (p. 372). Resultantly, use of CSR models have decreased. Their study looked at the relationship between teacher buy-in and student academic growth utilizing the data from the Study of Instructional Improvement (SII) to examine Accelerated Schools (AS), America’s Choice (AC), and Success for All (SFA). Overall, meta-analysis of CSR models indicate commitment of five or more years before desired outcomes may be realized (although, admittedly, this is true for other educational innovations as well). Their research indicates at least two years of investment before instructional behaviors are changed. (p.

375). The challenge becomes one of initiatives that continually start and stop as leaders come and go within an organization.

The “Change Curve Is a powerful model accredited to Elisabeth Kubler-Ross” (Albeshr, 2020, p. 704) and is still used in organizational management today. Albeshr writes from a lens of management, business administration and accounting and is relevant to the field of education as educational leaders can incorporate models of organizational change management in schools and districts. An understanding of the change curve can lead administrators to better help stakeholders through times of organizational realignment. The goal of the leader is to limit the time stakeholders spend at the bottom of the change curve. “Techniques and Models for Organizational Management Systems ensure Sustainability [sic] in the organization” (Albeshr, 2020, p. 706). However, if change management is not practiced well, then organizations continually lose traction towards goals. The loss of traction leads to inconsistent outcomes which can impact performance over time.

Lee and Min (2017) “indicate the same implementation dip for large reform programs may also reflect the collective levels of buy-in among teachers at a given school” (p. 375) leading to teachers seeing less value in policy or recommended changes, thus “they are less likely to make the suggested changes in their instruction” (p. 376). They further support the claim that change management, limiting the impact of the change curve, by ensuring teacher buy-in can lead to solid outcomes after two years, “in the schools that implemented the CSR program 2 years prior to data collection, students who were taught by teachers with higher buy-in tended to show higher academic performance in all three subjects” (p. 383).

Slavin and Madden (2013) offer CSR programs as a third option juxtaposed with top-down models that go from national to state to district models and small-scale, localized efforts,

that are hard to scale up, to build networks of support, and face unusual circumstances in each case. The whole school approach with supports and tools designed for wide-scale use, and scaling within organizations, that came about in the late 1990s and included about 48 national CRS programs. However, the decline of CSR programs was reached by the mid-2000s. Slavin and Madden (2013) claim Talent Development High Schools and Success for All as the two remaining CSR programs with Success for All maintaining the larger market share and, as of 2014, being in about “600 elementary and middle schools throughout the United States” (p. 170). “Because of its size, experience, and research base, Success for All represents the best surviving example of how whole-school reform models can be created, evaluated, and brought to scale on a national basis” (p. 170). So what PD characteristics does Success for All utilize?

The main elements of the approach are: (a) a schoolwide focus on literacy, (b) cooperative learning, (c) quarterly assessments, (d) a schoolwide leadership model, (e) a facilitator, (f) tutoring, and (g) schoolwide systems for student and family support (p. 171). Given these elements, one might suggest commitment to the high-quality characteristics of coherence, collaboration across multiple levels within the organization, time and duration, content knowledge and active learning as a facilitator works with teachers to help them implement the programs, and finally, leadership as teams of teachers and school leaders take on responsibility for the school wide implementation of the model.

Structures, Processes, and Levels of Core Features Employed

The model used for this study, Structures of Training, Processes of Implementation, and Levels of Core Features Employed (SPF – structures, processes and features) (Appendix A), combines concepts from Structures of Training and Processes of Implementation model (STPI) published by Gardner et. Al. (2005) and the levels of Core Features of high-quality PD identified

in Garet et. Al. (2001, Winter) and more recently Desimone (2011). Also, I incorporate a leadership component as an additional core feature because without leadership participants might not have the supportive work environment to put into practice what is learned in PD and explore the impacts on student learning.

Sappington et. Al. (2012) describes the STPI frames well. The four frames are labeled (a) short-term, solo practitioner, (b) short-term, group practitioners, (c) long-term, group practitioners, and (d) long-term, solo practitioner. The Core Features from Garet et al. (2001) are: (a) content knowledge, (b) active learning, (c) coherence, (d) duration, and I time. SPF combines the two 2- dimensional models into a three-dimensional typology that has eight frames as identified in Table 1. This approach is similar to what Desimone (2011) did. She changed the Core Features to (a) content focus, (b) active learning, (c) coherence, (d) duration and I collective participation (p. 29). However, SPF maintains both the Garet et al. and the Sappington et al. models as its base.

SPF has three dimensions: (a) x- axis = Level of Duration, (b) y-axis = Level of Collaboration and (c) z-axis = Level of Core Features (content knowledge, active learning, coherence, time and leadership) (see Table 1 for definitions). These axes result in eight frames that reflect the levels of duration, collaboration and core feature characteristics within the PD system. The eight frames and their characteristics are shown in Table 2. The frames are defined below.

Frame A – Short-Term, Single, Mundane Information

Frame A consists of activities in which participants attend on an individual basis and complete the training in one setting with no ongoing support. Commonly, these activities are workshops, conferences, and presenters. The effectiveness and direct impact on increased student

achievement of these activities are criticized by the field (Sappington et al., 2012) as they tend to be procedural, verse conceptual, in nature (Hochberg and Desimone, 2010) and lack an ongoing network support system. In addition, these activities would be weak in core features—not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership.

Frame B – Short-Term, Group, Mundane Information

Frame B consists of short activities that are attended by groups of people from more than one level of the school’s organization (Sappington et al., 2012). Common examples would be the mandated school level training like blood borne pathogens and automated external defibrillator (AED) operation and region-wide institutes. Like Frame A, these activities share the lack of ongoing network support. In addition, these activities would be weak in core features—not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership.

Frame C – Ongoing, Group, Lacks Focus

Frame C consist of ongoing activities that include multiple educators and levels. The training is often work embedded and linked to improvement in instruction (Sappington et al., 2012). Examples could be professional learning communities (PLC) meeting on an ongoing schedule that is embedded in the workday; however, due to lack of training or knowledge, educators fail to discuss content related topics, so these activities turn out to be weak in core features. That is, the activities are not focused on content knowledge, utilize passive learning, are disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership (as evidenced by lack of administrator guidance,

support and participation at meetings). This might be the case where personnel believe they are doing PLCs but are truly not maximizing the benefits of PLCs.

Frame D – Ongoing, Single, Lacks Focus

Frame D consist of activities that are ongoing and embedded, but do not maintain a collaborative multilevel participant approach (Sappington et al., 2012). These activities may be individual PD in non-content related fields of education. These activities would be weak in core features— not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership. An example might be an individual taking coursework at an outside institution in a field other than education or his or her area of concentration—a teacher pursuing a degree in administration perhaps.

Frame E – Short-Term, Single, High Quality

Frame E consists of activities in which participants attend on an individual basis and complete the training in one setting with no ongoing support. Commonly, these activities are workshops, conferences, and presenters. These activities would be strong in core features— focused on content knowledge, active learning, connected to the systemic PD process at the school or district level, and actively supported by school and district leadership. An example might be an administrator attending a national PLC conference, but without ongoing district support to implement due to lack of resources that are outside the control of school and district leadership.

Frame F – Short-Term, Group, High Quality

Frame F consists of one-time activities that are attended by groups of people from more than one level of the school’s organization. These activities have high levels of core features.

They will be focused on content knowledge, utilize active learning, will be aligned to district and school initiatives, and will have active support of school and district leadership. An example may be a district wide institute day that is conducted once a year to review large-scale summative test results in the morning session, followed by discussion groups in the afternoon session, and a return to whole group to dialogue about small group conversations. Another example may be the initial exploratory team attending a national conference to determine if the program could be implemented in the school or district, and then determining it could not be so adopted, so the initiative is not pursued further.

Frame G – Ongoing, Group, High Quality

Frame G consist of activities that are ongoing, include multiple educators and levels, and demonstrates high core features. The training is often work embedded and linked to improvement in instruction. Examples could be PLCs meeting on an ongoing schedule that is embedded in the workday, with proper levels of training and knowledge, that are focused on content knowledge, that utilize active learning, that is connected to the systemic PD process at the school or district level, and that have active school and district leadership support.

Frame H – Ongoing, Single, High Quality

Frame H consist of activities that are ongoing, generate networks of support, are embedded, but do not maintain a collaborative multilevel participant approach. These activities may be individual PD in content related fields of education – mathematics teachers pursuing advanced degrees in mathematics or mathematics education for example. These activities would be strong in core features—focused on content knowledge, active learning, connected to the systemic PD process at the school and district levels, and have active school and district leadership support.

Summary

This literature review is meant to highlight the daunting tasks today's educators face and to highlight the ongoing need for HQPD as it is so directly related to student learning and school improvement while contributing to educator career fulfillment. It is important to repeat the findings that link student learning to school improvement and PD such as Hattie (2009), Hawley and Valli (1999), Joyce and Calhoun (2010), Marzano (2003) and Timperley et. Al. (2008). These works combined with Kasemsap (2017) about understanding educator perceptions and common definitions will help move forward on mutually agree to PD efforts that are both important for student learning and educator growth as to provide overall improvement to the school environment for students and educators.

The themes of common language, shared goals, and PD that Is Intentional, systemic, and purposeful are paramount reach across the literature over time. This study is an attempt to add to the significance supported by Desimone and Garet (2015) as it attempts to translate the "broad features into specific, effective activities in varying contexts" (p. 260) by surveying educators to determine their perceptions of high-quality PD activities in which they have participated, and then identifying details about those the various activities marked as successful events by the educator participants. The next chapter defines the methodology used for this study.

CHAPTER III: METHODOLOGY

This chapter will provide details about the study's research questions, research design, participants, ethical considerations, instrumentation, data collection and analysis. The study utilizes qualitative and quantitative methodologies to collect information regarding participant perceptions about a professional development activity the individual rates as highly effective. The responses will be analyzed to determine if participant groups identify common characteristics related to what they identified as HQPD.

Research Questions

This study attempts to answer the following set of questions:

1. When asked to describe a professional development experience they believe to have been most effective to their learning, to what extent do educators identify characteristics of high-quality professional development such as:
 - a. Duration
 - b. Collaboration
 - c. Core features
 - i. Content knowledge
 - ii. Active learning
 - iii. Coherence
 - iv. Time
 - v. Leadership?
2. To what extent do educators' perceptions differ by their position?
3. To what extent do educators' perceptions differ by their grade band?

4. To what extent do educators' perceptions differ across the combinations of position and grade band?

Research Design

The purpose of this research was to collect educator perceptions of the PD they received and believed to have been the most effective form of professional development. A survey design was used in this study. Survey design is used in cases where one wants to (a) collect data directly from participants, (b) utilizing short structured prompts, (c) when participants are trusted to give truthful answers, (d) when the researcher will use the responses to answer various research questions, and I an adequate response rate can be expected. Of the three modes of survey design (i.e. face-to-face, telephone, and self-administered) this study utilized a self-administered questionnaire delivered via Qualtrics in an effort to contact a maximum number of participants in a minimum amount of time. The approach assured all respondents got exactly the same questions in the same order, however it did not guarantee participants interpreted questions the same which may have introduced measurement error. Further, as responses were collected anonymously, another downside to this design was that this researcher could not ask participants clarifying questions about their responses. The data collection was a onetime event, so the research design did not provide parameters to address the change over time aspect of survey design. The question formats included Likert, single-select and multi-select multiple choice, numerically scaled ranges (slider bars), and extended responses (text box) participant interactions. The survey instrument was provided as Appendix B (Vogt et. Al., 2012).

Variables

The TAS used to collect responses about PD. The SPF was used to place characteristics of HQPD onto a 3-dimensional model. For the purpose of this study, the tools were aligned with the literature base to ensure content validity. The individual items within the survey were clustered to gather demographic information (mainly role and grade band served) and by HQPD characteristics (duration, collaboration and core features) in an attempt to ensure construct validity. Table 4 demonstrated the independent and dependent variables included in the study. For the independent variables (IV), there are 2 levels of educator role (administrator or teacher), and three levels of grade band served (3-5, 6-8, and 9-12). The dependent variables (DV) are the three dimensions used to define the characteristics of high quality professional development such as duration, collaboration, and core features, to include the variables content knowledge, active learning, coherence, time, and leadership as subcategories of the core features dimension.

Table 4

Factorial MANOVA Variables Defined

Parameters	Values
Independent Variable (IV) - role	Teachers, Administrators
Independent Variable (IV)- grade band served	Grade band: (a) 3-5, (b) 6-8 and (c) 9-12
Dependent Variable (DV) - characteristics of HQPD	Duration, Collaboration, Core Features (Content Knowledge, Active Learning, Coherence, Time, Leadership)

Participants

The participants in this study are educators that have participated in PD opportunities through an Illinois University. The population included teachers of mathematics and science. The university provided email contacts for the participants. A sampling frame was taken from the university's official list of PD participants and used to generate a sample of participants for the study. From the list of respondents, a large enough random sample was drawn to ensure statistical validity.

Ethical Considerations

Institutional Review Board (IRB) approval was sought to conduct the study. The survey link included a consent form (Appendix C) and the survey was completed anonymously. Finally, participants were at least 18 years of age.

Instrumentation

An electronic survey tool, the Teacher Activity Survey (TAS) (Appendix B), that is mapped to the Structures of Training, Processes of Implementation, and Levels of Core Features Employed model (SPF – structures, processes and features) (Appendix A) was used to gather data on the types of PD employed in the districts and schools. The survey instrument was adapted from the Teacher Activity Survey (Original TAS) used in Garet et al. (2001) and is used with permission (M. S. Garet and K. S. Yoon, personal email communications, June 11, 2015). The original TAS used by Garet et al. (2001) was modified in length by removing Sections I and II. This researcher did not wish to collect data that pertained to the teaching community in the same manner as did the original TAS, Section I and this researcher focused on a single PD event thus did not collect the data from the original TAS, Section II. Additionally, items in the original TAS, Section III, were reworded, reordered, combined into single questions, reformatted to be

placed into an array of Likert items or omitted to improve overall survey length and estimated response time. For the purpose of this study, the tools were aligned with the literature base to ensure content validity. The individual items within the survey were placed into clusters to gather HQPD characteristics (duration, collaboration and core features) in an attempt to ensure construct validity. The survey instrument was used to collect quantitative data related to the characteristics of HQPD identified in the SPF model.

As the survey tool was modified from its original form and construct, the survey tool was field tested and evaluated to determine reliability and validity with internal consistency coefficient and exploratory factor analysis (Mertler and Vannatta, 2013).

Data Collection

Data was collected via Qualtrics -- an online survey instrument. The data was exported into Microsoft Excel and was prepared for analysis in Excel and IBM Statistical Package for the Social Sciences (SPSS) software platform for advanced statistical analysis.

Data Analysis

This researcher used the Statistical Package for the Social Sciences (SPSS) software to complete the analyses for this work. In each case, missing values were addressed as part of the pre-analysis data screening process. The data gathered with the survey were analyzed using series of statistical analyses: (a) descriptive statistics, (b) factorial analysis, (c) ANOVA, (d) a simple comparison of educator demographics between the State of Illinois and the sample gathered for this study, (e) Correlation, (f) MANOVA and (g) X^2 . Highlights of each usage are provided below.

Descriptive statistics such as means, standard deviations, percentages and frequencies for demographic information and participant qualities (i.e., role, primary grade band, race, gender,

total number of years teaching, total number of years in current position). According to Vogt (2007), descriptive statistics, "are ways to explore quantitative evidence, usually one variable at a time" (p. 11). Descriptive statistics act as an initial analysis step to summarize and organize the characteristics of a dataset. After providing the summative information about the sample, other univariate, associational and multivariate analyses were explored.

A factor analysis of the Likert style questions was used to identify individual constructs from which to form a baseline score the Core Features variable (i.e., Content Knowledge, Active Learning, Coherence, and Leadership). A factor analysis is a procedure used to measure the shared variance that exist among the selected variables. It was used to determine if survey questions did in fact measure common themes, or factors, that were then used to create corresponding variables (Mertler and Vannatta, 2013). Table 5 shows the n-counts for each core feature for each survey item placed on a Likert scale. Each item has a 6-point scale that ranged from 1 to 6 points.

Table 5

Core Features, N-counts of Related Survey Questions

	Feature	Total Items		
		n-count	+ALL	Linked to Feature
DURATION	D	2	4	6
COLLABORATION	C	12	4	16
CONTENT KNOWLEDGE	CK	37	4	41
ACTIVE LEANRING	AL	15	4	19

(Table Continues)

(Table Continued)

	Feature	Total Items		
		n-count	+ALL	Linked to Feature
COHERENCE	CO	33	4	37
TIME	T	0	4	4
LEADERSHIP	L	13	4	17
ALL	ALL	4		

Appendix D shows the arrangement of survey questions (items) clustered by the variables -- Item Clusters by Variables. The clusters were used to look for similarity in responses across items for each given variable. An "All" cluster, survey questions that were mapped to all dependent variables, is shown separately, but those items were included in each cluster (i.e. the variable Time had 4 items in the cluster).

A series of ANOVA test were conducted between the demographic, HQPD characteristic, and Resultant Frame variables. Appropriate ANOVA statistics were reported. Analysis of variance (ANOVA) is a versatile analysis that, "can simultaneously study multiple independent variables with multiple groups" (Vogt, 2007, p.103), to measure the probability of significant differences between samples.

A simple comparison of demographic breakdown of educators in Illinois was conducted utilizing data from the Illinois Report Card (IRC). The results were then compared to the demographic distribution of the sample gathered during this study. Further, the sampling techniques of the study were detailed.

Research Question 1 was answered in part by a multiple correlations study. The generated correlation coefficients were utilized to determine association between the set of variables. This researcher noted the R^2 values and evaluated them following standards provided by Vogt (2007).

According to Mertler and Vannatta (2013), factorial MANOVA is a multivariate statistical procedure used “to test significance of group differences” and MANOVA is used when the study includes “several dependent variables” (p. 119). Specifically, factorial MANOVA, was conducted to investigate group differences in relationship to the three dimensions in the SPF model (Duration, Collaboration, and Core Features) and the five subcategories of Core Features.

Mertler and Vannatta (2013) indicate four common test statistics used in MANOVA. The (a) Pillai’s Trace, (b) Wilks’ Lambda, (c) Hotelling’s Trace, and (d) Roy’s Largest Root. In this study, Wilks’ Lambda were referenced first when equal variances were true,. As there are more than two independent variables, the F test was used as a consistent measure of significance across Pillai’s Trace, Wilks’ Lambda, and Hotelling’s Trace: with Wilks’ Lambda being, “the most commonly reported MANOVA statistic” (p. 125). Further, Box’s test for homogeneity of variance-covariance was referenced ($p < 0.001$) to ensure Wilks’ Lambda was appropriate due to the MANOVA test assumption of homogeneity. If homogeneity failed, which was possible as this researcher anticipated group sample sizes to be extremely unequal, then a more robust statistic, Pillai’s Trace was used to interpret the results.

Chi-Squared is a test of relative frequencies used to study categorical variables. The test was used to determine if variables were truly independent of each other or if a significant level of disproportionately appeared between groups. Mainly, the test was used to determine if

independent variables were distributed evenly across the Resultant Frame variable to answer Research Questions 3 and 4.

Summary

The goal of this chapter was to outline the research method used to answer the research questions. The research questions, along with a discussion of the research design, participants, ethical considerations, instrumentation, data collection and statistical analyses was provided. Procedures to analyze the data collected through the TAS instrument for placement onto the SPF model were detailed along with the corresponding statistical analyzes that were used to answer the research questions. Detailed steps taken and results recorded are provided in Chapter IV that demonstrate the methodology described in Chapter III was followed.

CHAPTER IV: RESULTS

This chapter presents the quantitative results to address the research questions:

1. When asked to describe a professional development experience they believe to have been most effective to their learning, to what extent do educators identify characteristics of high-quality professional development such as:
 - a. Duration
 - b. Collaboration
 - c. Core features
 - i. Content knowledge
 - ii. Active learning
 - iii. Coherence
 - iv. Leadership?
2. To what extent do educators' perceptions differ by their position?
3. To what extent do educators' perceptions differ by their grade band?
4. To what extent do educators' perceptions differ across the combinations of position and grade band?

Additionally, qualitative analyses were used to extend the discussion past the original scope of the study. A correlation study was completed as well as linguistic review of the participant descriptions of the PD events they deemed effective.

Preliminary Analysis

This section presents the preparation of the dataset and results of descriptive analyses: (a) percentages and frequencies for demographic information and participant qualities (i.e., role, primary grade band, race, gender, total number of years teaching, total number of years in

current position), (b) a factor analysis of the Likert style questions to identify individual constructs from which to form a baseline score the Core Features variable (i.e., Content Knowledge, Active Learning, Coherence, and Leadership), and (c) central tendencies scores and standard deviations for the variables Duration and Collaboration. This researcher used the Statistical Package for the Social Sciences (SPSS) software to complete the analyses for this work. In each case, missing values were addressed as part of the pre-analysis data screening process.

Following guidance on page 28 from Mertler and Vannatta (2013) the data were first screened for missing entries. As such, those surveys that were incomplete, where the participant did not reach the final question, were dropped from the set. The remaining responses were then reviewed to determine a rule to mitigate missing data values. It was decided to use a conservative approach, Mertler and Vannatta's second method, of mean replacement and the mean score was substituted for missing values. No outliers were discovered. Data were reviewed for normality and robustness.

The participants in this study were educators that participated in PD opportunities through an Illinois University. The initial sample was not large enough, so two additional Illinois school districts were added to the survey per consultation with this researcher's dissertation chair and methodologist. There were 42 participants, and the majority (92.9%) were White; other races included African American (4.8%) and Hispanic (2.4%). Responses to Gender were Female 76.2%, male 21.4%, and Non-binary/third gender 2.4%.

The distribution of the Role variable was 88.1% teacher and 11.9% administrator. The Primary Grade Band variable was distributed K-5 (14.3%), 6-8 (40.5%), and 9-12 (40.5%). The number of Total Years in Education variable was recoded into three bands: (a) 0-4 years (4.8%),

(b) 5-20 years (52.4%), and (c) 21 and above years (42.9%). The Years in Your Current Position variable was recoded into the same three bands: (a) 0-4 years (28.6%), (b) 5-20 years (50.0%), and (c) 21 and above (21.4%). These results are presented in Table 6.

Table 6

Demographic Variables for All Participants

Variable	<i>n</i>	%
Race		
White	39	92.9
African American	2	4.8
Hispanic	1	2.4
Gender		
Female	32	76.2
Male	9	21.4
Non-binary/third gender	1	2.4
Role		
Teacher	37	88.1
Administrator	5	11.9
Primary Grade Band		
K-5	6	14.3
6-8	17	40.5
9-12	17	40.5

(Table Continues)

(Table Continued)

Variable	n	%
Years in Profession		
0-4	2	4.8
5-20	22	52.4
21 and up	18	42.9
Years in Position		
0-4	12	28.6
5-20	21	50
21 and up	9	21.4

A factor analysis was completed utilizing eight survey questions that contained a total of 54 topics placed on a six-point Likert scale. Principal constructs models were analyzed with correlation matrix, unrotated factor solution, fixed number of rotations ranging from two through 10, and a maximum iterations for convergence set at 100. The Varimax method governed the rotation with maximum rotation set at 100. Rotated solutions were displayed for analysis with coefficients under .33 suppressed. The initial solutions statistic was recorded.

Per guidance from page 235 of Vogt (2007), the analysis was completed to gather and review results for models that contained 2-10 constructs. The review led to adoption of a three-construct model with the following topics identified: (a) content knowledge in curriculum and standards, (b) content knowledge in assessment, use of technology, meeting the needs to diverse student populations, leadership, and instruction, and (c) situations that led to hindered

implementation of what was learned during the PD activity, hereafter referred to Constructs 1 through 3 respectively. The information is shown in Table 7.

Table 7

Total Variance Explained for Eigenvalues >1.0

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	11.88	22.00	22.00
2	6.21	11.50	33.50
3	5.02	9.30	42.80
4	3.91	7.23	50.03
5	2.70	4.98	55.01
6	2.23	4.13	59.15
7	2.12	3.91	63.06
8	1.85	3.43	66.49
9	1.77	3.28	69.78
10	1.58	2.92	72.70
11	1.51	2.79	75.49
12	1.44	2.67	78.16
13	1.21	2.24	80.40
14	1.11	2.06	82.47
15	1.03	1.92	84.39

Extraction Method: Principal Component Analysis.

Next, when a variable had more than one substantial factor loading, indicating cross loadings, it was evaluated by calculating the difference of squares between the two loadings, keeping those with a difference of 1.0 or greater and assigning the variable to the factor with the higher score. The initial review eliminated two survey items (Q27j and Q31g). Data are shown in Table 8.

Table 8

Rotated Component Matrix^a

Item and Component	1	2	3
24a: The activity provided significant emphasis to the following areas: - Curriculum (e.g., units, texts, standards)	0.58		
24b: The activity provided significant emphasis to the following areas: - Instructional methods	0.48		
24c: The activity provided significant emphasis to the following areas: - Approaches to assessment		0.4	
24d: The activity provided significant emphasis to the following areas: - Use of technology in instruction		0.5	
24e: The activity provided significant emphasis to the following areas: - Strategies for teaching diverse student populations		0.8	
24f: The activity provided significant emphasis to the following areas: - Deepening your knowledge of mathematics/science	0.52		

(Table Continues)

(Table Continued)

Item and Component	1	2	3
24g: The activity provided significant emphasis to the following areas: - Leadership development	0.34	0.6	
25a: The professional development activity was: - consistent with your own goals for your professional development.	0.84		
25b: The professional development activity was: - consistent with your school's or department's plan to change practice.			
25c: The professional development activity was: - based explicitly on what you had learned in earlier professional development experiences.			
25d: The professional development activity was: - followed up with activities that built upon what you learned in this professional development activity.	0.66		
25e: The professional development activity was: - designed to support state or district standards/curriculum frameworks.	0.63		
25f: The professional development activity was: - designed to support state or district assessment.	0.36		
26: I executed a plan to integrate what I learned into my everyday work practice as part of this activity. - Plan developed	0.84		

(Table Continues)

(Table Continued)

Item and Component	1	2	3
27a: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Curriculum (e.g., units, texts, standards)	0.78		
27b: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Instructional methods	0.45		
27d: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Use of technology in instruction		0.6	
27e: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Strategies for teaching diverse student population		0.7	

(Table Continues)

(Table Continued)

Item and Component	1	2	3
27f: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? – Deepening knowledge of mathematics or science	0.5	0.4	
27g: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? – Leadership development		0.6	
27h: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? – Learning about state assessments in professional			
27i: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? – Learning about state standards or curriculum fr	0.48		- 0.3

(Table Continues)

(Table Continued)

Item and Component	1	2	3
27j: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Adapting teaching to meet state assessment req	0.36	0.4	
27k: To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in the identified professional development activity? - Adapting teaching to meet state standards or cu	0.54		0.3
28a: The professional development activity impacted changes in my work practices: - It expanded my understanding of mathematics/science curriculum content.	0.5	0.4	
28b: The professional development activity impacted changes in my work practices: - It increased the cognitive challenge required by students for math/science classroom activities.	0.74		
28c: The professional development activity impacted changes in my work practices: - It changed the instructional methods I employ.	0.73		

(Table Continues)

(Table Continued)

Item and Component	1	2	3
28d: The professional development activity impacted changes in my work practices: - It changed the types or mix of assessments I use to evaluate students.	0.38	0.5	
28e: The professional development activity impacted changes in my work practices: - It changed the ways I use technology in instruction.		0.7	
28f: The professional development activity impacted changes in my work practices: - It changed the approaches I take to student diversity.		0.8	
29a: I continue to discuss what was learned with: - other educators who attended the activity.			
29b: I continue to discuss what was learned with: - other educators who did not attend the activity.			0.4
29c: I continue to discuss what was learned with: - administrators (e.g., principal or department chair, central office)			0.5
29d: I continue to discuss what was learned with: - participants in the activity who work in other schools outside formal meetings that are part of the PD schedule.			0.7

(Table Continues)

(Table Continued)

Item and Component	1	2	3
30a: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student ability to memorize facts, definitions or formulas			
30b: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student conceptual understanding	0.87		
30c: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student ability to perform procedures (e.g., computation, algorithms, replicate experiments)	0.76		
30d: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student ability to generate hypotheses	0.69		
30e: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student ability to collect, analyze, and interpret data	0.72		

(Table Continues)

(Table Continued)

Item and Component	1	2	3
30f: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student ability to use information to make connections (e.g., use and integrate concepts, appl	0.72		
30g: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Created positive student attitudes regarding mathematics/science	0.64		
30h: As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas: - Student rate of attendance		0.4	
31a: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Insufficient planning time			0.43
31b: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Inadequate classroom resources			0.59

(Table Continues)

(Table Continued)

Item and Component	1	2	3
31c: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Resistance from other teachers	0.34		
31d: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Resistance from administrators			0.65
31e: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Resistance from parents			0.75
31f: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Class size too large to implement changes			0.63
31g: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Conflict between changes and needs of my students	-	0.34	0.35
31h: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Conflict between changes and state assessments			0.79

(Table Continues)

(Table Continued)

Item and Component	1	2	3
31i: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Conflict between changes and state curriculum frameworks/content standards			0.74
31j: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Conflict between changes and reform efforts			0.77
31k: The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity: - Insufficient opportunity to practice new skills			0.73

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a

a. Rotation converged in 4 iterations.

Next a reliability analysis was completed for each construct. Descriptives for item, scale, and scale if item deleted options were selected along with an Alpha model. Cronbach Alpha and the number of items were noted in each case. The Cronbach Alpha lower bound for construct acceptance was set at .80. The Item-Total Statics table was referenced to ensure appropriate corrected item-total correlations and Cronbach Alpha if the item was deleted column to determine if survey questions merited removal from the construct.

The review of data for Construct 1 began with 24 items and an Cronbach Alpha of .93. Analysis led to removal of two items so Construct 1 ended with 22 items and a Cronbach Alpha

of .93. Items 31c and 25f were removed. Construct 2 began and ended with 15 items and a Cronbach Alpha of .87. Construct 3 began with nine items and a Cronbach Alpha of .87 and ended with eight items and a Cronbach Alpha of .88. Item 31a was removed. Constructs 1-3 were then used to calculate new variables by summing the responses to each Likert item within the construct. The reliability data are shown in Tables 9 and 10.

Table 9

Reliability Statistics Constructs 1-3

Cluster	Cronbach's Alpha	# <i>Items</i>
Construct 1 - Cluster_3_1_CK_Curr_Stand (initial)	.93	24
Construct 1 - Cluster_3_1_CK_Curr_Stand (final)	.93	22
Construct 2 - Cluster_3_2_CK_Assess_Tech_Diversity_Leadership (final)	.87	15
Construct 3 - Cluster_3_3_Hindered_Implementation (initial)	.87	9
Construct 3 - Cluster_3_3_Hindered_Implementation (final)	.87	8

Table 10

Item-Total Statistics by Construct

Items by Construct	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Construct 1 -		
Cluster_3_1_CK_Curr_Stand		
24a	0.53	0.93
24b	0.47	0.93
24f	0.51	0.93
25a	0.80	0.93
25b	0.56	0.93
25d	0.60	0.93
25e	0.59	0.93
26	0.83	0.93
27a	0.77	0.93
27b	0.43	0.93
27f1	0.50	0.93
27i	0.42	0.93
27k	0.48	0.93
28a	0.47	0.93
28b	0.72	0.93

(Table Continues)

(Table Continued)

Items by Construct	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
28c	0.63	0.93
30b		0.85 0.93
30c		0.74 0.93
30d		0.62 0.93
30e		0.66 0.93
30f		0.68 0.93
30g		0.59 0.93
Construct 2 -		
Cluster_3_2_CK_Assess_Tech_Diversity_Leadership		
24c		0.36 0.88
24d		0.42 0.87
24e		0.67 0.86
24g		0.64 0.86
27c		0.66 0.86
27d		0.48 0.87
27e		0.63 0.86
27g		0.60 0.86
28a		0.45 0.87

(Table Continues)

(Table Continued)

Items by Construct	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
28e		0.61 0.86
28f		0.63 0.86
29b		0.37 0.87
29c		0.42 0.87
29d		0.61 0.86
30h		0.39 0.87
Construct 3 - Cluster_3_3_Hindered_Implementation		
31a		0.43 0.88
31b		0.56 0.86
31d		0.60 0.86
31e		0.63 0.86
31f		0.60 0.86
31h		0.73 0.85
31i		0.72 0.85
31j		0.65 0.85
31k		0.65 0.85

The new variables were then converted to z-scores and recoded into three categories: (a) low, (b) medium, and (c) high by placing scores less than or equal to one standard deviation below the mean into the low category and assigning a point value of 1, z-scores one standard

deviation or above the mean into the high category and assigning a point value of 3. The rest of the z-scores were coded as medium with a point value of 2. Constructs 1 and 2 (the content knowledge constructs) were then used to determine the level of Core Features of the PD activity identified by calculating the mean score of Constructs 1 and 2. The mean score was evaluated as low if less than 2.0 and high if greater than or equal to 2.0. The descriptive statistics and frequencies of this process are shown in Tables 11 and 12 respectfully. Construct 3 was omitted as it was not part of the Core Features variable (It later used as the Leadership variable during some ad hoc analyses.).

Table 11

Descriptive Statistics of Core Features Final Rating Process

Process Step	N	M	SD	Minimum	
				Maximum	
Construct 1 (Low, Med, High)	42	1.76	0.8	1	3
Construct 2 (Low, Med, High)	42	1.71	0.6	1	3
Core Features Score	42	1.74	0.6	1	3
Core Features Rating (Low, High)	42	1.38	0.5	1	2

Table 12

Frequencies - Core Features Rating Calculation Process

Variable	<i>n</i>	%
Construct 1 (Low, Med, High)		
Low - 1.00	19	45.2
Medium - 2.00	14	33.3
High - 3.00	9	21.4
Construct 2 (Low, Med, High)		
Low - 1.00	16	38.1
Medium - 2.00	22	52.4
High - 3.00	4	9.5
Core Features Score		
1	8	19
1.5	18	42.9
2	7	16.7
2.5	6	14.3
3	3	7.1
Core Features Rating (Low, High)		
Low	26	61.9
High	16	38.1

Similarly to Core Features, the Duration variable was rated as low or high. The Duration value was derived from questions 16, 18, and 19. Question 16 asked participants to identify the

period of time over which the activity was spread. Participants were given eight answer choices as follows: (a) Less than one day, (b) One day, (c) Two to four days, (d) One week, (e) More than one week and not over one month, (f) More than a month and less than a college semester, (g) A full college semester, and (h) More than a college semester. Question 18 asked participants to record the total number of sessions over which the activity met given a scale of 0-50 sessions. Question 19 asked participants to identify the total number of hours spent in sessions for the activity given a scale of 0-200 hours.

Results for Question 16 were recoded into low, medium, and high ratings as such: (a) answer choices 1-3 were set to low, (b) answer choices 4-6 were set to medium, and (c) answer choices 7-8 were set to high. The recode set new durations of less than one week, one week to less than a college semester, and a college semester and more. The results are shown in Table 13.

Table 13

Q16: Over what period of time was the activity spread, including the main activity and any formal preliminary or follow-up sessions?

Score	<i>n</i>	%	Valid %	Cumulative %
1	20	47.6	47.6	47.6
2	11	26.2	26.2	73.8
3	11	26.2	26.2	100

Question 18 was converted to a z-scores and recoded into three categories: (a) low, (b) medium, and (c) high by placing scores less than or equal to one standard deviation below the mean into the low category and assigning a point value of 1, those z-scores one standard deviation or above the mean into the high category and assigning a point value of 3. The rest of

the z-scores were coded as medium with a point value of 2. The results are shown in Tables 14 and 15.

Table 14

Q18: Including the main activity, preliminary activities, and formal follow-up sessions, about how many sessions were held as part of this professional development activity? - Total number of sessions

Score	<i>n</i>	%	Valid %	Cumulative %
1	6	14.3	14.3	14.3
2	2	4.8	4.8	19
3	8	19	19	38.1
4	3	7.1	7.1	45.2
5	1	2.4	2.4	47.6
6	1	2.4	2.4	50
10	3	7.1	7.1	57.1
14	3	7.1	7.1	64.3
15	2	4.8	4.8	69
16	1	2.4	2.4	71.4
20	2	4.8	4.8	76.2
25	3	7.1	7.1	83.3
35	1	2.4	2.4	85.7
40	3	7.1	7.1	92.9
50	3	7.1	7.1	100

Table 15

Q18 z-scores_LMH: Low, Medium, High

Score	<i>n</i>	%	Valid %	Cumulative %
2	35	83.3	83.3	83.3
3	7	16.7	16.7	100

Question 19, number of hours spent on the activity, was recoded using guidance from Desimone (2009) that sets the mark of time spent for effective PD to at least 20 hours of contact time. The number of hours were placed into three categories: (a) 0-20 hours for low, (b) 20 < # of hours < 30 for medium, and (c) 30 and above for high. Again, each category, low-high, was given a value of 1-3 respectively. The results are shown in Tables 16 and 17.

Table 16

Q19: Including the main activity, preliminary activities, and formal follow-up sessions, about how many hours total did you spend in this professional development activity? - Number of hours

Total Hours	Frequency	%	Valid %	Cumulative %
1	2	4.8	4.8	4.8
2	3	7.1	7.1	11.9
3	1	2.4	2.4	14.3
5	1	2.4	2.4	16.7
6	5	11.9	11.9	28.6
8	1	2.4	2.4	31
9	1	2.4	2.4	33.3

(Table Continues)

(Table Continued)

Total Hours	Frequency	%	Valid %	Cumulative %
10	2	4.8	4.8	38.1
12	1	2.4	2.4	40.5
13	1	2.4	2.4	42.9
15	1	2.4	2.4	45.2
18	3	7.1	7.1	52.4
20	1	2.4	2.4	54.8
25	1	2.4	2.4	57.1
33	1	2.4	2.4	59.5
39	1	2.4	2.4	61.9
42	1	2.4	2.4	64.3
58	1	2.4	2.4	66.7
60	2	4.8	4.8	71.4
80	1	2.4	2.4	73.8
120	1	2.4	2.4	76.2
121	1	2.4	2.4	78.6
140	2	4.8	4.8	83.3
200	7	16.7	16.7	100

Table 17

Q19 as LMH: Low, Medium, High

Score	<i>n</i>	%	Valid %	Cumulative %
1	23	54.8	54.8	54.8
2	1	2.4	2.4	57.1
3	18	42.9	42.9	100

A final Duration rating was calculated by taking the mean low-high values for Questions 16, 18, and 19, then the mean score was evaluated as low if less than 2.0 and high if greater than or equal to 2.0. The results of these calculations are shown in Table 18.

Table 18

Frequencies - Duration Rating Calculation Process

Variable	<i>n</i>	%
Question 16 (Low, Med, High)		
Low - 1.00	20	47.6
Medium - 2.00	11	26.2
High - 3.00	11	26.2
Question 18 (Low, Med, High)		
Low - 1.00	0	0
Medium - 2.00	35	83.3

(Table Continues)

(Table Continued)

Variable	<i>n</i>	%
High - 3.00	7	16.7
Variable	<i>n</i>	%
Question 19 (Low, Med, High)		
Low - 1.00	23	54.8
Medium - 2.00	1	2.4
High - 3.00	18	42.9
Mean of Questions 16,18, and 19		
1.33	18	42.9
1.67	6	14.3
2	1	2.4
2.33	3	7.1
2.67	10	23.8
3	4	9.5
Duration Rating (Low, High)		
Low	25	59.5
High	17	40.5

Similarly to Core Features and Duration variables, Collaboration was rated as low or high. Collaboration was defined as the degree to which multiple people and levels of the organization participated together during or the activity. Question 21 asked participants to identify other groups, besides regular classroom teachers, that also participated in the identified

activity. Participant selections (via a multiple select interaction) were totaled. Cases where participants did not identify other groups present for the activity were coded as low collaboration and those totals above zero were coded as high collaboration. The results are shown in Table 19.

Table 19

*Frequencies -Collaboration Rating Calculation
Process*

Variable	<i>n</i>	%
Sum of Question 21 Groups		
0	7	16.7
1	19	45.2
2	9	21.4
3	4	9.5
4	3	7.1
Collaboration Rating (Low, High)		
Low	7	16.7
High	35	83.3

The Duration, Collaboration, and Core Features scores were used to determine the Resultant Frame of the identified activity using the structure in Table 20. Table 20 also shows the resultant n-count and percent of outcomes. Frame E was not an activity type indicated in the data. The target activity type is Frame G (23.8%) as it is high in duration, collaboration, and core features. Frame G consist of activities that are ongoing, include multiple educators and levels, and demonstrates high core features. The training is often work embedded and linked to improvement in instruction. Examples could be PLCs meeting on an ongoing schedule that is

embedded in the workday, with proper levels of training and knowledge, that are focused on content knowledge, that utilize active learning, that is connected to the systemic PD process at the school or district level, and that have active school and district leadership support.

However, 42.9% of activities identified fell in Frame B. Frame B consists of short activities that are attended by groups of people from more than one level of the school’s organization (Sappington et al., 2012). Common examples would be the mandated school level training like blood borne pathogens and automated external defibrillator (AED) operation and region-wide institutes. Like Frame A, these activities share the lack of ongoing network support. In addition, these activities would be weak in core features—not focused on content knowledge, passive learning, disconnected from any systemic PD process at the school or district level, or not actively supported by school or district leadership.

Table 20

Characteristics of Professional Development Distribution

Frame	PD Characteristics				
	Duration	Collaboration	Core Features	<i>n</i>	%
A	Low	Low	Low	3	7.1
B	Low	High	Low	18	42.9
C	High	High	Low	3	7.1
D	High	Low	Low	2	4.8
F	Low	High	High	4	9.5
G	High	High	High	10	23.8
H	High	Low	High	2	4.8

(Frame E was not present in the data.)

Finally, A series one-way analysis of variance (ANOVA) were completed on each demographic area identified and the three dimensions (Duration, Collaboration, and Core Features) and Resultant Frame (A-H). The results indicate no significant differences ($p < 0.05$) across all demographic variables as shown in Table 21.

Table 21

ANOVA Results for Demographic vs. Dimensions and Overall Frame

Variable	Duration		Collaboration		Core Features		Frame	
	F	P	F	P	F	P	F	P
Race F(2,39)=	1.08	.35	.3	.74	.97	.39	1.01	.37
Gender F(2,9)=	.35	.71	.20	.82	.37	.69	.32	.73
Role F(1,40)=	.96	.33	1.11	.30	.77	.39	.83	.37
Grade Band F(2,37)	.29	.75	.60	.56	.08	.92	.27	.77
Years Profession F(2,39)	.71	.50	.50	.64	2.43	.10	.66	.52
Years Position F(2,39)	.06	.95	.42	.66	2.63	.09	.07	.94

Summary of Findings

Demographics: State and Study

The 5-year trend (2016-2021) for teacher demographics in Illinois, per the Illinois Report Card (IRC) posted by the Illinois State Board of Education (ISBE) at www.illinoisreportcard.com, shows Illinois teachers are steadily 82-83% White and 6% Black, with a growing Hispanic population up 2%, from 6% in 2016 to 8% in 2021. Asian, American Indian, Two or More races, Pacific Islander, and Unknown groups round out the remaining percentage of teachers. The ratio of female to male teachers is 77% to 23% across all five years.

The breakdown of participant demographics for this study were White (92.9%), Black (4.8%) and Hispanic (2.4%), thus representing slight oversampling for those that identified as white when compared to the state at large, however, more approximate to a down-state sampling. Responses to Gender were Female 76.2%, male 21.4%, and Non-binary/third gender 2.4% which appears to be in alignment with the overall teacher population in Illinois. The distribution of the Role variable was 88.1% teacher and 11.9% administrator. Per the IRC data, the 2021 teacher to administrator ratio was 132,354 to 12,059 which is 91% teacher and 8% administrator. Thus, the role variable is close to the 2021 teacher to administrator ratio. These observations are important as the sample size appears to generalize, at minimum, a down-state sampling, and in many regards, to a statewide sample.

Sample Size of the Study

The sample was collected using Qualtrics Experience Management (QXM) software. The initial list of potential participants were contacted via email on January 25, 2022, and again on February 8, 2022. Following the plan in Chapter III, and after consultation with my methodologist, a third effort was made to increase the same through recruitment of two additional school districts on February 16, 2022. An unknown number of recipients can be determined as one of the districts on the 16th provided a listserv mailing address (not an actual count of recipients) to reach their teachers and administrators. However, using the IRC data for 2021, the district reported 202 teachers and 16 administrators. The other survey contacts reached about 943 individuals. After removing incomplete records, 42 records were retained for analysis to answer the research questions out of the total possible of 1,161 for a return rate of about 3.6%.

Research Question 1

Research Question 1 asked, *When asked to describe a professional development experience they believe to have been most effective to their learning, to what extent do educators identify characteristics of high-quality professional development such as:*

- a. *Duration*
- b. *Collaboration*
- c. *Core features*
 - i. *Content knowledge*
 - ii. *Active learning*
 - iii. *Coherence*
- iv. *Leadership?*

Major findings. The results appear to support educators identified characteristics of high quality professional develop of duration in 17 of 42 cases (40.5%), characteristics of high quality professional develop of collaboration in 35 of 42 cases (83.3%), and characteristics of high quality professional develop of core features in 16 of 42 cases (38.1%). The data are shown in Table 22. Further, participants identified PD events that scored high in at least two characteristics about 45% (19/42) of the time and low in at least two characteristics about 55% (23/42). Table 23 displays the disaggregated results of the Resultant Frames identified by teachers and administrators.

Table 22

Frequency of Characteristic Identification

Characteristic	<i>n</i>	%
High Duration	17	40.5%
High Collaboration	35	83.3%
High Core Features	16	38.1%

Table 23

Characteristics of Professional Development by Role

Frame	PD Characteristics			Total		Teacher		Administrator	
	Duration	Collaboration	Core Features	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
A	Low	Low	Low	3	7.1	3	.08	0	0
B	Low	High	Low	18	42.9	14	.38	4	.11
C	High	High	Low	3	7.1	3	.08	0	0
D	High	Low	Low	2	4.8	2	.05	0	0
E	Low	Low	High	0	0	0	.00	0	0
F	Low	High	High	4	9.5	4	.11	0	0
G	High	High	High	10	23.8	9	.24	1	.03
H	High	Low	High	2	4.8	2	.05	0	0

To further explore this characteristic of HQPD in this study, the TAS questions were clustered as shown in Appendix D, to create the variables *Leadership_Score*, *Duration_Score*, *Collaboration_Score*, *Content_Knowledge_Score*, and *Active_Learning_Score*. Data were

summed per cluster, converted to z-scores, then converted to categories of Low, Medium and High determined by the z-scores that were below by at least one standard deviation, between $-.99$ and $.99$ standard deviation and above by at least one standard deviation respectively. The *Duration_Score* had additional steps that are detailed in Table 18.

Interestingly, data found in Table 24 show Duration, Collaboration and Core Features attributes of Content Knowledge and Active Learning do show significant correlation to each other and to the resultant Frame which appears to show strong linkage between the SPF model and TAS instrument. This is important on two fronts.

First, the characteristics identified in the literature to define HQPD in Hirsh, (2012), Garet et al. (2001), leadership in Hochberg and Desimone (2010), and the Elements of Effective PD set forth by the National Council of Teachers of Mathematics (Mirra, 2003) as shown in Chapter 1, Table 1, have been confirmed in this study as characteristics identified by educators when naming effective PD events and that the TAS instrument and SPF model used to collect and visualize the data appear to accurately identify and code the resultant PD Frame based on the characteristics of the PD event. The exception is the Leadership aspect.

Leadership Variable Impacts and Conclusions. The second front is leadership. In the Chapter I Overview it was posited that leadership was relevant and should be a characteristic used in this study to identify HQPD. It is important to point out that although Leadership does not show a correlation to the overall Frame of the PD event, it does show significant positive correlation to Collaboration, Content Knowledge, and Active Learning which is important as PD participants need time, built into their work schedules, to collaborate, expand content knowledge and work as active learners to grow and practice pedagogical ideas and instructional practices learned in PD events.

A correlation analysis was conducted using the *Frame* and *Leadership_Score* variables (see Table 24). *Leadership_Score*, was were not significantly correlated to the overall Frame of the PD event [$r(42) = .04, p = .83$]. The result means that, in this sample, leadership did not appear to impact participant perception of effective PD for the overall event. However, the *Leadership_Score*. Leadership did positively correlate to Collaboration [$r(42) = .46, p = .00$], Content Knowledge [$r(42) = .37, p = .02$] and Active Learning [$r(42) = .48, p = .00$] showing that good leadership is related in positive ways to PD that contains high quality characteristics connecting the SPF model and TAS instrument.

Further, as raised in Chapter 1, Statement of the Problem section, the importance of leadership support for aspects included in duration, collaboration, and core features, at least separately, is useful because this may help reduce turnover by providing HQPD for educators so they can continue to grow in targeted PD programs that are not one-size-fits-all. Further, as educators identified many different styles of PD events, this may signal that the one-size-fits-all model of PD is outdated. Support by administrators for teacher participation in PD events that teachers believe to be effective allows for individual PD plans to be successful and breeds a feeling of reciprocal support between administrators and teachers. Trust that both teachers and administrators can collaboratively identify and support PD events that increase educator skills and ultimately increase student learning.

This is supported further as participants identified several PD Frames, mainly Frames B and G, to describe effective PD events and those participant perceptions were not influenced by the support, or lack of support, provided by school or district leaders. It appears that when recalling an effective PD experience, participants focused on other variables that led to success of individual learning. This may signal that the teacher's focus on ROI detailed Sixel (2013)

outweighs the critical leadership component as stated in Kasemsap (2017, 9.112), “The most critical factor within the school in facilitating student learning is the teacher and the ability of those in leadership positions to shape a collaborative, motivated, and effective teaching community.” This may be similar to students learning regardless of the instruction provided or environmental supports in place -- student intelligence and self-motivation to learn. More of this aspect of the study needs to be explored.

Table 24

Core Feature and Frame Correlations

Variable	Duration	Collaboration	Content Knowledge	Active Learning	Leadership	Frame
Duration	1	.52**	.44**	.46**	.05	.80**
Collaboration	.52**	1	.85**	.83**	.46**	.50**
Content Knowledge	.44**	.85**	1	.77**	.37*	.46**
Active Learning	.46**	.83**	.77**	1	.48**	.43**
Leadership	.05	.46**	.37*	.48**	1	.04
Frame	.80**	.50**	.46**	.43**	.04	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

All n-counts of 42

Research Question 2

Research Question 2 asked, To what extent do educators' perceptions differ by their position? Given the results of the ANOVA test above (Table 20) position does not appear to significantly impact educator perceptions when identifying characteristics of HQPD across the three dimensions or for the Resultant Frame.

A multivariate analysis of variance (MANOVA) was conducted using dependent variables of Duration, Collaboration, and Core Features and a numerical value (scaled) associated with the Resultant Frame Variable and the independent variable of Role. Again, no significant difference was identified, $F(3, 38) = .71$, $p = .56$; Wilk's $\Lambda = .95$.

Research Question 3

Research Question 3 asked, To what extent do educators' perceptions differ by their grade band? X^2 analyses were conducted using the original grade band distribution. The Primary Grade Band variable was distributed K-5 (14.3%), 6-8 (40.5%), and 9-12 (40.5%). However, the X^2 tests failed to meet the requirement "For a larger table, all expected frequencies > 1 and no more than 20% of all cells may have expected frequencies < 5 " (Ruben Geert van den Berg, 2022), so the primary grade level variable was collapsed by adding the elementary and middle school bands to create a K-8 grade band. The new K-8 grade band was then compared to the 9-12 (high school) grade band using the X^2 test. The values .43, .69, and .68 appear to indicate no significant differences in perceptions between the adjusted grand bands. The data are shown in Table 25. These results appear to agree with the aforementioned ANOVA results in Table 20.

Table 25

Perception by Grade Band

	K-8	9-12	Overall
Dimensions	<i>n</i>	<i>n</i>	χ^2
Duration			.43
Low	15	9	
High	8	8	
Collaboration			.69
Low	3	3	
High	20	14	
Core Features			.68
Low	15	10	
High	8	7	

A multivariate analysis of variance (MANOVA) was conducted using dependent variables of Duration, Collaboration, and Core Features and the numerical value (scaled) associated with the Resultant Frame Variable and the independent variable of Primary Grade Band. Again, no significant difference was identified between the grade bands, $F(6, 70) = .29$, $p = .94$; Wilk's $\Lambda = .95$.

Research Question 4

Research Question 4 asked, To what extent do educators' perceptions differ across the combinations of position and grade band? The variable Combination_Role_Grade was created

by combining the *Role* and *Primary Grade Band* variables. This effort created five outcomes shown in Table 26 below.

Table 26

Frequency of Combination_Role_Grade Variable

Category	<i>n</i>	%
Teacher ELEM	6	14.3
Teacher MS	14	33.3
Teacher HS	16	38.1
Admin MS	3	7.1
Admin HS	1	2.4

X^2 analyses were conducted using the *Combination_Role_Grade* and the *Frame_Letter* Variables. However, as with Research Question 3, the X^2 tests failed to meet the requirement "For a larger table, all expected frequencies > 1 and no more than 20% of all cells may have expected frequencies < 5" (Geert van den Berg 2022). Additionally, a One-way analysis of variance (ANOVA) was completed on the *Combination_Role_Grade* and *Frame* variables. The results indicate the means do not differ significantly, $F(4,35) = .88, p=.49$.

Conclusions

These findings from Research Question 1 appear to be supportive of Garet et. al. (2001, Winter, p. 935), the cornerstone work that led to interest in completing this study, when the authors indicated, "It is clear from these data that many PD activities do not have features of high quality, whether they are structured as reform or traditional." They went further to identify

possible reasons as to why PD does not contain high quality characteristics such as time needed to prepare the PD and overall cost to deliver such PD.

Over the past 20 years since Garet et. al. (2001), educators appear to continue to receive PD that is low in duration and core features. However, collaboration appears to have gained notoriety as a characteristic of HQPD (identified by about 83% of respondents). Newer trends in regular school improvement days that encourage data discussions that include multiple types of educators both within schools and across schools within the district may be highlighting the collaboration feature as more educators become comfortable in these types of PD activities. Popular practices such as Professional Learning Communities encourage collaboration with colleagues, thus may be driving this trend. This is important as collaboration is a mainstay characteristic of HQPD as detailed in the literature base presented in Chapter II. Moreover, the data in Table 24 display the importance of collaboration as it correlates strongly ($r \geq .80$) to Content Knowledge and Active Learning and has at least a medium correlation ($.80 > r \geq .30$) to all other characteristics of HQPD using thresholds found in Vogt (2007). The Collaboration correlation may also shed light on the findings for Research Questions 2-4.

The analyses above for Research Questions 2, 3 and 4 indicate aggregation by: (a) role, (b) grade band, or (c) the combination of role and grade band does not appear to impact participant perceptions as the results of the analyses show no significant difference between the groups for the respective research questions. When asked about effective PD experiences, participants describe similar events that have similar characteristics. Some of those events are high in duration, collaboration and core features and others are not with the most common results being in Frames B and G with 42.9% and 23.8% respectively. This appears to show agreement between participants as to what characteristics are needed to provide HQPD, however, further

study within districts would be needed to drill down to actual practices within districts to determine effectiveness of district and individual PD plans.

The larger concern is that more individuals still identified events in Frame B indicating shorter duration and less core features as effective forms of PD. Both teachers and administrators may be failing to identify features of HQPD. This claim is supported by the results to Research Question 1, but, ultimately, more would need to be explored as to the actual events to determine if this concern is merited because one would need to know the full context in which the individual attended the PD event and what need the event was meant to satisfy. A qualitative or mixed methods approach might be better suited to continue. As a potential starting point, next, I'll explore this thought with an ad hoc analysis of the words used to describe the PD event.

In Table 18 we see the characteristics of PD aggregated by the PD frames. Results that landed in Frames B and G are discussed here for two reasons. First, Frames B and G had the highest frequencies (18 and 10 respectively) and second, both had teachers and administrators in the samples (3 and 1 respectively).

Ten results landed in Frame G -- characteristics high in duration, collaboration, and core features. Interestingly, when searching the written description of the PD activity, the words "Conference", "Workshop", or "Seminar" do not appear. Reading six of the descriptions, one could clearly place the PD event in Frame G. Plural words like "meetings" and "years" along with indicators of time such as "sustained", "took a class", "graduate", "university" appear in the descriptions. The words "standards" (including "NGSS"), "curriculum", "instruction" or "assessment" were indicated eight times in the 10 event descriptions. In the remaining four events, participants did not provide enough detail to place the event on the Structures of Training, Processes of Implementation, and Levels of Core Features Employed (SPF –

structures, processes and features). However, information provided from the survey showed that the PD event scored high in duration, collaboration, and core features thus placing it in Frame G.

Eighteen results landed in Frame B -- characteristics low in duration, high in collaboration, and low in core features. The responses placed in Frame B indicated the word "Conference", "Workshop", or "Seminar" in eight of the 18 events. Similarly, words in singular form described the timeframe - "day", "activity" or "session". The words "standards" (including "NGSS"), "curriculum", "instruction" or "assessment" indicated five times in the 18 event descriptions. In six events, participants did not provide enough detail to place the event on the SPF cube. However, information provided from the survey showed that the PD event scored low in duration, high in collaboration, and low in core features thus placing it in Frame B.

These findings regarding, word usage, are important as it demonstrates a shared vocabulary between participants. More importantly, that shared vocabulary matches well with the language used to define the various PD Frames. In defense of the activities in Frame B (Short-Term, Group, Mundane Information) participants identified the PD event as effective and in 14 out of 18 of those events sighted topics related to curriculum, standards, instruction, or assessment to indicate more than "mundane information" was the cornerstone topic of the event. A revision to the definition/description of Frame B may be merited and explored in future works. These results further support the linkage between the SPF model and TAS instrument.

Summary

A summary of findings for this study has been provided in Chapter IV. The process for data scrubbing was detailed for each part of the study. Descriptive statistics were included for the participants' demographic data. The sample size of the study was addressed. Findings of the quantitative analysis to answer Research Questions 1 through 4 were provided. Ultimately, the

role of teacher or administrator, nor the grade band of the educator, impacted significantly the type of HQPD identified by the individual. An analysis of the role of leadership showed no correlation to the type of PD identified by participants. What individuals thought was effective was not impacted by information provided about the individual's relationship with leadership. Most importantly, participants did identify characteristics of HQPD and did share common language across several PD events and identified effective PD events across the various frames without regard to aggregation by: (a) role, (b) grade band, or (c) the combination of role and grade band. Potentially, the most important outcome of the study is the support of linkage between the SPF model and TAS instrument as accurate tools for placing participant perceptions of effective PD into a visual framework and classification scheme.

Chapter V presents implications of the study, a critique of the study, recommendations for the future and conclusions.

CHAPTER V: DISCUSSION AND CONCLUSIONS

Chapter V provides the summary of the study, discussion of the results, a critique of the work, and offers a conclusion resultant from this research project designed and implemented to determine the extent educators identify characteristics of high quality professional development (HQPD) when recalling professional development (PD) events the participants' determined to be highly effective. All offered in an attempt to further the work around successful PD programs is school districts.

Purpose and Significance

The purpose of this research is to determine if educators identify PD events that contain HQPD characteristics by collecting educator perceptions of a PD event they believe to have been the most effective form of professional learning. Secondly, to determine if perceptions differ in relation to position or grade level or the combination of position and grade level. This study's significance is supported by Desimone and Garet (2015) as the work attempts to translate the "broad features into specific, effective activities in varying contexts" (p. 260) by surveying educators to determine their perceptions of high-quality PD activities in which they have participated, and then identifying details about those the various activities marked as successful events by the educators.

In an attempt to measure educators' perceptions of the characteristics of HQPD, this researcher creates a three-dimensional model (Structures, Processes and Features (SPF)) that can be used to quantify the levels of duration, collaboration, and core features, by utilizing work by Garet et. al. (2001, Winter) and Sappington et. al. (2012) as the primary artifacts. The work is also heavily supported by Desimone (2009, 2011), Desimone and Garet (2015), and Desimone, Smith and Baker (2005). A modified survey instrument from Garet et. al. (2001, Winter), the

Teacher Activity Survey (TAS), was mapped to the characteristics of HQPD (Appendix D) and used to collect and code participant responses in an attempt to answer the following:

1. When asked to describe a professional development experience they believe to have been most effective to their learning, to what extent do educators identify characteristics of high-quality professional development such as:
 - a. Duration
 - b. Collaboration
 - c. Core features
 - i. Content knowledge
 - ii. Active learning
 - iii. Coherence
 - iv. Leadership?
2. To what extent do educators' perceptions differ by their position?
3. To what extent do educators' perceptions differ by their grade band?
4. To what extent do educators' perceptions differ across the combinations of position and grade band?

The core literature base is supported further by Hirsh (2019). Hirsh identified four key areas: (a) coaching, (b) collaborative learning, (c) content-focused professional learning and instructional materials, and (d) leadership development. Hirsh, citing research from Kraft et. al. (2018) credits coaching as a method of professional learning that can accelerate trajectories for teacher as they move from novice to veteran status.

As such, a potential baseline of successful professional learning is dependent on the perceptions of, or the ability to identify, exactly what the characteristics of high-quality

professional learning are and then how to implement those in professional learning plans across educational organizations. The logic being that if all educators in the organization can identify high-quality professional learning, then all levels of the organization can work collaboratively to implement effective programs. The results of the data analysis, use of the SPF model, and TAS instrument fielded are discussed below.

Discussion

At the start of this journey, I set out to determine if I could measure if educators identified characteristics of HQPD when recalling events they determined to be highly effective and, if successful, determine if the variables of position or grade band of the educator impacted the individual's perception of the of HQPD. The rationale that agreement in perceptions between teachers and administrators is important for the success of a PD program within a school district was supported in Sixel (2013), key finding number two addressed the PD plan and process. In summary, teachers identified the importance of return on investment (ROI) of time spent in PD against time spent on instruction in their classrooms. Therefore, it is important for educators to agree on a definition of high-quality PD so that all can agree on the ROI of time. A first step to ensure agreement is to determine current perceptions.

The findings regarding, word usage and leadership, have importance as they demonstrate shared vocabulary between participants. More importantly, that shared vocabulary matches well with the language used to define the various PD Frames. The importance of leadership support for aspects included in duration, collaboration, and core features, at least separately, is useful because this may help reduce turnover by providing HQPD for educators so they can continue to grow in targeted PD programs that are not one-size-fits-all. Further, as educators identified many different styles of PD events, this may signal that the one-size-fits-all model of PD is outdated.

Support by administrators for teacher participation in PD events that teachers believe to be effective allows for individual PD plans to be successful and breeds a feeling of reciprocal support between administrators and teachers. Trust that both teachers and administrators can collaboratively identify and support PD events that increase educator skills and ultimately increase student learning. Kasemsap (2017) wrote, “The most critical factor within the school in facilitating student learning is the teacher and the ability of those in leadership positions to shape a collaborative, motivated, and effective teaching community.” (p. 112) To inform this effort, one must first understand educator perceptions of the characteristics of HQPD in order to determine if a common definition is understood or needs to be derived so all can move forward together.

Next, the fact that educator perceptions need to be accepted as valid is an important twist on the claims posited in the review of literature. Specifically, if an educator attended a PD event, was satisfied with the experience, learned new knowledge, skills and abilities, able to transfer that information to improve instructional practices, that led to improved student learning and better outcomes overall, then perhaps researchers need to rethink the categorical schema used to place PD events on a spectrum of some sort. The fact that an individual educator's PD experience was successful and led to improved student outcomes should be celebrated even if the resultant analysis of the event placed it, using the SPF model, in Frame B where it was rated low in two of three dimensions of the commonly agreed to characteristics of HQPD. This is not to say, that as developers of PD activities, we abandon the lessons learned and documented in the literature base. Instead, we abandon a one-size-fits all mindset. We develop activities keeping focus on the ultimate outcome desired, and then define, design, develop and deliver a PD event tailored for the situational setting, audience, and budget to ensure success. Following Wenger (1998), we do

not want to get stuck using models that are dichotomous, rigid, or sacred, but use the best PD designs for the given situation to meet the needs of our educators and, ultimately, our students.

Finally, the an important outcome of the study may be the support of linkage between the SPF model and TAS instrument as accurate tools for placing participant perceptions of effective PD into a visual framework and classification scheme. The SPF model and TAS instrument were successful. The use of such models and instruments is supported in Canedela (2017) as to give voice to teachers about their perceptions of effective PD. The teachers surveyed were able to identify several characteristics of HQPD that align to the framework used in this researcher's proposed study. Canedela (2017) used a model of PD that overlaps with the framework used in this researcher's study. Commonalities are: (a) collaboration, (b) content knowledge, (c) pedagogical growth, (d) connections to classroom teaching practices (job-embeddedness), and ongoing support (leadership support).

Each research question can be answered using the results of the study. Educators were able to identify characteristics HQPD between approximately 40-80% of the time (Research Question 1) and the data show no significant differences in participant perceptions of HQPD when analyzing the combinations of position and grade band (Research Questions 2-4). The findings are important as they show a use of common language between educators when describing HQPD. This agreement may pave the way to better district, school and individual PD plans that are aligned and support district, school and individual learning goals to help better serve students and increase student learning.

Critique of the Study

The work in this study can be improved in at least four ways. First, by increasing the sample size. The study was hindered by the smaller sample size which proved problematic when

conducting analysis across multiple combinations of grade bands, roles, and PD frames. A state-wide effort sponsored by the State Board of Education and the various professional organizations such as the various teachers' unions, the Illinois Principals Association, the Illinois Association of School Administrators, the Illinois Council of Teachers of Mathematics, and the Illinois Science Teaching Association might greatly improve the response.

Secondly, the survey instrument length may have hindered full responses. Therefore, a second version that utilizes more Likert style questions and reduces the multiple select items may improve the response rate by reducing the amount of time to complete the survey. This effort would also make data analysis easier as all survey questions could be filtered through the factor analysis process.

Thirdly, as mentioned in Chapter IV, the definition of Frame B appears to need revision as PD events in the frame are not all "mundane". As expressed above, participants identified PD events that to them, were effective. That is important! A review of the descriptions provided showed that 14 of 18 events were related to curriculum, standards, instruction or assessment - all cornerstone topics to school improvement and professional growth as discussed in Hattie (2009), Hawley and Valli (1999) and Marzano (2003). As PD experts, we honor the feedback from our educators as we continue to create and evaluate PD activities and efforts.

Lastly, the data collected in this study might be used to better define what determines the level of each characteristic of HQPD. The attempt was made using statistical analysis to place characteristics into low or high bands so that an overall frame containing duration, collaboration, and core features could be determined. Further analysis in this area over time might strengthen the use of the SPF cube to describe PD efforts as individual events and as parts of individual, school, district and state-wide PD plans.

Conclusion

The major findings seem to indicate educators agree on characteristics of HQPD. The results in Research Question 1 (Table 17) show educators identified activities with characteristics of HQPD between about 40% - 80% of the time. Further, in Research Questions 2, 3 and 4 (Tables 18, 19 and 20 respectively), results show no significant differences between groups in participant perceptions about what is deemed effective PD. These results compared with a post analysis of key words pulled from participant descriptions of the PD event seem to confirm agreement through the use of common language to describe events that landed in Frames B and G. The results appear to indicate a glimmer of hope that PD efforts of types contained in Frames B and G are deemed effective by teachers and administrators, across grade levels, and the combination thereof. This appears to be the first step in providing, as Guskey (2000) indicates, PD that is intentional, ongoing, and systematic, to improve student learning through, as Hattie (2009), Hawley and Valli (1999), Joyce and Calhoun (2010), Marzano (2003) and Timperley et. al. (2008), emphasized effort to successfully deliver PD in curriculum and instruction.

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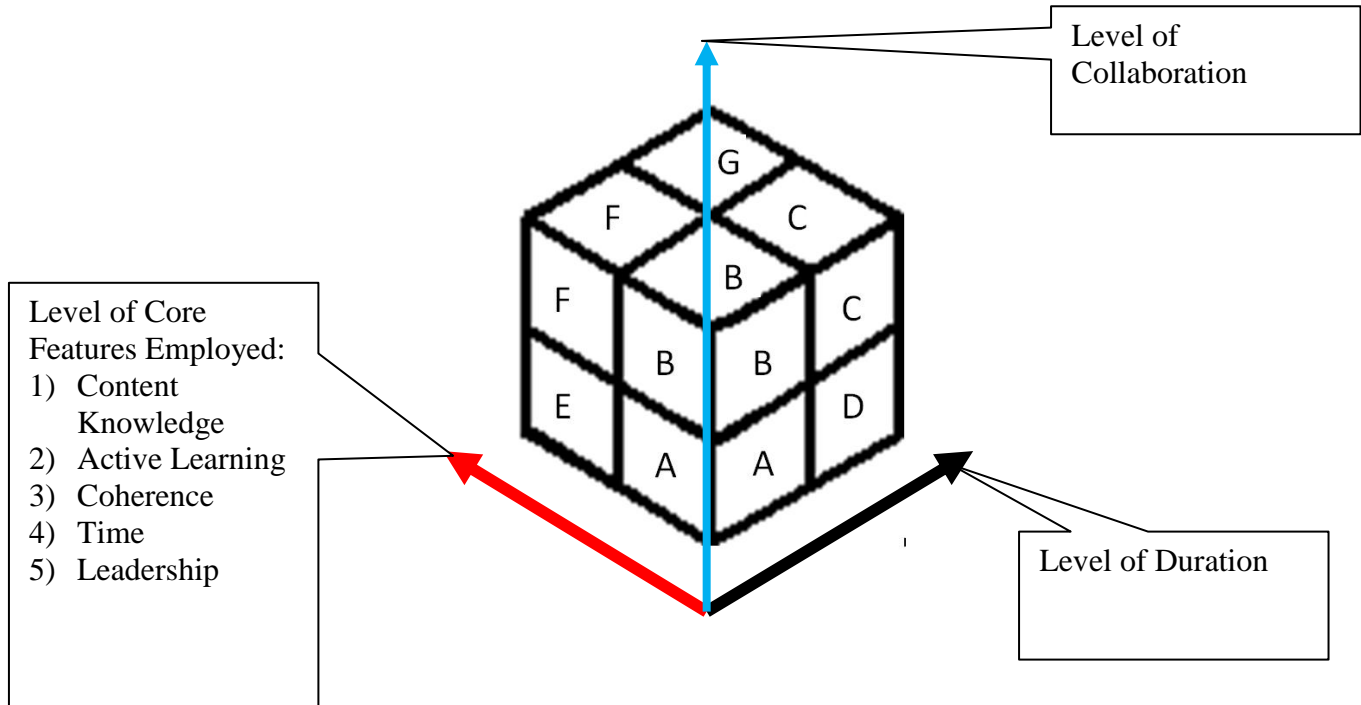
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APPENDIX A: SPF MODEL

Created by Daniel L. Brown

(Adapted from Sappington et al. (2012) and Garet et al. (2001))



Frame	PD Characteristics
A	Short-term—Solo--Low Core Features
B	Short-term—Group--Low Core Features
C	Long-term--Group--Low Core Features
D	Long-term—Solo--Low Core Features
E	Short-term--Solo--High Core Features
F	Short-term—Group--High Core Features
G	Long-term—Group--High Core Features
H (hidden)	Long-term—Solo--High Core Features

APPENDIX B: TEACHER ACTIVITY SURVEY

- 1 Enter your role.
 - a Teacher
 - b Administrator
- 2 Enter the primary grade band you serve.
 - a Elementary (K-5)
 - b Middle School (6-8)
 - c High School (9-12)
- 3 Enter your primary content area. If you are a current administrator, then enter the primary content area from when you last taught in the classroom.
 - a Mathematics
 - b Science
 - c Other (please specify)
- 4 Enter the race code for which you identify.
 - a Hispanic or Latino
 - b American Indian or Alaska Native
 - c Asian
 - d Black or African American
 - e Native Hawaiian or Other Pacific

Islander

f White

g Two or More Races

5 Enter the gender code for which you identify.

a Male

b Female

c Non-binary / third
gender

6 Enter the number of:

a total years in 0-50
education.

b years in your current 0-50
position.

7 Please provide a brief description of an activity you felt provided the most effective professional development.

8 Did this professional development activity continue after the end of the school year?

a Yes

b No

9 Did the activity fulfill any continuation credit (CPDU) requirements for you?

a Yes

b No

10 Were you required to attend the activity?

a Yes

- b No
- 11 Did you go through a competitive application process to participate in the activity?
- a Yes
 - b No
- 12 What resources were provided for use in your classroom after the activity? (Mark all that apply.)
- a Resources to use
when teaching
 - b Resources for
students to use when
learning
 - c No resources
provided
- 13 Which types of support (if any) did you receive to attend this activity? (Mark all that apply.)
- a Release time from
teaching
 - b Credits towards re-
certification
 - c Credits toward
salary increments or
pay increases
 - d Stipend

- e Full or partial reimbursement of college tuition
 - f Conference or workshop fees
 - g Reimbursement for travel and/or per diem expenses
 - h Grant to support a special project
 - i Recognition or higher ratings on an annual teacher evaluation
 - j Increased status as a professional within your school
 - k Other (please specify)
 - l No support provided
- 14 Which of the following best describes the activity?
- a Participation in an in-district workshop or institute
 - b Attendance at a

- college course
- c Attendance at an
out-of-district
workshop or
institute
 - d Participation in a
teacher collaborative
or network
 - e Attendance at an
out-of-district
conference
 - f Working in an
internship or
immersion activity
 - g Working with a
mentor, coach, lead
teacher, or observer
 - h Use of a teacher
resource center
 - i Participation in a
committee or task
force
 - j Participation in a

teacher study group

- k Other (please specify)

15 If you participated in preliminary activities, what did the preliminary activities include (Mark all that apply.)?

- a Reading materials were assigned to be completed prior to the start of the activity
- b Met in preliminary session(s) to help plan or shape the activity
- c Attended lectures or discussions to learn about relevant underlying ideas
- d Prepared materials from my classroom to bring to the activity
- e Met individually with staff to determine the appropriateness of the activity for me
- f Other (please specify)
- g No preliminary activities

16 Over what period of time was the activity spread, including the main activity and any formal preliminary or follow-up sessions?

- a Less than one day
- b One day

- c Two to four days
- d One week
- e More than one week
and not over one
month
- f More than a month
and less than a
college semester
- g A full college
semester
- h More than a college
semester

17 In what month(s) did the activity (including any preliminary or formal follow-up sessions) take place?

- a January
- b February
- c March
- d April
- e May
- f June
- g July
- h August
- i September

- j October
- k November
- l December

18 Including the main activity, preliminary activities, and formal follow-up sessions, about how many sessions were held as part of this professional development activity?

- a Total number of sessions 0-50

19 Including the main activity, preliminary activities, and formal follow-up sessions, about how many hours total did you spend in this professional development activity?

- a Number of hours 0-200

20 Who led this activity? (Mark all that apply.)

- a Classroom teacher from your school
- b Classroom teacher not from your school
- c Internal district or school staff
- d External district or school staff
- e State staff
- f Professional development expert or consultant

- g Other (please
specify)
 - h Don't know
- 21 Other than regular classroom teachers, did any other classifications of staff participate in this activity? (Mark all that apply.)
- a Resource teachers (including
special education and Title I
teachers)
 - b Paraprofessionals
(e.g., teacher aides)
 - c Other school staff (e.g.,
custodians, secretaries, bus
drivers)
 - d Administrative school staff (e.g.,
principals, department chairs)
 - e Staff from the
district
 - f Educators from
other districts
 - g Educators from the
State Agency
 - h Other (please
specify)

- i No staff other than
classroom teachers

22 Which of the following did you engage in during the activity? (Mark all that apply.)

- a Listened to a lecture
- b Observed a
demonstration of a
lesson or unit
- c Participated in a
whole-group
discussion
- d Participated in a
small-group
discussion
- e Gave a lecture or
presentation
- f Conducted a
demonstration of a
lesson, unit, or skill
- g Led a whole-group
discussion
- h Led a small-group
discussion
- i Engaged in extended

- problem solving
- j Wrote a paper,
report or plan
 - k Practiced using
student materials
 - l Developed or
reviewed materials
 - m Reviewed student
work
 - n Wrote assessment
items/questions
 - o Aligned assessment
items/questions to
standards
 - p Scored assessments
 - q Assessed
participants'
knowledge or skills
 - r Collaborated as a colleague with
mathematician/scientist
 - s Learned technology with intent to later lead
students using the same technology

t Completed paper-
and-pencil problems
or exercises

u Other (please
specify)

23 What practice(s) within the professional development activity did you find effective? (Mark all that apply.)

a I practiced under
simulated
conditions, with
feedback.

b I received coaching
or mentoring.

c I met formally with other activity participants
to discuss classroom implementation.

d My work was observed by the activity
leader(s) and feedback was provided.

e My work was observed by other participants
and feedback was provided.

f I communicated with the leader(s) of the activity
concerning implementation in my daily work.

g My students' or teachers' work was reviewed
by participants or the activity leader.

- h I met informally with other participants to discuss implementation in my daily work.
- i I developed curricula or lesson plans, which other participants or the activity leader reviewed.
- j Other (please specify)
- k None

24 The activity provided significant emphasis to the following areas:

	No Emphasis was Given to this area.	Strongly Disagree	Disagree	Agree	Strongly Agree	This Area Dominated the Activity.
a Curriculum (e.g., units, texts, standards)	0	1	2	3	4	5
b Instructional methods	0	1	2	3	4	5
c Approaches to assessment	0	1	2	3	4	5
d Use of technology in instruction	0	1	2	3	4	5
e Strategies for teaching diverse	0	1	2	3	4	5

	student populations						
f	Deepening your knowledge of mathematics/science	0	1	2	3	4	5
g	Leadership development	0	1	2	3	4	5
h	Other (please specify)	0	1	2	3	4	5

25 The professional development activity was:

		Not at all					Perfect alignment
a	consistent with your own goals for your professional development.	0	1	2	3	4	5
b	consistent with your school's or department's plan to change practice.	0	1	2	3	4	5
c	based explicitly on what you had learned in earlier professional	0	1	2	3	4	5

development
experiences.

d followed up with 0 1 2 3 4 5
activities that built
upon what you
learned in this
professional
development
activity.

e designed to support 0 1 2 3 4 5
state or district
standards/curriculum
frameworks.

f designed to support 0 1 2 3 4 5
state or district
assessment.

26 I executed a plan to integrate what I learned into my everyday work practice as part of this activity.

	Strongly	Disagree	Agree	Strongly	A complete plan was	
	Disagree			Agree	executed.	
No Plan Developed	0	1	2	3	4	5

27 To what extent do you feel that your knowledge and skills have been enhanced in each of the

following areas as a result of your participation in the identified professional development activity?

	Not at All						Greatest Extent Possible
a	Curriculum (e.g., units, texts, standards)	0	1	2	3	4	5
b	Instructional methods	0	1	2	3	4	5
c	Approaches to assessment	0	1	2	3	4	5
d	Use of technology in instruction	0	1	2	3	4	5
e	Strategies for teaching diverse student populations	0	1	2	3	4	5
f	Deepening knowledge of mathematics or science	0	1	2	3	4	5
g	Leadership development	0	1	2	3	4	5

h	Learning about state assessments in professional development	0	1	2	3	4	5
i	Learning about state standards or curriculum frameworks in professional development	0	1	2	3	4	5
j	Adapting teaching to meet state assessment requirements	0	1	2	3	4	5
k	Adapting teaching to meet state standards or curriculum framework requirements	0	1	2	3	4	5
l	Other (please specify)	0	1	2	3	4	5

28 The professional development activity impacted changes in my work practices:

		No changes	Strongly Disagree	Disagree	Agree	Strongly Agree	Changes to My Everyday Practice
a	It expanded my understanding of mathematics/science curriculum content.	0	1	2	3	4	5
b	It increased the cognitive challenge required by students for math/science classroom activities.	0	1	2	3	4	5
c	It changed the instructional methods I employ.	0	1	2	3	4	5
d	It changed the types or mix of assessments I use to evaluate students.	0	1	2	3	4	5
e	It changed the ways I use technology in instruction.	0	1	2	3	4	5

f	It changed the approaches I take to student diversity.	0	1	2	3	4	5
---	--	---	---	---	---	---	---

29 I continue to discuss what was learned with:

		No	Strongly Disagree	Disagree	Agree	Strongly Agree	It is now a regular part of my work.
a	other educators who attended the activity.	0	1	2	3	4	5
b	other educators who did not attend the activity.	0	1	2	3	4	5
c	administrators (e.g., principal or department chair, central office)	0	1	2	3	4	5
d	participants in the activity who work in other schools outside formal meetings that are part of the PD schedule.	0	1	2	3	4	5

30 As a result of implementing changes in practices linked to the professional development activity, student learning increased in the following areas:

	No Measurable Increase	Strongly Disagree	Disagree	Agree	Strongly Agree	Direct Result of the PD
a Student ability to memorize facts, definitions or formulas	0	1	2	3	4	5
b Student conceptual understanding	0	1	2	3	4	5
c Student ability to perform procedures (e.g., computation, algorithms, replicate experiments)	0	1	2	3	4	5
d Student ability to generate hypotheses	0	1	2	3	4	5
e Student ability to collect, analyze, and interpret data	0	1	2	3	4	5

f	Student ability to use information to make connections (e.g., use and integrate concepts, apply to real world situations, make generalizations)	0	1	2	3	4	5
g	Created positive student attitudes regarding mathematics/science	0	1	2	3	4	5
h	Student rate of attendance	0	1	2	3	4	5

31 The following issues have hindered my efforts to introduce changes into my work based on my experience in the professional development activity:

		Issue Did Not Hinder Effort	Strongly Disagree	Disagree	Agree	Strongly Agree	Issue Prevented Changes
a	Insufficient planning time	0	1	2	3	4	5
b	Inadequate classroom resources	0	1	2	3	4	5

c	Resistance from other teachers	0	1	2	3	4	5
d	Resistance from administrators	0	1	2	3	4	5
e	Resistance from parents	0	1	2	3	4	5
f	Class size too large to implement changes	0	1	2	3	4	5
g	Conflict between changes and needs of my students	0	1	2	3	4	5
h	Conflict between changes and state assessments	0	1	2	3	4	5
i	Conflict between changes and state curriculum frameworks/content standards	0	1	2	3	4	5
j	Conflict between changes and reform efforts	0	1	2	3	4	5

k Insufficient 0 1 2 3 4 5
opportunity to
practice new skills

32 Have you communicated to other educators regarding the content of this survey?

a Yes

b No

33 Please enter your school district.

a Charleston

b Mattoon

c Other

This survey was modified from that used

by Garet et al. (2001) and is used with

permission.

Garet, M. S., et. al., (2001, Winter). What makes professional development effective? Results from a national sample of teachers. American Educational Research Journal 38(4), 915-45.

http://vnweb.hwwilsonweb.com.proxy2.library.uiuc.edu/hww/results/results_single_ftPES.jhtml.

APPENDIX C: PARTICIPANT CONSENT FORM

You are being asked to participate in a research study conducted by Daniel L. Brown, Co-Principal Investigator (CPI), student in the Educational Administration and Foundations Department at Illinois State University doctoral program with Dr. Guy Banicki as Dissertation Chair and Principal Investigator, Educational Administration and Foundations, Illinois State University. The purpose of this study is to take a pulse check regarding educator perceptions about the characteristics that identify high-quality PD and if those perceptions are in alignment across groups of educators: classroom teachers and current administrators. This researcher posits that agreement of definition is important to ensure the success of district, school and individual PD plans thus maximizing the return on investment of time outside the classroom to improve student achievement in the classroom.

Why are you being asked?

You have been asked to participate because you were identified by faculty members at Southern Illinois University at Carbondale (SIUC) as having participated in professional development activities conducted by SIUC. Your participation in this study is voluntary. You will not be penalized if you choose to skip parts of the study, not participate, or withdraw from the study at any time.

What would you do?

If you choose to participate in this study, please follow this link to the Teacher Activity Survey. In total, your involvement in this study will last approximately one hour.

Are any risks expected?

The survey is anonymous, and we do not anticipate any risks beyond those that would occur in everyday life.

Will your information be protected?

Your responses will be anonymous; nothing that will identify you will be linked to your responses. The findings from this study may be presented in Daniel L. Brown’s dissertation and disseminated in accordance with the Illinois State University requirements for dissertation completion.

Who will benefit from this study?

You participation will benefit the field of education in general, SIUC by providing feedback on their professional learning opportunities in general and Daniel L. Brown directly as it will assist with completion of the requirements for doctoral studies. Another specific benefit is to attempt to take a pulse check regarding educator perceptions about the characteristics that identify high-quality PD and if those perceptions are in alignment across three groups of educators: classroom teachers, aspiring administrators, and current administrators. This researcher posits that agreement of definition is important to ensure the success of district, school and individual PD plans thus maximizing the return on investment of time outside the classroom to improve student achievement in the classroom.

Whom do you contact if you have any questions?

If you have any questions about the research or wish to withdraw from the study, contact Daniel L. Brown by email at dsmmbrown@consolidated.net or Dr. Guy Banicki by calling the Educational Administration and Foundations Office at (309) 438-5422.

If you have any questions about your rights as a participant, or if you feel you have been placed at risk, contact the Illinois State University Research Ethics & Compliance Office at (309) 438-5527 or IRB@ilstu.edu.

Documentation of Consent

Participation in this survey is completely voluntary and you are not under any obligation. All participants must be 18 years and older to take part in this study. All responses are anonymous (no names or email addresses are collected via the survey) and confidential, and information provided will be kept private and secure. We will take all reasonable steps to protect your identity. You may withdraw at any time. By completing and submitting this online survey you agree to participate and that you are at least 18 years of age.

Please click this link to complete the online survey: [LINK PROVIDED LATER]

You can print this form for your records.

APPENDIX D: SURVEY QUESTIONS CLUSTERED BY VARIABLE

Table D1

Survey Questions Clustered by Variable

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
1					
2					
3a					
3b					
4					
5					
6a					
6b					
7					
8		X			
9					
10					
11					
12a					
12b					
12c					
13a					

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
13b					
13c					
13d					
13e					
13f					
13g					
13h					
13i					
13j					
13k					
13l					
13m					
14a					
14b					
15a				X	
15b			X	X	
15c			X	X	
15d				X	X
15e				X	

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
15f					
15g					
15h					
16	X				
17a					
17b					
17c					
17d					
17e					
17f					
17g					
17h					
17i					
17j					
17k					
17l					
18	X				
19		X			
20a			X		

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
20b			X		
20c			X		
20d			X		
20e			X		
20f			X		
20g					
20h					
20i					
21a			X		
21b			X		
21c			X		
21d			X		
21e			X		
21f			X		
21g			X		
21h					
21i					
21j					
22a					X

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
22b				X	
22c			X		X
22d			X		X
22e					X
22f					X
22g					X
22h					X
22i				X	X
22j				X	X
22k				X	X
22l				X	X
22m				X	X
22n				X	X
22o				X	X
22p				X	X
22q				X	X
22r			X		
22s					
22t				X	X

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
22u					
22v					
23a			X	X	X
23b			X	X	X
23c			X	X	X
23d			X	X	X
23e			X	X	X
23f			X	X	X
23g			X	X	X
23h			X	X	X
23i			X	X	X
23j					
23k					
23l					
24a				X	
24b				X	
24c				X	
24d				X	
24e				X	

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
24f				X	
24g				X	
24h					
24i					
25a					
25b					
25c					
25d					
25e					
25f					
26	X			X	X
27a				X	
27b				X	
27c				X	
27d				X	
27e				X	
27f				X	
27g				X	
27h				X	

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
27i				X	
27j				X	
27k				X	
27l					
27m					
28a					
28b					
28c					
28d					
28e					
28f					
29a	X		X		
29b	X		X		
29c	X				
29d	X		X		
30a					
30b					
30c					
30d					

(Table Continues)

(Table Continued)

Survey Question	Duration	Time	Collaboration	Content Knowledge	Active Learning
30e					
30f					
30g					
30h					
31a					
31b					
31c					
31d					
31e					
31f					
31g					
31h					
31i					
31j					
31k					
32					
33					
