Integrating Research-Based Analytic Writing Instructional Strategies into Middle School English Language Arts Classrooms

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The skill of analyzing texts in English language arts classrooms has been a focus of the Pennsylvania Core Standards, especially at the middle school level. Analysis in ELA classrooms can be broken down into two components: analytic thinking and analytic writing. This dissertation in practice focused on the implementation of a professional development series structured around level-setting beliefs about the importance of analysis, effective strategies for teaching analysis in middle school ELA classrooms, and collaborative lesson planning. These sessions were held with the 11 ELA teachers at the participating school. Teachers were surveyed and interviewed to gain an understanding of the impact that the professional development has had on their practice. The results of the professional development series and measures related to that series yielded important considerations for future study and research around analytic writing in ELA classrooms as well as suggestions for future professional development.

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Preface

This work is an ode to those who are passionate about literacy and leadership. I truly believe that one of the most important purposes of education is to raise a literate populace. To everyone working to teach students to read, write, and become critical consumers of information—thank you for all that you do.

I stand on the shoulders of many educators who have raised me to be a critical thinker and compassionate leader in all that I do. Educators like Linda Bryant, Elizabeth Brovey, Mara Cregan, Gretchen Generett, and countless others are the heroes of my life, and they inspired the words on these pages. I dedicate this to all the educators who helped me develop my sense of self and ground me in my vocation of serving my community by serving our students.

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1.0 Naming and Framing the Problem of Practice

1.1 Broader Problem Area

The Common Core State Standards for English/ Language Arts (ELA) prioritize results over pedagogical processes (Common Core State Standards Initiative, 2021). This shift challenged educators to develop their own processes to achieve the desired results spelled out in the rigorous standards, which was a different approach compared to how educators responded to previous state standards. The previous standards were broken down into smaller components of reading and writing. For example, the previous standards had a specific standard for writing an introduction, while the new standards incorporate the structure of an introduction into a standard related to the structure of an entire essay. This change in standard configuration required teachers to update their knowledge of English language (ELA) arts and develop their own pedagogical strategies for attaining the required outcomes.

The Pennsylvania Department of Education (PDE) adopted the Common Core Standards, which are referred to as the PA Core Standards. The PA Core Standards mirror the Common Core State Standards with a few variations; they added one crucial standard under a new category, Response to Literature. The standard applies to grades 3-12: "Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade-level reading standards for literature and literary nonfiction" (Pennsylvania Department of Education, 2014a). This standard is assessed using the test item called the text-dependent analysis (TDA) on the Pennsylvania System of School Assessment (PSSA), which accounts for 25% of a student's overall performance on the PSSA, making it the single highest weighted test item on the assessment. This

test item has been a consistent challenge for students across the state. This challenge is seen in my local context as well, which leads to my problem of practice: Students at the 7th and 8th grade level struggle to demonstrate proficient analysis of complex texts in ELA classes.

This problem is a focal point for the studied district's future review of ELA educational programming. Located in an upper-middle class community in southwestern Pennsylvania, the district underwent a K-12 review of our ELA programming during the 2019-2020 school year. This review committee engaged with community partners, universities, and student and parent focus groups; reviewed the curriculum and scheduling structures of exemplar schools in Pennsylvania; and investigated relevant research from the field. The review produced nine recommendations in the areas of professional development, structure and scheduling, writing strategies, and differentiation/interventions, among others. This study will focus on two of those recommendations because of their pertinence to addressing the instruction and assessment of analytic writing. One is the writing recommendation, which includes a sub-recommendation for students to develop the metacognitive skills needed to become proficient writers and to use self-monitoring strategies for comprehension. The other recommendation, from the professional development section, is the following: "Implement meaningful and appropriate professional development (department-wide) on current ELA instructional trends/needs (e.g., text dependent analysis and analytic thinking, flexible grouping, and guided reading)." These recommendations provide the actionable steps to help students achieve proficiency on analytic writing at the 7th and 8th grade levels.

Writing became a focus of the focus district's ELA program review because it is a necessary skill for post-secondary life. Several studies in the past two decades have enumerated the difficulties that schools have faced in developing writing proficiency in K-12 education (Mo

et al., 2014; Sanders & Reio, 2012; Sessions et al., 2016). Almost two decades ago, the National Commission on Writing (2003) summarized years of data that indicated that students are not given access to enough writing instruction throughout their K-12 education. The Commission's recommendations to address the writing deficits included making policy changes to include a focus on writing, an increase in the amount of time students write, better assessment practices, better access to and use of technology, and more robust professional development for teachers (pp. 3-5). In the intervening years, some of these recommendations have been adopted in Pennsylvania while others have been left behind. The focus on analytic writing was one of the steps toward emphasizing writing instruction in grades 3-8.

To address the need for more writing in schools, specifically analytic writing, the Pennsylvania Department of Education (PDE) commissioned the creation of a new test item for the Pennsylvania System of State Assessment (PSSAs), the text-dependent analysis (TDA), which is the most heavily weighted test item on the PSSAs, comprising 25% of a students' score. Thompson (2018b) classified TDAs in the following way:

> TDA prompts ask students to explain and elaborate on the interaction of literary
> and informational elements, and/or structure, such as how the theme is revealed
> through the characters. . . . They necessitate an understanding of the author's craft,
> choices, and presence in the text as it relates to the specified elements identified or
> alluded to in the prompt. (p. 1)

PDE and the National Center for the Improvement of Educational Assessment have developed resources for teachers to support their instruction of TDA writing. These resources include sample prompts, learning progressions, and protocols for student work analysis (Pennsylvania Department of Education, 2021b). Appendix A provides an example of a sample 8th

grade TDA prompt from the 2022 PSSA item sample. In that sample, the TDA prompt requires students to read a three-page science fiction text about penguins and write an essay analyzing how the author uses penguins to reveal characteristics about two characters from the passage (Pennsylvania Department of Education, 2022). In spite of these resources, students' scores on TDA prompts in the studied district are the lowest scoring reporting category on the PSSAs.

Because of the historical challenges that the studied school has had with student TDA scores, there have been previous interventions attempted that have had little success in changing the results. A few years ago, the school made TDA a focus for everyone in the school and directed all teachers to give a TDA throughout the school year. The rationale behind the TDA for all subject areas was that students needed more practice with TDA writing than what they could get in their ELA classes and that more practice would improve TDA scores. Feedback from teachers about the "TDA for all" initiative was that it confused students because other content area teachers did not have the expertise needed to develop their own TDA questions and give appropriate feedback to help students deepen their proficiency of TDA writing.

Another strategy has been to send some teachers to the local intermediate unit for a series of four TDA professional development sessions. The district sent a few teachers over the course of a few years to receive this training and then expected the trained teachers to share their learning with the rest of the ELA teachers. This strategy was helpful for the teachers who attended the four-day training, but there was not enough time for those teachers to share their learning with the other ELA teachers. Teachers reported that they tried to share their learning during department meetings, which occur once a month for about a half hour, but they did not have enough time to work with their colleagues to share the instructional shifts needed to teach analysis appropriately.

1.2 Organizational System

Taken together, the studied district's mission, vision, and values (MVV) provide the compass that drives the district's work. The strategic plan is the map of how the district works to fulfill the promise of the district's mission, vision, and values. The mission of the district is to "focus on learning for every student every day," and this mission is known by all teachers and even students. The vision of the district is an image that depicts the following key features of education for the district:

1. Learning is different for different people.

2. Learning is focused on achievement and growth.

3. Learning occurs inside and outside the classroom.

4. Learning requires effort and persistence.

5. Learning happens with collaboration between students, staff, parents, and community.

Following the vision, the district outlines five PRIDE values of personal growth, resiliency, innovation, diverse opportunities, and engagement. The MVV has driven change in the district for eight years, including in the structure of the overall organization. The central office district leaders have remained in place, but the past few years have seen the reorganization of content area departments.

1.2.1 ELA Department Organization

The district assigned building administrators to oversee each department. Because of the size and importance of the English department, there is one building administrator at each grade span (K-3, 4-6, 7-8, and 9-12) who oversees the department. The district also identified teacher

leaders who serve as department chairs and planners of professional development sessions for the ELA department. Eight department chairs represent the ELA department for all grade levels. There is one department chair for high school English, while there are two department chairs for middle school English, three department chairs for grades 4-6, and two department chairs for grades K-3. All of them are white women with at least 10 years of teaching experience. There are approximately 50 staff members in the K-12 ELA department. All of them are white, and 70% are female and 30% are male. They serve all 4,500 students in the studied district, who closely match the demographics of the teachers. In terms of racial and ethnic demographics, 87.4% of the student population is white, 1.3% is black, and 2.4% is Hispanic. The larger community is a predominantly white, middle to upper class community that spans about 31.5 square miles in southwestern Pennsylvania.

1.2.2 ELA In-Depth Program Review and Recommendations

Another key element of the studied district's approach to departments is the in-depth program review process. Each department participates in this cyclical process every four years. In the first year, K-12 representatives from across departments convene monthly to examine four categories of information: exemplar schools, internal and external data review, research, and connections to businesses and post-secondary education. At the end of the first year, the department puts together a report with recommendations for programmatic change to be implemented for the following three years. The report also provides an outline for major action steps and budgetary expenditures associated with each recommendation; however, it does not outline the measures that will be used to determine if the recommendations were successful. Those measures for success are defined in subsequent years of implementation with collaboration among

the department chairs, building principals, and central office administrators, all of whom take the lead on implementing each recommendation.

The above process is accomplished within a year. The implementation phase begins the following year and lasts for four years. Figure 1.1 illustrates the implementation process. The ELA program review document yielded nine recommendation categories and 30 individual recommendations for the ELA department to accomplish in the four years of implementation. With these 30 recommendations being left to teachers and administrators to implement, much can be left behind due to many factors including these leaders managing other job responsibilities, a lack of dedicated time, a lack of buy-in and investment from department members, etc.

Year 1: Creation of ELA Program Review Report	Committee reviews research to develop recommendations.	Committee presents the report to the school board and department colleagues.
Year 2: Beginning of Implementation	Department chairs roll out the vision of the program review at back to school meetings.	Department chairs and administrators identify recommendations to accomplish.	Time to complete recommendations occurs during inservice days.
Year 3 and beyond: Continued Implementation	At the start of each year, there is a review of recommendations, identifying which ones should be the focus for the year.	Recommendations are implemented through professional development at inservice days and department meetings.

Figure 1.1 Implementation of ELA In-Depth Program Review

The document also leaves the recommendations without much action planning; instead, the focus is on how the recommendations were developed, leaving the action planning to be done in the summer following the publication of the program review report. Action planning documents are created by the central office and building-level administrators and are shared with the

department chairs who jointly take ownership of drafting and implementing the action plan. Evaluation of progress is also determined during the action planning stage where measures are established to determine if progress is being made. A color-coded system of green (completed), yellow (in progress), and red (not started) is assigned to each recommendation based on how much progress is made. Those colors are shared with the community on a quarterly basis.

One of the ELA program review recommendations is related to improving students' analytic thinking and writing skills. The report recommends that the studied district provide professional development on the most important concepts in ELA instruction, including text-dependent analysis, assessment practices, and the science of reading. This recommendation was created because districtwide testing results show that students' ability to analyze text is a weakness in all grade levels. Table 1.1 illustrates the discrepancy between student performance on the PSSA as a whole and their performance on the TDA portion of the PSSAs. While this recommendation fits with my problem of practice, it is also much narrower than my problem of practice. The recommendation focuses exclusively on professional development related to text-dependent analysis, which is one item on the PSSAs. Therefore, the professional development that will come from this recommendation will be specific to how to teach students to raise their scores on the PSSA test item. When teachers and administrators discuss analytic thinking and writing for ELA classrooms, they think primarily about the TDA prompt on the PSSAs, and their instruction is geared toward teaching students to demonstrate proficiency on the PSSAs. Moreover, data about students' ability to think and write analytically is examined through the TDA prompt results from the PSSAs, not internal assessments that gauge student progress throughout the year. My problem of practice is focused on the ability of students to think and write analytically in ELA classes, which is not limited to the standardized test item found on the PSSAs.

Table 1.1 Percentage of Students Scoring Proficient/Advanced for TDA Subcategory and for Overall ELA

PSSA in 2019, 2021, and 2022[1]

	2019: % proficient/ advanced on TDA	2019: % proficient/ advanced on total PSSA	2021: % proficient/ advanced on TDA	2021: % proficient/ advanced on total PSSA	2022: % proficient/ advanced on TDA	2022: % proficient/ advanced on total PSSA
7th Grade	56%	88%	25%	72%	45%	79%
8th Grade	40%	84%	47%	80%	33%	80%

The narrow focus of the program review recommendation feeds into some of the forces pushing toward and pulling against my problem of practice. The focus on addressing the improvement of test scores may superficially facilitate conversations about my problem of practice; however, it obstructs my problem because it does not allow teachers to get to the depth of understanding needed to help students think and write analytically. For example, one of the early movements in professional development on analysis advocated for graphic organizers that all students would use across the district. This graphic organizer, however, taught students to be more formulaic in their writing and did not teach them to be critical thinkers of text, thus obstructing the goal of teaching students to think analytically. As discussed in the review of literature, analytic thinking and writing are the foundational processes that students must be able to do independently in order to successfully write a TDA. In the graphic organizer example, teachers were focusing on students writing a proficient TDA without considering the metacognitive processes needed for students to think independently and write analytically.

Outside of the program review process, structural forces support or obstruct my problem. Monthly department meetings allow for conversations and professional development on analytic

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[1] Students were not assessed in 2020 because of the COVID-19 pandemic.

thinking and writing. In addition, there are professional development days every few months that can be used to address analysis. While there is time throughout the year to address my problem of practice, there is a lack of leadership dedicated to addressing curriculum issues in general. The district is organized to have two assistant superintendents—one for K-6 and one for 7-12. There is no curriculum director supervising initiatives such as analytic writing. Because the assistant superintendents focus on a wide array of concerns that arise at their designated grade levels, curriculum is relegated to the bottom of the priority list. Therefore, it becomes the responsibility of building principals and teachers to drive change in curriculum. In the past two years since the start of the COVID-19 pandemic, principals and teachers have turned their attention to the more fundamental challenges of maintaining instruction during a pandemic. Under these conditions, a topic such as enhancing students' analytical skills has been a lesser priority.

To support teachers in their curriculum development, curriculum documents are shared with teachers and accessible for editing throughout the year. Teachers have the freedom to update their curriculum documents in conjunction with their colleagues and their department leadership. Teachers may update curriculum documents during department meetings or individually after consulting their colleagues about changes they want to make. The written curriculum, housed in Google Sheets, has a column for resources that can be identified for each unit. Teachers are encouraged to add resources that are effective for each unit. The challenge with this freedom is that teachers feel that they are then bound to use the resources in the curriculum. This has led to a larger conversation about the balance between creating a common experience for all students and preserving teacher autonomy.

1.2.3 Stakeholders

The user groups central to this problem are students, teachers, and administrators. Within these categories, there are some prevailing characteristics that permeate multiple groups. For example, all work in a suburban, upper-class school where 95% of students and staff are white. The subsequent paragraphs provide more detail about the ways these user groups impact or are impacted by this problem of practice. Together, these user groups form an ecosystem of learning, which is illustrated in Figure 1.2 below.

Administratiors
- Includes central office and buliding level
- Set the priorities and building goal

Academic Leadership Council Teachers
- One teacher in each department identified as the leader
- Responsible for planning professional development

ELA Teachers (Reading and English)
- 11 teachers: 5 in Reading department, 6 in English department
- Responsible for planning instruction as a result of professional development

Students
- Around 700 7th and 8th grade students
- Shared in interviews that they struggle with analytic writing

Figure 1.2 Stakeholder System

The administrators set the priorities of the school, which department chairs use as their priorities during department meetings. These priorities are then distributed to teachers through department meetings along with other professional learning opportunities that set the direction of

the ELA department. ELA teachers then use those priorities to drive their instruction in classes. Ultimately, this instruction is delivered to students, whose progress in analytic thinking and writing is the main driver in determining if this problem remains relevant and important to address.

1.2.4 Administrators

In this ecosystem, one of the central user groups includes the building and district administrators, all of whom are context setters. They have significant power but have varying levels of interest in the problem of analytic thinking and writing. The administrative group has a few different types of users. The first set of users is comprised of building-level administrators, made up of a principal and assistant principal, both of whom are white men. One has been a principal for 20 years, and the other is new to being an administrator, having joined the district four years ago. They are most closely tied to this problem because their focus is specifically on the middle school; however, they do not maintain a singular focus on the ELA department and often find themselves meeting so many building-wide needs that they cannot make concentrated changes to any department.

The next level of administrators includes the central office leaders, which consist of two assistant superintendents (one for K-6 and one for 7-12). The assistant superintendent for secondary education is a white male who has been in education for almost 30 years, and the assistant superintendent for elementary education is a white female who has been in education for about 18 years. They have more power related to making curricular decisions than the building-level administrators but are pulled in even more directions, leaving them without intimate knowledge of each department. Central office administrators oversee and have final decision-making power over all curricular decisions made in a department, but they often rely on teacher

leaders and building-level administrators to inform those decisions because of the variety of responsibilities they maintain.

1.2.5 Department Chairs

Because of the wide-spanning responsibilities and influence of the administrators, they delegate some responsibility and power to lead teachers, who are called department chairs. The department chairs play the role of traditional department chairs. Department chairs are teachers who are hired by administrators to take leadership of specific departments and drive agenda items forward without having the supervision and evaluation responsibility, which is reserved for administrators. There are two department chairs at the studied school who are connected to ELA: one for the reading department and one for the English department. Both department chairs are white women who have been in education for 20 and 14 years respectively. They have monthly meetings that cover tactical items as well as strategic initiatives. For example, they review budgetary needs for the department while also leading professional learning sessions around key concepts covered in the PA Core Standards for ELA. The department chairs have shared research-based practices in analytic writing along with professional articles and reports like *Reading Next* (2006) and *Writing Next* (2007). All professional development sessions are planned in conjunction with building and central office administrators' approval. At times, administrators dictate topics for professional learning that must be covered (e.g., review standardized test score data, design a common assessment, etc.), and there are other times when administrators allow the department chairs to design their own professional development based on the needs of the department. Both leaders have participated in curriculum reviews and have led professional learning that emphasized analysis with a specific focus on text-dependent analysis (TDA) writing.

Interviews with the department chairs revealed that they are interested in both exploring analytic thinking and writing; they see it as a central part of their job as middle school ELA teachers. They became focused on analytic thinking and writing with the change in PA Core Standards, specifically with the focus on TDA writing that appears on the PSSAs. They shared that they would not be as focused on analysis if it were not on the PSSAs. When they started focusing on analysis, they looked exclusively at the essay that students wrote on the PSSA, supporting Brimi's (2012) claim that teachers focus on the product of the standardized test item instead of focusing on the process that gets students to understand how to write the essay. This view evolved for the department chairs through professional development that was exclusively focused on preparing students for writing proficient TDAs, which they have in turn shared with the other teachers in their departments. The department chairs also acknowledge that some have latched on to analytic thinking and writing more than others. Both discussed dynamics in their departments, which included at least one teacher who does not contribute to the larger team while others in the department want to collaborate to refine their curriculum and plan instruction together.

1.2.6 Reading and English Teachers

There are five reading teachers and six English teachers at the middle school. The reading department consists of five white women with varying levels of educational experience (between five and 25 years). The English department consists of six white teachers, three male and three female, all of whom have at least 15 years of English teaching experience. For decades, these departments have had separate curriculum resources and scopes and sequences. Reading teachers focus on the reading process and vocabulary while the English teachers focus on writing and

grammar instruction. However, in the past few years, efforts have been made to connect the two subjects for more cohesive ELA instruction. Part of this synthesis was driven by the inclusion of the analytic writing standard in the PA Core Standards for ELA, which requires students to write about reading. Reading and English teachers work most closely with their grade-level colleagues and then with their department chair in designing lessons and reviewing assessment results. It is worth acknowledging that there is no consensus around whether separate reading and English classes or integrating into one ELA block is more effective, especially at the secondary level. Beaver (1998) found that integrating reading and English increased students' achievement scores while Lewis et. al (2003) and Nichols (2005) found that turning ELA into one block instead of separate reading and English classes did not have an effect on student achievement.

In preparation for this study, empathy interviews were conducted with the ELA teachers. There are a variety of interest levels when it comes to analytic thinking and writing. Some teachers, like Mark, Ciara, and Jessica[2], believe that analytic writing should be a focus of their courses and have made great strides to update their curriculum to include more learning opportunities for analysis. Each year, they try new strategies based on professional learning that they seek out to improve their ability to teach analysis.

Others in the department, including Kaitlyn and Jamie, have not shown an interest or recognized analysis as a priority for their classes. This is in part because they view their courses to be focused on other skills. Kaitlyn, an English teacher, believes that English class should focus on grammar and creative writing skills while Jamie, a reading teacher, believes that reading class should be focused on basic reading comprehension skills and that higher order thinking skills like

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[2] Names included throughout this document are all pseudonyms.

analysis should be taught in English class. Currently, the district has not established a clear delineation between the reading and English courses. The absence of that delineation permits each teaching team to define the difference distinctly.

1.2.7 Students

Most importantly, the students are another user group that all other user groups work to support. The student population of this place of practice is 95% white, 1% black, 2% Asian, and 2% multiracial. This problem of practice exists because of data that shows students are not meeting grade-level proficiency when it comes to their analysis of complex texts. They are directly or indirectly affected by all the above user groups; administrators set priorities for the district and school that affect the student experience, department chairs provide professional learning to teachers, and teachers create daily lessons and assess students to find out what they have mastered and still need more work on. Through interviews, students voiced that their interaction with analysis comes almost exclusively from teachers focusing on the text-dependent analysis (TDA) prompt on the PSSAs. They do not see analysis as a focus of their English and reading classes, and they did not express enthusiasm about learning to be analytic thinkers and writers. They saw it as a necessary part of the class but also the most challenging part of reading and English class. Therefore, it is possible that the professional development sessions that have been offered thus far have not had the impact on teacher practice that was intended.

1.3 Statement of the Problem of Practice

These user groups are challenged by the problem of practice in various ways. The central office administrators have many responsibilities that involve responding to emergency situations and overseeing the curriculum development of all departments, limiting the amount of direction they can set for specific departments. Building-level administrators also respond to emergency situations that arise in their building while also working on student-specific concerns and providing oversight to every content area department in their school. Department chairs do not have extra preparation time to provide professional development to teachers. The lack of dedicated time to create professional development results in each teacher using their own approach to analysis. This creates inconsistency between teachers and grade levels in how they approach analysis. There is also the emphasis on the TDA test item on the PSSA. Some teachers think about analysis as an isolated item on the PSSA, while others see it as foundational to teach higher-order thinking skills. This disparate approach to analysis impacts students who associate analysis with a standardized test, which students voiced as a barrier to learning this very important skill in interviews.

The problem of analytic writing skills is complex and pervasive in middle school ELA curricula. The district has identified a need to support analytic writing through its in-depth program review recommendations; however, there are many recommendations for administrators and ELA teachers to address. Working through those recommendations while emerging from a pandemic has proven to be a challenge as well. Within the user groups, there are differing opinions about how important it is to address analytic writing in ELA classrooms. Some teachers feel that it is only needed for the annual state test, while others see it as a valuable cornerstone of ELA instruction. Students themselves voice that analytic writing is the most difficult part of reading and

English classes, which further solidifies analytic writing as a key problem of ELA practice at the focus school.

In summary, the problem of practice that I seek to address is the consistently low performance of students on the text-dependent analysis test item on the PSSAs. As an extension of that problem, I will specifically examine the problem of teacher preparation as it relates to developing students analytic writing skills.

1.4 Review of Supporting Knowledge

Analytic writing, specifically in the content of ELA classrooms, focuses on the examination of a text by breaking it down into its constituent parts (i.e., elements of literature, craft, structure, vocabulary, etc.) to determine the text's deeper meaning (Thompson, 2018b). While there are many other definitions of analysis, this study relies on Thompson's (2018b) definition as it is the one used by the Pennsylvania Department of Education. This review will examine analytic writing at the middle school level within Pennsylvania; however, some national statistics provide important context that explains why analytic writing instruction needs reform.

Nationally, writing has been a challenge for educators at all levels. The National Assessment of Educational Progress (NAEP) gave a random sampling of 8th grade students a writing assessment and found that only 27% of students wrote proficiently (National Center for Education Statistics, 2011). The scorers of this assessment defined 8th grade level proficiency:

> Eighth-grade students writing at the Proficient level should be able to develop responses that clearly accomplish their communicative purposes. Their texts should be coherent and well structured, and they should include appropriate connections and transitions. Most of

the ideas in the texts should be developed logically, coherently, and effectively. Supporting details and examples should be relevant to the main ideas they support and contribute to overall communicative effectiveness. Voice should be relevant to the tasks and support communicative effectiveness. Texts should include a variety of simple, compound, and complex sentence types combined effectively. Words and phrases should be chosen thoughtfully and used in ways that contribute to communicative effectiveness. Solid knowledge of spelling, grammar, usage, capitalization, and punctuation should be evident throughout the texts. There may be some errors, but these errors should not impede meaning. (p. 21)

Many of the above descriptors are present in the rubric used by Pennsylvania to assess analytic writing. Pennsylvania measures analytic writing in grades 3-8 using the text-dependent analysis (TDA) prompt on the Pennsylvania System of State Assessment (PSSA). The TDA prompt is scored with a holistic rubric of nine categories, shown in Figure 1.3 (Pennsylvania Department of Education, 2014c). The PSSA for ELA is administered in three sessions and consists of multiple-choice questions related to the PA Core Standards. Across the three sections, students answer 43 multiple choice questions that are associated with seven passages, answer 10 stand-alone multiple-choice questions related to the PA Core Standards about grammar and style, and write two text-dependent analysis essays (Pennsylvania Department of Education, 2014c).

Proficiency Criteria for the TDA in Grades 4-8
Adequately addresses all parts of the task demonstrating sufficient analytic understanding of the text(s)
Clear introduction, development, and conclusion identifying an opinion, topic, or controlling idea related to the text(s)
Appropriate organizational structure that adequately supports the focus and ideas
Clear analysis of explicit and implicit meanings from text(s) to support claims, opinions, ideas, and inferences

Sufficient, accurate, and direct reference to the text(s) using relevant details, examples, quotes, facts, and/or definitions
Sufficient reference to the main idea(s) and relevant key details of the text(s) to support the writer's purpose
Appropriate use of transitions to link ideas
Appropriate use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events
Some errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present seldom interfere with meaning

Figure 1.3 Guidelines for a Proficient Response on a Text Dependent Analysis Prompt

Analytic writing, as represented through TDA scores, has consistently been the lowest scoring reporting category on the Pennsylvania System of State Assessment (PSSA) for the studied district. Table 1.2 provides three data points from the 2019, 2021, and 2022 PSSAs: the percentage of students scoring proficient or advanced on the TDA subcategory and the percentage of students scoring proficient or advanced on the entire ELA PSSA. Scores from 2020 are excluded because students did not take the PSSA in 2020 due to the COVID-19 pandemic. There is a discrepancy between students scoring proficient and advanced on the TDA portion of the assessment and students scoring proficient or advanced on the overall assessment, with a 32% difference in 7th grade and 44% difference in 8th grade.

Table 1.2 Percentage of students scoring proficient/advanced for TDA subcategory and for overall ELA PSSA in 2019, 2021, and 2022

	2019: % proficient/ advanced on TDA	2019: % proficient/ advanced on total PSSA	2021: % proficient/ advanced on TDA	2021: % proficient/ advanced on total PSSA	2022: % proficient/ advanced on TDA	2022: % proficient/ advanced on total PSSA
7th Grade	56%	88%	25%	72%	45%	79%
8th Grade	40%	84%	47%	80%	33%	80%

This discrepancy is even more striking because the TDA accounts for 25% of a student's overall score, making it the most heavily weighted single test item on the assessment (Pennsylvania

Department of Education, 2017). Because of the weight of this item, it would make sense for students who score below proficiency on the TDA to likely score below proficiency on the entire ELA assessment; however, in the participating district, a significant percentage of students scored below proficiency on the TDA while scoring at or above proficiency on the entire ELA PSSA. Aside from the TDA, the rest of the PSSA is scored by students' responses to multiple-choice questions based on the PA Core Standards, which include standards related to analytic thinking that requires students to determine the correct answer from a series of choices about concepts like how an element of author's craft influences the tone or theme of a text. One conclusion to draw from this discrepancy is that students are capable of analytic thinking when it is presented to them in multiple choice form since the rest of the PSSA is a series of multiple-choice questions. Therefore, the root cause of the discrepancy comes into play when students are required to demonstrate analytic thinking in writing.

Based on the data above, this literature review will examine the components of analytic writing for middle school students and explore the research-based assessment and instructional practices of analytic writing. Analytic writing skills are a crucial building block for students to develop coherent arguments and communicate their claims and reasoning to an audience. As a lens for this literature review, I will focus on the following questions:

1. What are the components of analytic writing?

2. What are the current research-based practices for assessing analytic writing?

3. What are the current research-based instructional approaches for teaching analytic writing?

1.4.1 Key Terms

To provide context on the research on analytic writing, the following glossary provides definitions of the key terms that will be addressed in this review.

Analytic thinking and writing: "Detailed examination of the elements or structure of text, by breaking it into its component parts to uncover interrelationships in order to draw a conclusion" (Thompson, 2018a, p. 3).

Close reading: "An investigation of a short piece of text, with multiple readings done over multiple instructional lessons. Through text-based questions and discussion, students are guided to deeply analyze and appreciate various aspects of the text, such as key vocabulary and how its meaning is shaped by context; attention to form, tone, imagery and/or rhetorical devices; the significance of word choice and syntax; and the discovery of different levels of meaning as passages are read multiple times" (Brown & Kappes, 2012, p. 2).

Dialogic writing assessment: A structured teacher-student conference at which teachers think aloud their ideas about how to revise students' written work (Beck et al., 2021). In these conferences, teachers may check for understanding, provide clues to guide the student toward improved writing, give direct instruction about a writing skill, or highlight strengths of student work.

Domain-specific vocabulary: "Vocabulary specific to a particular field of study (domain)" (Pennsylvania Department of Education, 2014b, p. 8).

English/ Language Arts (ELA): The subject area in schools that is primarily responsible for teaching and assessing students' progress toward the ELA standards of reading, writing, speaking, and listening. In the participating district, this includes reading and English classes.

Inference: Use of "specific text evidence and combine this with their own background knowledge to determine the meaning of a small part of the text" (Thompson, 2019, p. 1).

Organizational strategy/ structure: "The writer's method of organizing text (e.g., chronological, compare/contrast, problem/solution)" (Pennsylvania Department of Education, 2014b, p. 14).

Pennsylvania System of State Assessment (PSSA): "A standards-based, criterion-referenced assessment which provides students, parents, educators and citizens with an understanding of student and school performance related to the attainment of proficiency of the academic standards" (Pennsylvania Department of Education, 2021a).

Text-dependent analysis (TDA): A writing prompt on the PSSA that "expects students to read complex text(s), either narrative or informational, and provide a critical response by drawing evidence from text(s) to 'support analysis, reflection, and research' using effective communication skills to write an essay in response to a prompt" (Thompson, 2018a, p. 1). This is a Pennsylvania-specific term that is often referred to as literary analysis in research.

The first investigation in this review will explore how these concepts relate to define analytic writing for middle school students.

1.4.2 Defining Analytic Writing

Before investigating the research on assessment and instructional practices, it is helpful to understand the scholarship on defining analytic writing. Analytic writing consists of two main skills: analytic thinking and the skill of writing. This section will first examine the research on students' development of analytic thinking at the middle school level, followed by a review of literature on the transference of analytic thinking into written form. It is important to know that

the phrase "analytic writing" takes on a few different names in the literature. In certain articles, "analytic writing" is referred to as "literary analysis," and in Pennsylvania-specific research, "analytic writing" is referred to as "text-dependent analysis" (Thompson, 2018b). While literary analysis refers to a written examination of a piece of literature, text-dependent analysis encompasses the analysis of literary, informational, and argumentative texts.

Analytic thinking skills start with the reader's creation of a point of reference when reading a text (Langer, 2013). This point of reference is either the task that a teacher is asking the students to do when they are reading, or it is the students' sense making of certain elements of literature (i.e., point of view, topic, bias, etc.) if there is no task set by the teacher. As readers form these points of reference in a text, they increasingly develop understandings of the text, which "build upon, clarify, or modify our momentary understandings and check it to see how well it contributes to our understanding of the whole" (Langer, 2013, p. 164).

Langer (1994) also wrote a seminal work about responding to literature, which broke literary response into two parts: local meaning and whole meaning. She defined local meaning as the meaning experienced as students are reading a text, in contrast with whole meaning, which can be described as the connections students make between the text and the larger world or literary themes. As a result, Langer (1994) described analysis as exploring the local and whole meanings that come about from a reader's interaction with the text, which creates the "horizon of possibilities" (p. 2). To explore this horizon of possibilities, Langer pointed to the importance of questioning a text, specifically questions that lead to divergent thinking. When students are asked open-ended questions, they analyze, or examine, the interconnected elements of a text.

The horizon of possibilities described above allows students to veer into many areas of thinking; however, literary analysis requires a specific kind of higher-level thinking. Marchetti and

O'Dell (2018) referred to analysis as the breaking down of text elements. They argued that the essential steps of channeling students' horizons of possibilities include the following: focus their passion for the text; develop it with claims, reasons, and evidence; and integrate those claims, reasons, and evidence into a coherent structure. The first two of these three components (passion and ideas) are done through analytic thinking; the third (structure) is accomplished through writing.

The third component that Marchetti and O'Dell (2018) described—writing—comes with a vast amount of research; however, most of the research on analytical writing is focused on either elementary or secondary writing as opposed to writing at the middle school level. This review will capture the core components of writing development from the secondary perspective.

Graham and Perin (2007) emphasized that writing development is synonymous with strategy development for students. At its core, writing requires planning, evaluating, and revising text (p. 9). Writing also serves to extend and deepen student knowledge, which is what makes it so applicable for the higher-level thinking task of analysis.

Years of research have refined our understanding of the processes that help students become successful writers. Seow (2002) outlined the writing process to include planning, drafting, revising, and editing. In planning, students may participate in a group brainstorming session, engage in free writing, or start to define their writing by answering the WH- questions (who, what, when, where, why, and how) (p. 316). Then, students move to the drafting stage where their focus is on writing fluency and putting their ideas in sentences on paper. Students then get feedback from peers and/or teachers so they can revise their work. Revision is meant to improve the quality of the written content or help to re-organize writing that may be unclear. Editing, the last stage, is done to refine students' use of grammar, conventions, diction, and sentence structure.

In summary, research on middle school students' analytic writing skills can be broken into two subcomponents: analytic thinking and writing. Analytic thinking requires students to move beyond their initial interpretations of the text and see how the elements of a text are connected to highlight a larger meaning or theme. Once students have these thoughts organized, they must formulate and plan out their ideas in a logical order and in written language.

The cognitive demands of analytic thinking and writing are challenging separately; for middle school students, putting these intellectual tasks together requires a significant cognitive load. This initial research investigation into each component of analytic writing provides an indirect rationale as to why students struggle with analytic writing. To successfully write an analytic essay, students must first read a text, make meaning of the individual elements of the text as they read, determine what the text means as a whole, examine how the individual elements of a text contribute to the whole meaning, plan an essay that addresses the connections between elements of a text, draft that essay, revise it to clarify its coherence, and, finally, check for proper grammar and convention usage. While this is a complicated process, it is important to follow it through instead of simplifying tasks to a lower level of cognitive demand (i.e., summarizing) so that students get better at taking their analytic thinking and turning it into writing (Durst, 1987). Moreover, a complex process like analytic writing requires a thoughtful approach to assessment so that teachers can identify the points where student understanding breaks down.

1.4.3 Research-Based Practices in Assessment of Analytic Writing

Analytic writing is a recently developed field in the research, and thus, the research around assessment in analytic writing is more general to research-based practices in writing assessment, not specifically practices in analytic writing assessment. Assessment of analytic writing can be

broken down into two categories: state accountability assessments and classroom assessments. The Pennsylvania Department of Education (PDE) determined that it would measure students' ability to write literary analyses through the text-dependent analysis (TDA) prompt. Thompson and Lyons (2017) defined the TDA as a test item that requires students to respond to text by addressing a complex prompt and assessing students' ability to comprehend, analyze, and write proficiently. The TDA test item is a departure from previous writing prompts on the PSSAs, which focused on narrative, informational, or persuasive writing. This change aligns with the recommendations of Coker and Lewis (2008), who suggested revisiting high stakes writing assessments to make sure that they are authentic, contextualized, and "flexible enough to accommodate the varied writing practices used by students" (p. 247). Recognizing the challenges presented by the TDA, PDE has continuously updated instructional and assessment support resources for teachers around research-based practices to support students as they teach analytic thinking and writing.

Although PDE has continued to provide resources for teachers, questions remain about the developmental appropriateness of TDA writing for students in fourth through eighth grade. Brimi (2012) found that the addition of writing prompts on standardized assessments shifted teachers' focus from process to product. For example, teachers focused less on revision to the point where it seemed like an afterthought to the writing process. Therefore, it is important to consider the classroom-based assessment practices along with the statewide accountability measures for analytic writing.

At the classroom level, many traditional literary analysis writing assessments require students to read a text and respond to a prompt; however, as noted above, the cognitive demand of such a task is challenging for middle school students. For all the tribulations that come with having an analytic writing assessment item on a high-stakes standardized test, the research is clear about

the need to assess writing and reading in tandem (Deane et al., 2012). Assessments of writing in response to reading have the added benefit of improving students' reading comprehension skills as well (Hebert, Simpson, & Graham, 2013). Furthermore, when done in a classroom setting, assessing reading through writing allows teachers to engage in an inquiry cycle with students that culminates in a sharing of feedback based on students' progress (Calfee & Miller, 2013).

One of the challenges of assessing reading and writing together is that diagnosing where students struggle can be difficult because literary analysis is a cognitively demanding task. Deane et al. (2012) presented an approach to the literary analysis assessment that includes a series of short lead-in tasks consisting of selected and constructed response items that prime students to write a literary analysis. For example, before writing an essay about how the author's use of text structure influences the central idea of an informational text, students would first respond to short-answer questions about identifying the central idea and text structures used in the text. Their research found a strong correlation between students' performance on the lead-in tasks and their performance on the literary analysis. They posited that because of the connection between reading and writing, students need to think about the text with scaffolded tasks of increasing complexity before presenting them with a complex literary analysis prompt.

After students complete a draft of a literary analysis, one of the most important decisions a teacher makes is how to provide feedback in the form of formative or summative assessment. Research points to three main functions of evaluating or assessing student writing: evaluation to diagnose student needs, evaluation of what students have learned, and evaluation to determine if students can apply what they know (Langer & Applebee, 1987). In addition to evaluation, providing feedback to students is another crucial component of the assessment process. Feedback can be defined as an initial step in the start of instruction in response to assessing students' work.

Teachers assess student writing by reading and determining areas of strength and growth. From that assessment, teachers provide feedback that guides students toward revisions they could make to improve the quality of their writing. This feedback can be specific to the student work that is being reviewed, or it can be global feedback that can be applied to any piece of writing that the student does. Research in this area includes identifying different types of feedback that can be shared with students. Beck et al. (2020) explored the idea of dialogic writing assessment, a feedback approach that combines the traditional elements of a writing conference with think-alouds. In dialogic writing assessments, the assessment and instructional loops are pulled together, requiring teachers to be nimble and flexible in their approach to assessing student writing. These assessments look like a one-on-one teacher-student conference in which the teacher models the revision process by thinking aloud about how they would revise the written work. In these conferences, teachers may pose questions to the students about points of clarity needed in the text, or they may provide direct instruction about an element of the writing that could be improved.

Dialogic writing assessment also addresses some of the equity issues that surround traditional writing assessments. Ball (1997) and others have argued that the evaluator holds too much power in assessing student writing, thereby making writing feedback unreliable (Ball & Ellis, 2008; Haswell & Haswell, 1996). Beck et al. (2019) wrote about the roles that a teacher plays in assessing students' writing: reader, assessor, and instructor. Regarding those roles, the researchers argued that teachers must hold conferences with students that blend each role together naturally in their conversation with students. The equity element of this approach is that it provides time for teachers to meet with individual students for different amounts of time, depending on their writing needs. This is consistent with the findings of Taylor (2018), who also investigated the equity issues of writing assessment and found that it is important to create safe and healing spaces

for students to feel comfortable sharing and talking about their writing. Furthermore, using the approach of dialogic writing assessment would address the common criticism of writing instruction in schools, which is that it lacks a clear purpose and a clear audience for writing (Coker & Lewis, 2008). Using dialogic writing assessment in conjunction with other techniques like scaffolded lead-in tasks could create a successful analytic writing assessment system for middle school teachers.

Research about analytic writing assessment focuses on what students produce in essays. In Pennsylvania, the TDA is used as a summative assessment on students' ability to write analytically (Thompson, 2018a). Research has shown that the inclusion of a test item like the TDA on a state assessment may shift teachers' approaches to instruction from process orientation to product orientation (Brimi, 2012). However, there are strategies like breaking a writing task down into short lead-in tasks and dialogic writing assessment that will give teachers manageable assessment measures for monitoring student progress in their writing throughout the year without focusing exclusively on the final product of students' writing (Beck et al., 2020).

Another theme related to analytic writing assessment is the need to have conversations with the students about their current writing ability and give them targeted areas to work toward, tasks found in dialogic writing assessment (Beck et al., 2020). Assessment and instruction are inextricably linked, so these techniques will serve teachers well as they use assessment data to inform their instructional practices.

1.4.4 Research-Based Practices in Analytic Writing Instruction

Along with defining assessment practices, research identifies several practices that improve students' analytic thinking and writing. The emphasis on analysis in the PA Core

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Standards led researchers to focus on the instructional strategy of close reading (Thompson, 2018b). Brown and Kappes (2012) characterized close reading as a process done with a short text that requires multiple readings upon which teachers use text-based questions and discussion to get students to "deeply analyze and appreciate various aspects of the text" (p. 2). They also defined six attributes of close reading:

- Selection of a brief, high quality, complex text.

- Individual reading of the text.

- Group reading aloud.

- Text-based questions and discussion that focus on discrete elements of the text.

- Discussion among students.

- Writing about the text.

Since the dawn of the Common Core standards, others have also developed specific routines for close reading. Fisher and Frey (2014) used a close reading process to provide a reading intervention for middle school students. In their intervention, students followed Brown and Kappes' (2012) attributes of close reading, but they also had the opportunity to reread a complex text several times and collaborate with peers to answer text-based questions. The collaborative sessions focused students on different levels of textual understanding, which the authors termed the "word, sentence, and paragraph" levels (p. 374). These collaborative routines align with the work of Manyak and Manyak (2021), who developed a daily routine for literary analysis and writing that incorporated vocabulary instruction, text analysis, and text-based writing.

While some have argued that literary analysis is predicated on close reading skills (Brown & Kappes, 2012; Deane, 2011), others have argued that close reading does not address the true reasons for why we teach students to read. Eppley (2019) challenged the assumption that close

reading can be accomplished without relying on background and prior knowledge and instead advocated for place-centered reading, which engages readers with the "social and ecological components of places" (p. 13). This approach aligns with others who have emphasized that reading should focus on emboldening readers to act and make meaning of text in relation to their own world experiences (Freire, 1985; Giroux, 1987). This counterargument to the research on close reading provides a balance to discussions about how heavily teachers should use close reading versus other research-based instructional strategies to help students to think analytically.

Along with close reading, others have developed instructional strategies and progressions designed to move students toward analytic thinking and writing. Langer (1994) studied the instructional implications of analytic writing and provided a set of recommendations about how teachers should develop students' analytic thinking. She provided a structure for lesson planning that included creating a context for reading and analysis by priming background knowledge, reviewing the task that will follow the reading, reading the text and allowing students' wonderings to take precedent over correct answers, defending interpretations using evidence from the text, and closing the lesson with a summary of the key issues and possibilities for further exploration. This lesson plan overview included an element of discussion, which reflects the research on practices for close reading lessons.

Discussions are a research-based teaching technique for getting students to think analytically. Applebee et al. (2003) found that discussions, along with high academic demands, improved the literacy performance of middle and high school students. In their study, discussions were rated in terms of quality based on the following criteria: authentic teacher questions (questions that did not have "a prespecified answer that the teacher was seeking"), amount of open discussion ("free exchange of information among students and/or between at least three

participants that lasts longer than 30 seconds"), and questions with an uptake ("questions that incorporated what a previous speaker had said") (p. 700). The more that students engaged in these types of discussions throughout the school year, the greater their literacy gains.

The literacy gains through discussions can be translated to writing abilities through a series of specific research-based strategies. The main source of research-based practices in writing comes from Graham and Perin's (2007) seminal meta-analysis of writing practices. In their analysis, they developed 11 recommendations for writing instruction to improve outcomes for middle and high school students. These recommendations are listed in Table 1.3. According to Graham and Perin (2007), the explicit teaching of writing strategies was shown to have the most impact on student achievement. In addition, the recommendation for inquiry activities, which parallel the work that literary analyses require, had a substantial impact on student achievement as well. This meta-analysis built on the work of Langer and Applebee (1987), who found that writing was developed through strong instructional routines like freewriting, modeled sentences, sentence frames, and impromptu writing with a focus on summarizing class discussions about texts.

Table 1.3 Recommendations for Effective Adolescent Writing Instruction (Graham & Perin, 2007)

Recommendation	Definition
Writing Strategies	Teaching students strategies for planning, revising, and editing their compositions
Summarization	Explicitly and systematically teaching students how to summarize texts
Collaborative Writing	Instructional arrangements in which adolescents work together to plan, draft, revise, and edit their compositions
Specific Product Goals	Assigns students specific, reachable goals for the writing they are to complete
Word Processing	Use of computers and word processors as instructional supports for writing assignments
Sentence Combining	Teaching students to construct more complex, sophisticated sentences
Prewriting	Engage students in activities designed to help them generate or organize ideas for their composition

Inquiry Activities	Engage students in analyzing immediate, concrete data to help them develop ideas and content for a particular writing task
Process Writing Approach	Interweave several writing instructional activities in a workshop environment that stresses extended writing opportunities, writing for authentic audiences, personalized instruction, and cycles of writing
Study of Models	Provide students with opportunities to read, analyze, and emulate models of good writing
Writing for Content Learning	Use writing as a tool for learning content material

Within the recommendation of writing strategies, Graham and Perin (2007) also called attention to the process of self-regulated strategy development (SRSD), which involves six steps: develop background knowledge about the strategy, describe the strategy and its purpose, model the strategy, memorize the steps in the strategy, support students' mastery of the strategy, and independently use the strategy (p. 15). Graham et al. (2000) documented the effectiveness of SRSD for struggling writers and found that students who use the process change their approach to writing, their understanding of what qualifies as good writing, and their attitude about writing.

Another extension of the writing recommendations supported by Graham and Perin (2007) is peer revision. Research has shown that students make significant gains in their own writing quality by providing feedback about other students' writing, particularly for students who began as weaker writers (Lundstrom and Baker, 2009). Yu and Schunn (2021) wrote about the effectiveness of peer revision in both improving the number of revisions made to students' writing and improving students' writing quality. This improvement was evident in cases where a student was either giving or receiving feedback.

While there is much research about practices in writing instruction such as peer revision, one crucial finding is that schools have not engaged students in enough writing, either in terms of amount or complexity, which is particularly true for analytic writing. The research about analytic writing instruction focuses on a few core practices that will develop students' proficiency at analytic thinking and writing. The first is close reading, the process by which students respond to

text-dependent questions about a complex text to develop deeper understanding of that passage (Fisher & Frey, 2014). Close reading requires discussion among students and ultimately some type of writing about the text (Brown & Kappes, 2012). This process is documented in the research as an effective way of getting students to move toward analytic thinking and writing (Thompson, 2018a). In addition to close reading, Langer (1994) identified a lesson plan structure that takes students from exploring their background knowledge to engaging in wonderings about the text, which leads to analytic thinking. Langer's lesson structure emphasizes the need for student discussions, which were also included as an important strategy for getting students to think deeply about a text (Applebee et al., 2003). To get students from analytic thinking to analytic writing, Graham and Perin (2007) posited that students need self-regulated strategy development, which involves a teacher explicitly teaching a writing strategy, modeling it, and having students independently use the strategy. Once they have a strong foundation of how to write, students should engage in peer revision activities in which they give and receive feedback (Yu & Shun, 2021).

1.4.5 Summary of Findings

This review of supporting knowledge summarizes the professional and academic knowledge around the assessment and instructional practices for teaching analytic writing to middle school students. Analytic writing can be broken down into two main skills, starting with analytic thinking and then moving to writing (Thompson, 2018a). In analytic thinking, readers create a point of reference based on a specific task set by the teacher or by students actively making sense of the literature while they read (Langer, 2013). Analysis pulls students closer to examining the thematic meaning of a text by breaking down the elements of that text (Marchetti & O'Dell,

2018). After students engage in analytic thinking, they progress to analytic writing, which follows the writing process steps of planning, drafting, revising, and editing (Seow, 2002). Developing proficiency at analytic thinking and writing requires strategy development that extends and deepens student knowledge (Graham & Perin, 2007).

In addition to strategy development, analytic thinking and writing are also improved based on how feedback is provided in response to assessment. On the state level, students are assessed by writing a text-dependent analysis (TDA) essay on the Pennsylvania System of State Assessment (PSSA). Research supports the need for teachers to assess students using short lead-in tasks that prime students for writing a complete essay (Deane et al., 2012). Specific to analytic writing, those lead-in tasks should include selected and constructed response items that assess students' reading and writing abilities before having them write analytically in response to a text (Deane et al., 2012). Research indicates that after students complete essay assignments, teachers should provide feedback through methods like a dialogic writing assessment, which combines the characteristics of a one-on-one writing conference with think-aloud instruction (Beck et al., 2019). In summation, assessments of analytic thinking and writing are focused on giving individualized feedback via conferencing to students.

As a part of the assessment-instruction cycle, research is clear about the instructional strategies that teachers should focus on when instructing students about analytic writing. The process of close reading is frequently cited as a central way to help students become more proficient analytic thinkers (Brown & Kappes, 2012; Fisher & Frey, 2014; Thompson, 2018a). In the close reading process, teachers pick a specific passage and develop text-dependent questions that target the word, sentence, or paragraph level of the passage (Fisher & Frey, 2014). Another important component of close reading is student discussion of the text-dependent questions

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(Brown & Kappes, 2012). Applebee (2003) noted that students who engaged in discussions made progress in their literacy skills. That close reading process moves to analytic writing through self-regulated strategy development, which is the process of explicitly teaching writing strategies to students (Graham & Perin, 2007). Once they have used those strategies to write their essays, students benefit from peer revision activities (Yu & Schunn, 2021). Altogether, students who have access to feedback and explicit, structured strategy instruction will be most successful in showing growth in their analytic thinking and writing skills.

1.4.6 Remaining Questions

As discussed above, much of the research on analytic writing is focused at the elementary or secondary level more than at the middle school level. Therefore, one of the remaining questions is, what practices for analytic writing work specifically at the middle school level? Moreover, there are also gaps in the literature regarding how to successfully implement research-based practices for analytic writing when English teachers are responsible for teaching a wide variety of reading and writing skills, which leads to the question, how do teachers manage the instruction of analytic writing while also teaching the other components of their curriculum (e.g., grammar, vocabulary, other modes of writing, etc.)?

1.5 Conclusion

This study addresses how analytic writing can be taught to middle school students by a participating set of middle school ELA teachers. The study specifically focuses on the

implementation of research-based assessment and instructional practices for analytic writing at a middle school level via a series of professional learning opportunities. The literature has provided specifics about practices for assessment and instruction of analytic writing; however, some of those practices have not translated to the participating school. This study will address the problem of practice related to students' low performance on analytic writing tasks on standardized tests by providing teachers with professional learning experience around how to define analytic thinking and writing along with the research-based practices for assessment and instruction.

2.0 Theory of Improvement and Implementation Plan

2.1 Theory of Improvement and the Change

2.1.1 Theory of Improvement

The problem of practice for this study is that students at the 7th and 8th grade level struggle to demonstrate analysis of complex texts in ELA classes. The problem of teaching students to think and write analytically stems from a requirement in the PA Core State Standards to have students "draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade-level reading standards for literature and literary nonfiction" (Pennsylvania Department of Education, 2014a). In Pennsylvania, students' ability to write analytically is measured through the PSSA text-dependent analysis (TDA) essay test item. Because of that, the aim for this dissertation is to improve proficiency rates on the TDA essay from year to year.

The primary drivers related to this aim are about how teachers approach instruction and curriculum related to analysis. The main secondary drivers related to instruction are about teachers using instructional strategies and identifying standards that are appropriate for teaching analysis with a given text. To accomplish these drivers, professional development can be used to establish the purpose behind focusing on analysis instruction along with sessions related to how to incorporate analysis instruction throughout a unit.

The other primary driver is focused on curriculum development and revision, specifically at the department level. To enhance the curriculum, texts will need to be sufficiently complex to provide enough opportunities for analysis instruction. In addition, a more defined curriculum

revision process will help to ensure that curriculum revision is standardized across all teachers and leads to a more consistently used scope and sequence. To address these secondary drivers, a process could be developed to give teachers support in identifying appropriately complex texts for their curriculum, and a formalized curriculum revision process could be implemented to ensure that all teachers consistently revise curriculum.
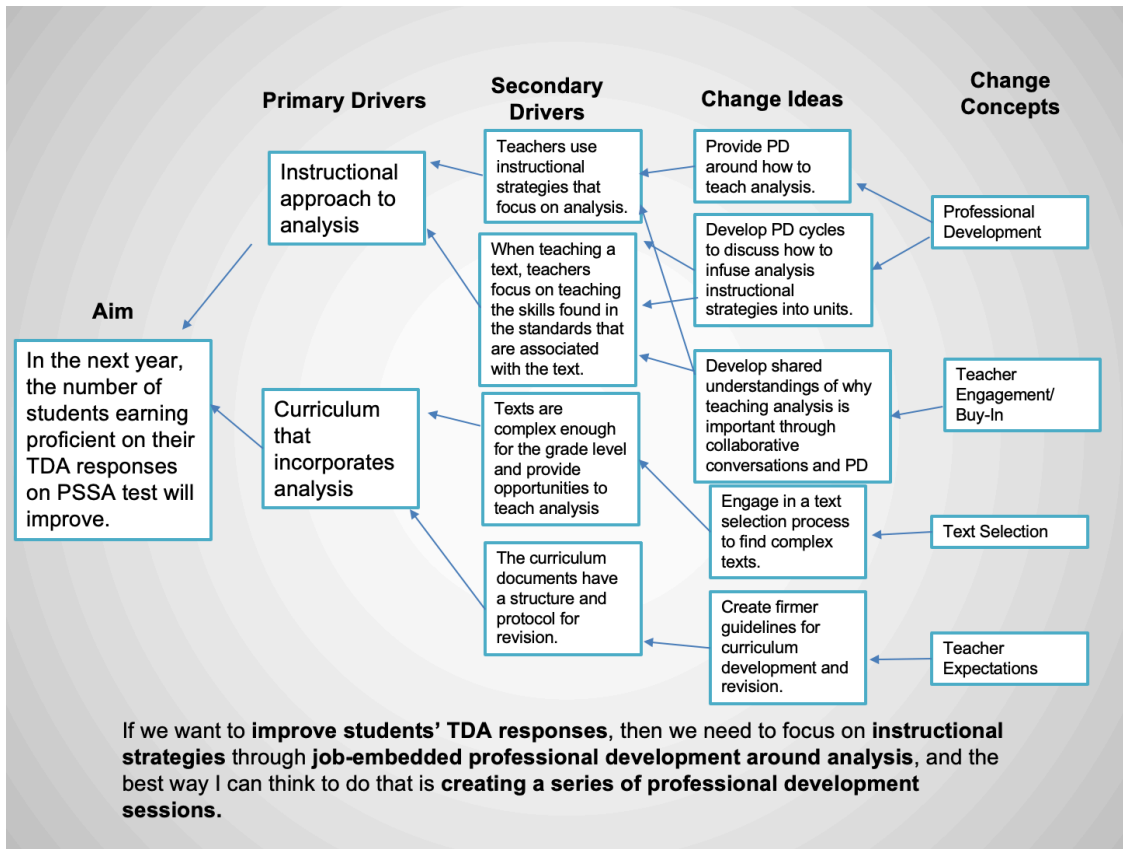

Figure 2.1 Theory of Improvement

2.1.2 Drivers

2.1.2.1 Primary Drivers

The primary drivers within the system of the studied school are the department-specific curriculum development process and teachers' instructional practices. Curriculum and instruction

also have the most to leverage in terms of reasonable changes and improvements that can be made. Through interviews, teachers voiced being confused by the curriculum development and revision process because curriculum documents are editable Google Sheets that can be revised by anyone without collaborating with grade-level colleagues. For example, one teacher shared that they opened their curriculum one day and found a long list of resources they had never seen before included in a unit. She was confused about whether she needed to use those resources or if they were just suggestions. This lack of clarity is equally true on the instructional side where teachers take an individual approach to teaching analysis, have their own definitions of what analysis in ELA is, and have different opinions on how to get students to analyze texts. Some do not view analysis as an important part of their class and focus on skills like comprehension and grammar, while others have shifted toward an analysis-heavy approach to their instruction. Changes implemented in curriculum and instruction will seek to create more consistency in how teachers instruct and revise their curriculum to incorporate analysis.

2.1.2.2 Secondary Drivers

From curriculum and instruction, there are a few secondary drivers that will directly affect the main primary drivers of curriculum and instruction. As mentioned above, the unstructured way of developing and revising curriculum has led to frustration from some teachers and miscommunication about how teachers should approach each unit because anyone can update the curriculum at any time without telling the other teachers who teach the class. This also extends to assessment practices, which are inconsistent because of the lack of structure to curriculum revision. While the district priority is to emphasize a common experience through curriculum, instruction, and assessment for all students, the implementation of that priority has not yet resulted in consistency. For example, teachers can insert their own assessments into the curriculum, which

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may not be grounded in research or used in collaboration with colleagues to determine if it is an effective assessment. Interviews with teachers suggest that they are looking for help with assessing analytic thinking and writing and have made assessment decisions based on what they think is right, not what they have learned from research or trainings.

Another curricular driver involves the texts teachers use. Teachers report that they have not updated the texts in their curriculum for at least five years when the district adopted a new textbook series. Texts, both novels and short texts, have been in the curriculum for over a decade and were adopted before the demands of teaching analysis were included in the PA Core State Standards. Because of how long ago the texts were selected, another secondary curriculum driver is that the texts taught in 7th and 8th grade ELA courses do not meet the cognitive demands and engagement needed to deeply teach analysis. Ostenson and Wadham (2012) pointed out that young adult literature is useful for teaching higher-order thinking skills like analysis; however, the texts used in the curriculum are not contemporary young adult literature that can be used to engage students and teach analysis at the same time. The current novels were selected over 20 years ago when the standards were not focused on analytic thinking.

In addition to the secondary curricular drivers, there are some secondary instructional drivers that could show that change ideas are leading to improvement. Teachers have voiced that they do not feel that their courses are suited for teaching analysis; instead, they argue that they must spend more time teaching comprehension because students are not prepared to learn how to analyze yet. However, research on analysis shows that students in third grade can learn how to analyze grade-level texts (Thompson, 2018b). Therefore, professional learning around the developmental appropriateness of analysis instruction can get all teachers on the same page about the belief that all students can analyze grade-level texts. A final driver is that teachers would focus

on teaching students the skills aligned with the PA Core Standards instead of teaching the text—its background, author information, plot, etc. Teachers making a shift toward skill-focused units instead of text-focused units would lead to more analysis instruction, which research indicates should be the priority over teaching the text itself (Fisher & Frey, 2014).

2.1.3 Change Ideas

In response to these drivers, there are several attainable change ideas. The creation of guidelines for curriculum revision would remedy some of the concerns teachers have about what resources to use when reviewing their curriculum documents and create more consistency across teachers of the same course. These guidelines would also engage teachers in collaboration and discussion around what resources should be included in the curriculum and would push teachers to come to consensus if they disagree about what they will use as opposed to each teacher making their own decision about what resources they use to teach each unit. An extension of such guidelines is the need to engage in a text selection process that brings in new resources that are both rigorous and engaging for students to read. This would involve updating resources like *The Wizard of Oz* and *The Time Machine*, which students and teachers report are not engaging enough for students to sustain higher-level analytical thinking. Selecting new texts is a challenge within the current political climate of my district; however, it has been identified as a necessary step by district leadership and has been occurring during the 2022-23 school year.

In terms of instruction, both change ideas revolve around implementing professional learning opportunities. The first is to provide more job-embedded professional learning focused on analysis. This includes making use of in-service days to provide information about what analysis in ELA is along with how to teach and assess it. These professional learning opportunities

would also strengthen the department's ability to collaborate on future curriculum and lesson planning. The second change idea of dedicating time for teachers to discuss aspects of analysis instruction could create some accountability and an increase in resources for teachers to use to change their instructional practices, which will in turn improve student outcomes related to analysis.

2.2 Inquiry Questions

This study followed the improvement science structure of inquiry. Improvement science is driven by PDSA cycles. PDSA stands for plan-do-study-act and involves the improver examining the context of the place of practice to understand the problem, plan out an intervention based on that knowledge, implement the change, measure the impact that the change had on the system, and create further change interventions based on the success of the first change (Hinnant-Crawford, 2020). The following inquiry questions guided the selection of the change idea and the implementation of my PDSA cycles:

1. How do middle school ELA teachers successfully incorporate analytic thinking and writing practices into their daily teaching routines?

2. What prerequisite knowledge is needed for middle school ELA teachers to implement research-based analytic writing strategies with fidelity?

2.2.1 Intervention and PDSA Cycle

The implemented intervention provided professional development focused on the foundations of analytic writing, its constituent parts, and the role it plays in middle school ELA classrooms. This intervention was voluntary and made available to all 11 reading and English teachers to participate in this three-session series. Overall, the intervention consisted of three professional development sessions that lasted 30 to 45 minutes each. The three sessions covered the following topics: understanding analysis in ELA classrooms, incorporating analysis activities into daily practice, and debriefing the use of analysis in lessons.

The initial professional development session focused on helping teachers understand analysis and why it is an important area of focus on in middle school ELA classrooms. The researcher led the session and summarized the latest research about analytic writing. To prepare for the session, the researcher conducted a short presentation about the research on analytic writing and its importance in ELA classrooms followed by time for selected small-groups to discuss how analysis instruction could be incorporated into upcoming units and lessons. Selecting who was in which group was based on participants' teaching assignments (i.e., 7th grade reading, 7th grade English, etc). At the end of the first session, teachers were asked to bring a unit that they were teaching in the next month. This unit was the focus of the second session, in which teachers had the chance to collaboratively plan analysis activities to incorporate into the unit.

The initial professional development session was designed to set the groundwork for subsequent collaboration opportunities and follow-up professional development sessions that would involve more intentional planning of specific lessons that could be implemented across classes. The goal was to establish common definitions of terms related to analysis in ELA

classrooms and to develop a unified understanding of the importance that analysis has as a cornerstone of middle school ELA standards.

The second professional development session was dedicated to collaborative planning for upcoming places to incorporate analysis instructional activities. The session began with a refresher that defined analytic writing along with an overview of two specific strategies that could be used to teach analytic writing to students: the close reading process as defined by Fisher and Frey (2014) and high academic discussion techniques from Applebee et al. (2003). The researcher modeled how both strategies could be used with a grade-level text. During the rest of the session, teachers worked in small groups with colleagues to design or enhance existing lessons to include a focus on analytic writing strategies. At the conclusion of the second session, teachers were asked to select and try out one of the two analysis activities before the third session, which took place a few weeks after the second session. After the participants tried out either the close reading strategy or the discussion techniques, they completed a brief Google Form recording how the experience was and brought their lesson or unit plan to the third professional development session.

The third component of this intervention was another professional development session in which teachers debriefed their experience teaching their analytic instructional activity. This session began with small group debriefing time related to the reflections that they turned in using the Google Form questions. Teachers were grouped with the same groups that they collaboratively planned with during the second session. In their small groups, they had questions to guide their discussion about how their activities went. The last 10 minutes of the session consisted of a whole group debrief in which teachers were invited to share their key takeaways about using analysis in their daily instruction.

Following these sessions, it was predicted that teachers would begin to show improved confidence in their ability to teach the components of analytic writing to their students. The sessions were also designed to help some teachers buy into the importance of analytic writing, which was measured on a post-session survey, detailed in the following section.

Table 2.1 Timeline of Sessions and Measures

Session/ Measure	Date
Students take the first Star test	September 6-16
Teachers take pre-survey	End of October
First professional development session: Understanding analysis/ take session survey	Beginning of November
Second professional development session: Collaborative lesson planning/ take session survey	Mid November
Third professional development session: Debrief analysis lessons/ take session survey	Beginning of December
Students take second Star test	November 29-December 9
Interviews with department chairs	Mid December

2.3 Methods and Measures

From the change ideas and drivers shown in Figure 1.4 above, a series of measures fit within my system to indicate whether improvement was made towards the aim. One of the chief outcome measures my school has for understanding student performance on analysis is the PSSA, specifically the text-dependent analysis (TDA) prompt that students write a response to. This relates directly to the aim statement from my theory of improvement, which is that 7th and 8th grade students will improve in proficiency on the TDA prompt on the PSSAs in the next year.

Since this measure will not be in place by the end of this dissertation study, an intermediary outcome measure is students' results on the Star Reading assessment. The Star Reading assessment is a computerized adaptive test that assesses students in five main areas: word knowledge and skills, comprehension strategies and constructing meaning, analyzing literary text, understanding

author's craft, and analyzing argument and evaluating text (Renaissance, 2022). Student results are reported with a few different metrics. The assessment gives students a norm-referenced score (which includes a percentile rank) and normal curve equivalent score (which compares their performance on the assessment to their grade-level peers). It also provides criterion-referenced scores for each PA Core standard. Students at the studied school take the Star Reading assessment at the beginning of the school year, in December, and in March. The timing of the Star Reading administration allowed the researcher to look for improvement from students' criterion-referenced scores on the PA Core Standards related to analytic thinking. The researcher examined the average score of students' mastery on standards related to analytic thinking to determine if there was growth from the September assessment window to the December assessment window. Since the assessment consists exclusively of multiple-choice questions, it was not used as a measure of students' analytic writing performance.

In previous years, individual teachers did their own analysis of Star results, which led to inconsistencies regarding how teachers approached using the data to inform their instruction. To develop more common expectations and protocols around Star data analysis, the school leaders instituted data meetings to review Star results. ELA teachers meet for a half day after each Star administration to review student results on individual, class, and grade levels. At these meetings, teachers examine results based on how individual students are doing and plan specific interventions for them. They also review class and grade-wide data to determine if there are standards that should be focused on moving forward based on collective student performance.

As another measure, teachers responded to surveys given at several points throughout the intervention timeline. Teachers took a pre-survey before the three professional development sessions and retook the survey after the third professional development session. The survey was

set up as a pre-/post-survey design. Data was collected about whether teachers' beliefs about the importance of analysis are changing and if they are gaining a better understanding of analysis instruction because of the sessions.

Between the second and third professional development session, teachers completed a Google Form on which they captured the analysis teaching technique that they committed to try in their classroom after the second session. Data from the Google Form results helped shape the conversation in the third professional development session and provided the researcher with qualitative data about how teachers were beginning to see analysis instruction functioning in their classes.

After the three sessions, the researcher conducted interviews with the reading and English department chairs to determine their respective departments' impressions of the professional development series. These interviews allowed for further exploration of the survey results by asking questions in direct response to some of the survey data. These questions revolved around how the teachers were able to incorporate the strategies into their lessons and get suggestions for future professional development.

The theory of improvement related to middle school students' ability to analyze complex texts can be summed up in the following sentence: To improve the number of students earning proficiency on their TDA responses, there must be a focus on a) instructional strategies and curriculum revision through the teaching of skills instead of texts and b) the fluid nature of curriculum revision, and the best way to do that is to provide job-embedded professional development around analysis and a structured curriculum review process. To accomplish this aim, professional development was provided to support teachers' development of instructional and assessment strategies to teach analysis. In future improvement cycles, teachers will also engage in

a more structured curriculum revision process to ensure more collaboration and consensus-building around what should be updated in their curriculum. To monitor the success of the intervention, surveys were administered to determine how teachers self-report their understanding of teaching analysis and how they are balancing their other teaching responsibilities with the newly implemented instructional strategies for teaching analysis. Results from the Star Reading assessment were used to determine if the professional development is improving student outcomes. Interviews with the two department chairs were conducted at the end of the professional development sessions to gain further information about what each department learned from the sessions. Engaging in these new routines and practices should help teachers achieve the aim of improving students' TDA scores on the PSSA and preparing students to be analytic thinkers for years to come.

2.4 Analysis of Data

The most frequent form of data collection occurred with a survey that teachers completed prior to beginning the professional development series and again at the end of the third professional development session. These surveys were administered on a Google Form and analyzed using Microsoft Excel. The survey included questions about what kind of learning occurred during the session, what kind of learning would be helpful for future sessions, and an open-ended response on which teachers could describe their thoughts about the sessions in general (Appendix B).

To analyze the surveys, the researcher compared how teachers' responses changed by looking at the average comfort with teaching and assessing analysis on a Likert scale response. These results were compared to how teachers initially answered the survey questions on the survey

they took prior to any professional development. The researcher also analyzed how teachers' ideas about future professional development topics changed over time. If the professional development sessions were successful, then teachers would not choose topics that had not previously been covered in a session in their response to that question on the survey.

Additionally, teachers completed a short open-ended survey between the second and third professional development sessions. The questions on this survey, located in Appendix B, provided teachers a space to reflect on how the analysis technique went when they tried it in their classrooms. The researcher reviewed the responses to this survey to determine if any misconceptions continued to arise about analysis instruction, and responses to this survey drove the discussion held during the third professional development session.

To complement the surveys, interviews were conducted at the end of the professional development series. The interview participants will be the two department chairs. The department chairs were selected as the interview participants because they are the teacher leaders of their departments. The researcher created the questions that guided the interviews pertaining to the quality of the professional development sessions, reflections on what the participants learned and used in their classrooms as a direct result of the sessions, and suggestions for future professional development. Interviews were conducted and transcribed through Zoom, and the interview questions can be found in Appendix D.

The interviews were held with the English and reading department chairs, who were asked questions about their beliefs about analytic thinking and writing as well as how their departments were responding to the professional development. As a part of reviewing the responses, the researcher generated emerging themes from across the interviews and examined how the responses to those themes (e.g., instructional strategies for analytic thinking, feedback through writing, etc.)

compared to findings in the research. If teachers learned from the PD sessions, then their responses would mirror what is documented in the research.

Another data point is the results of the December Star Reading assessment. Since students took the assessment in September, the researcher was able to review the results for evidence of growth related to a few PA Core Standards related to analytic thinking. The researcher looked at the average criterion-referenced mastery score, which is a score out of 100, to determine if students made growth in being able to analyze literary and informational text. Star assessment results for other categories of standards like comprehension and vocabulary were also analyzed to make sure those areas of instruction are not suffering because of the focus on analytic thinking and writing.

The Star assessment results were analyzed using average scores from each standard for analytic thinking included in the PA Core Standards for ELA that are mapped to the Star assessment. The main standard that was compared was the one related to citing evidence to support analysis of what the text says. These scores were also aggregated by grade level, teacher, and subject area to determine if patterns of growth happened in certain areas over others. Scores were also aggregated by student subgroups (i.e., gender, special education) to determine if there are discrepancies in progress between subgroups. All criterion-referenced mastery standards were reviewed for growth to determine if the focus on analytic thinking and writing is causing other areas to regress.

3.0 Results

3.1 Summary of Intervention

The three analytic instruction professional development sessions took place over seven weeks. The first one provided background in the research for analytic writing instruction, including an overview of two strategies that were elaborated on during the second session. Those strategies, close reading and academic discussions, became the focus of the second session, and teachers were tasked with trying one of those strategies in one lesson between sessions two and three. The third session, which took place four weeks after the second session, included a group debrief of how the lessons went and a discussion about next steps for analytic writing instruction.

All 11 teachers participated in the three professional development sessions. After the second professional development session, teachers asked the researcher for different levels of feedback and follow-up for planning their lessons. Two teachers asked for one-on-one planning sessions to brainstorm ideas related to academic discussions. Their questions pertained to determining how many questions to ask students for the discussion and how to scaffold the questions so that they increase in complexity.

One teacher asked the researcher to co-teach their academic discussion lesson. Leading up to that lesson, the researcher and teacher met briefly to co-plan the questions and discuss the pacing of the lesson. During the lesson, the researcher and teacher took turns asking the four discussion questions and circulated to each group listening to their feedback. At the end of the discussion, students continued talking about the debatable question that concluded the discussion as they were

leaving the classroom. The teacher continued the discussion the following day without the researcher and commented on how valuable the lesson was for student analytic thinking.

3.2 Data Summary

Four data sets were used to determine the impact of the analytic writing instructional strategies on teacher practice and student learning. They were pre- and post-surveys, an open-ended instructional strategy survey, interviews with the department chairs, and Star Reading assessment results. Each will be discussed in the following sections.

3.2.1 Pre- and Post-Survey

3.2.1.1 Characteristics and Response Rates

Teachers voluntarily completed two surveys to bookend the professional development sessions. Of the 11 teachers who participated in the professional development sessions, eight teachers completed the surveys. The eight teachers who responded to the surveys were evenly split across grade levels, with four teachers responding from 7th grade and four responding from 8th grade. The split between reading and English teachers was almost even, with five English teachers responding and three reading teachers responding.

3.2.1.2 Understanding of Analysis

Many of the results from the pre- and post-survey in this section were similar with minor shifts between how teachers responded to each question. The average response about how

important analytic writing is to teachers' curriculum stayed relatively the same, decreasing slightly from 4.4 to 4.3 pre-to-post. Table 3.1 shows the breakdown in responses across pre- and post-survey data. The only change between the two surveys was that one participant rated the importance of analytic writing at a 2 in the post-survey, and one respondent rated the importance of analytic writing at a 3 in the pre-survey.

Table 3.1 Pre/Post Survey Comparison: Importance of Analytic Writing in Curriculum

Rating	Pre Survey	Post Survey
1: Not important	0	0
2: Slightly important	0	1
3: Moderately important	1	0
4: Very important	3	3
5: Extremely important	4	4

Figure 3.1 shows the pre- and post-survey results for the questions related to comfortability with analytic thinking and writing instructional strategies. The average comfortability in teaching analytic thinking decreased slightly from 3.6 to 3.5 while the comfortability of analytic writing maintained an average of 3.5.
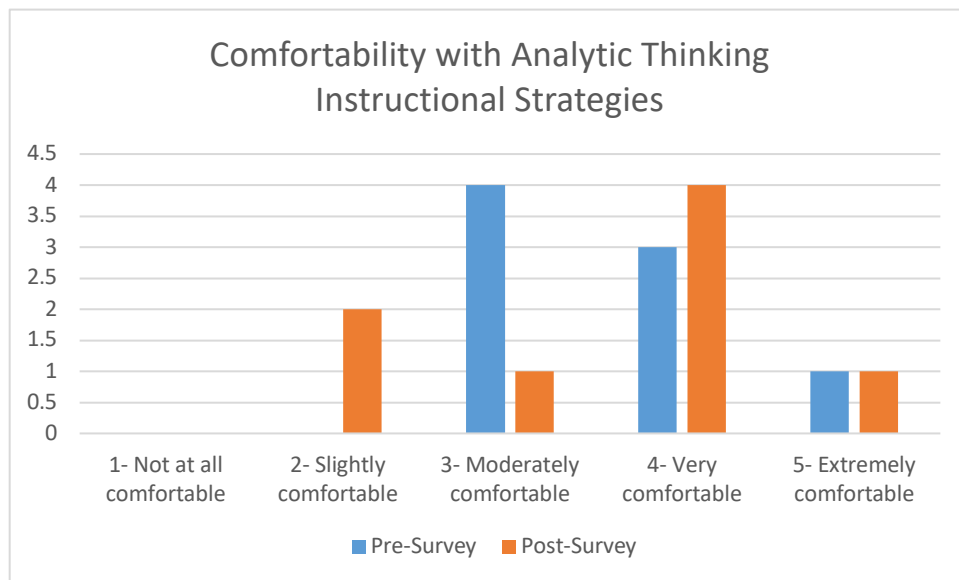
Figure 3.1 Pre/Post Survey Comparison: Comfortability with Analytic Thinking Instructional Strategies
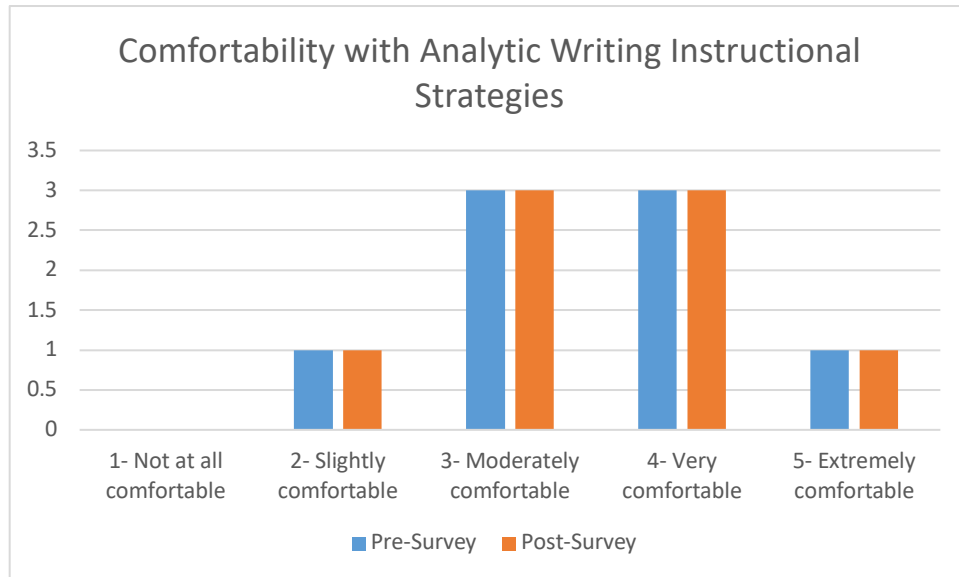
Figure 3.2 Pre/Post Survey Comparison: Comfortability with Analytic Writing Instructional Strategies

Teachers showed an increase in their awareness of the definition of analysis in ELA classrooms, with 75% of respondents (n=8) selecting the state definition on the pre-survey and 100% of the respondents using the state definition on the post-survey. The same consistency in responses also occurred when teachers were asked about their comfortability with specific instructional strategies. Table 3.2 shows the five instructional strategies included on the pre- and post-survey question about comfortability with instructional strategies. The two focal strategies, close reading and academic discussions, decreased slightly in average comfortability. Close reading decreased from 3.9 to 3.8, and academic discussions/ facilitating group discussions decreased from 4.1 to 3.9. On the other hand, facilitating peer revision and think alouds had a 0.3 increase from pre- to post-survey. These two strategies were not the focus of the intervention, but both strategies were discussed and linked to the two focal strategies. For example, think alouds were linked to facilitating group discussions because teachers were taught to model certain discussion starters and response sentence frames with students before having them engage in the discussion. Facilitating peer revision was also included as an addendum to the close reading

strategy where students were asked to write their response to a close reading question. As a part

of that lesson, teachers were given an overview of how to engage students in meaningful peer

revision of their written responses.

Table 3.2 Average Ratings of Comfortability with Instructional Strategies

	Pre-Survey	Post-Survey
Think alouds	3.6	3.9
Facilitating group discussions (i.e., Socratic Seminars)	4.1	3.9
Conferencing with students about their writing	4.1	4.1
Close reading process	3.9	3.8
Facilitating peer revision	3.0	3.3

3.2.1.3 Collaboration and Lesson Planning

From pre- to post-survey, teachers expressed a similar consistency in the number of

instructional activities they used on a weekly basis. In the pre-survey, teachers reported an average

of 3.7 instructional activities per week, and on the post-survey, teachers reported an average of 3.3

instructional activities per week.

Teachers were also asked about where analysis instruction fits into their curriculum.

Figures 3.2 and 3.3 show the pre- and post-survey data related to this information. The greatest

change from pre- to post-survey response came in the speaking and listening standards. Among

the respondents, 62.5% (n=5) saw analysis instruction linked to speaking and listening standards

in the pre-survey, and 25% (n=2) of respondents saw the link between analysis instruction and the

speaking and listening standards in the post-survey. Teachers' connecting between analysis and

writing showed a decrease as well with 87.5% (n=7) identifying it as connected on the pre-survey

and 62.5% (n=5) connecting analysis and writing on the post-survey. The connection between

analysis and reading literature standards had a slight increase from pre- to post-survey; 75% (n=6)

respondents identified the reading literature standards as being aided by a focus on analysis in the

pre-survey, and 87.5% (n=7) found analysis to aid reading literature standards on the post-survey. The other categories (vocabulary, grammar, reading informational standards) remained the same or decreased by n=1 from pre- to post-survey.

Which aspects of your written curriculum and ELA standards are aided by a focus on analysis? Check all that apply.

8 responses

Category	Value
Vocabulary	3 (37.5%)
Reading literature standards	6 (75%)
Reading informational text stan…	6 (75%)
Grammar	2 (25%)
Writing	7 (87.5%)
Speaking and listening standards	5 (62.5%)
None	0 (0%)
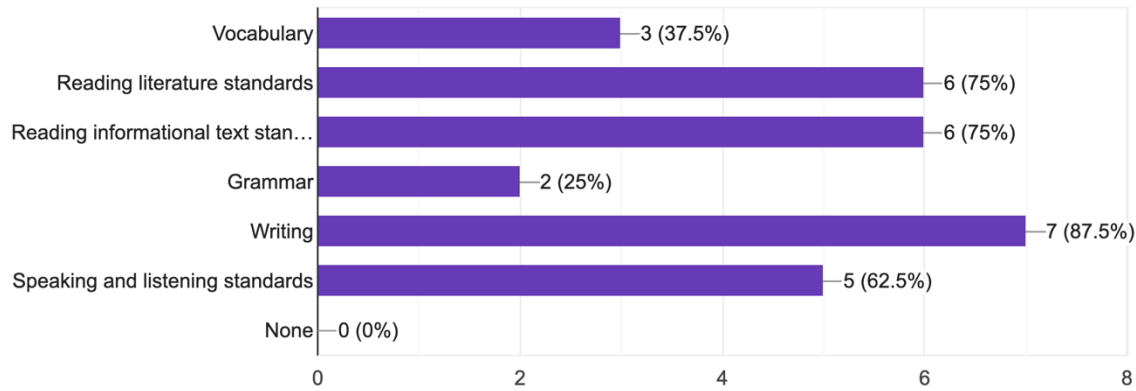
Figure 3.3 Analysis Links to Curriculum and ELA Standards: Pre-Survey

Which aspects of your written curriculum and ELA standards are aided by a focus on analysis? Check all that apply.

8 responses

Category	Value
Vocabulary	3 (37.5%)
Reading literature standards	7 (87.5%)
Reading informational text stan…	5 (62.5%)
Grammar	1 (12.5%)
Writing	5 (62.5%)
Speaking and listening standards	2 (25%)
None	0 (0%)
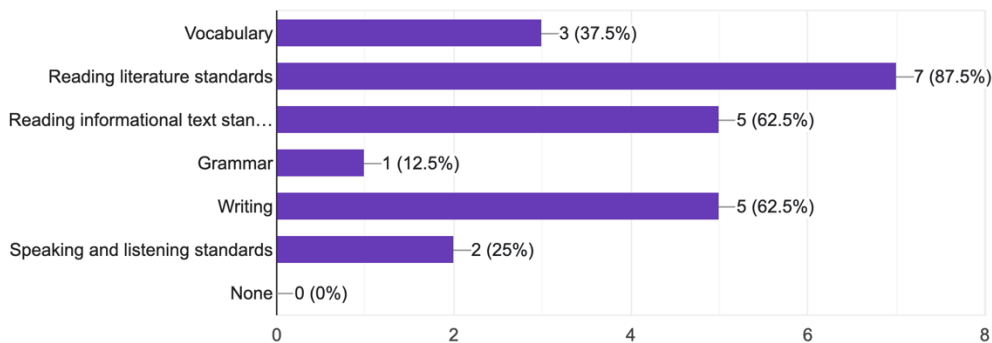
Figure 3.4 Analysis Links to Curriculum and ELA Standards: Post-Survey

Teachers also reported slight increases in collaboration around planning analytic thinking and writing activities, which is shared in Figures 3.4 and 3.5 below. More teachers reported higher frequency of collaboration on the post-survey than on the pre-survey. For example, 25% of teachers said that they frequently collaborated on the pre-survey, while 50% of teachers reported that they frequently collaborated on the post-survey. Some of this increase may be the result of the professional development sessions, which built in time for teachers to share their ideas with each other. It is possible that some of those discussions led to further conversations about how to teach analysis beyond the professional development sessions.

During the past three years, how often did you collaborate with your department level colleagues about analytic thinking and writing?
8 responses

Figure 3.5 Frequency of Collaboration around Analytic Thinking and Writing Activities: Pre-Survey

In the past three years, how often have you collaborated with your department level colleagues about analytic thinking and writing?
8 responses

Figure 3.6 Frequency of Collaboration around Analytic Thinking and Writing Activities: Post-Survey

Teachers also shared their perspectives on professional development opportunities that they would like to explore more. The survey opt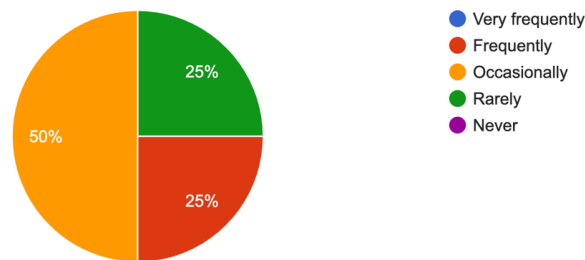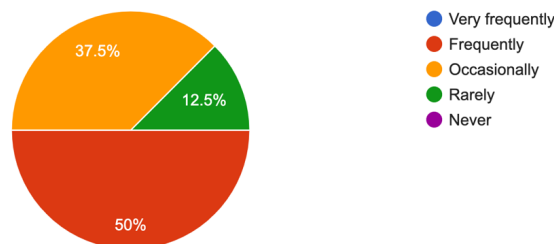ions for professional development included collaboration time with colleagues, training around foundational reading and writing skills, training from the local intermediate unit, reviewing student writing together, and selecting new texts to teach analysis. Teachers ranked their preferences on a scale of 1-5 with 1 being their top choice and 5 being their least preferred professional development option. Table 3.3 depicts the average ranking of each professional development opportunity, with the top rank being given a score of 5 and the bottom rank given a score of 1. The biggest jump in professional development suggestions from the pre-survey to the post-survey was more collaboration time with colleagues, which improved from an average ranking of 3 on the pre-survey to an average ranking of 3.9 on the post-survey. The other categories on the survey dropped in preference. The largest drop was in training from the local intermediate unit, which fell from an average of 3.5 to 3.1 from pre- to post-survey. Selecting new texts was consistently the lowest ranked choice with an average of 1.4 on both the pre- and post-survey.

In terms of overall rankings, the pre-survey showed that teachers preferred having training on foundational reading and writing skills, followed by training from the local intermediate unit, training on reviewing student writing, and more collaboration time with colleagues. The post-survey rankings were similar, except for collaboration time with colleagues, which became the highest ranking choice on the post-survey. Collaboration time with colleagues was followed by professional development about foundational reading and writing skills, training from the local intermediate unit, and then reviewing student writing together.

Table 3.3 Average Ranking of Future Professional Development Topics

	Pre	Post
More collaboration time with colleagues	3.0	3.9
Professional development about foundational reading and writing skills	3.9	3.8
Training from the intermediate unit[3]	3.5	3.1
Reviewing student writing together to determine high quality responses	3.3	2.9
Selecting new texts to use to teach analysis	1.4	1.4

Data from the surveys was disaggregated by grade level and by department. Those results are shown in tables 3.4 and 3.5. The biggest takeaway was that there was no change in comfortability of teaching analytic thinking and writing from pre- to post-survey for either grade level or department. Of all the subcategories for comfortability, the only one to change was 8th grade comfortability with analytic thinking, which changed from an average of 4 on the pre-survey to 3.75 on the post-survey. There was some variability within the selection of instructional stagies that teachers are comfortable with. The greatest change in instructional strategies came from 7th grade and their comfort in facilitating peer revision, which changed from an average of 1.75 on the pre-survey and an average of 3 on the post-survey. Smaller changes in comfort with facilitating peer revision were seen when the data was disaggregated by department. The reading department saw an increase of 0.4, and the English department saw an increase of 0.2. Other categories remained within 0.5 points of their pre-survey response average.

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[3] The Intermediate Unit is a county-wide educational agency that provides training and support to county schools.

3.2.1.4 Open-Ended Responses

The post-survey included a space for open-ended responses related to what teachers learned from the professional development sessions and what further professional development might be useful. A thematic content analysis was used to determine themes from the open-ended responses. However, of the eight respondents to the survey, three provided feedback through the open-ended response, which created limited opportunities for analysis. One of the takeaways for teachers was the gradual release of responsibility onto students so that they are doing the thinking and planning associated with analytic writing. In one open-ended response, a teacher expressed the ease with which they could implement both strategies into their routine classroom practices, writing that they learned "how to release greater responsibility to students in the close-reading process through ongoing, repeated exposure." Another teacher also stated that they learned how to allow students to struggle through tough questions. One teacher wrote that academic discussions taught them to "allow students to have silence at times" while another teacher wrote that they learned "ways to engage students in analytic discussions while taking a 'hands off' approach." These comments link back to the gradual release of responsibility that was discussed during the professional development sessions.

Table 3.4 Grade-Level Comparison of Survey Responses

| | On a scale of 1-5, how important is analytic writing in your curricul-um? | On a scale of 1-5, how comforta-ble are you with teaching analytic thinking? | On a scale of 1-5, how comfort-able are you with teaching analytic writing? | Rate how comfortable you are with the following instructional strategies related to analysis. | | | | | In your average class, how many activities related to analysis do you incorporate on a weekly basis? |
				Think aloud	Facilitating group discussions (i.e., Socratic Seminars)	Conferen-cing with students about their writing	Close reading process	Peer revision	
7th Pre	4.3	3.3	3.3	4.3	4.5	4	4	1.8	3
7th Post	4.5	3.3	3.3	4.3	3.8	4.3	4	3	2.8
8th Pre	4.5	4	3.8	3	3.8	4.3	3.8	3.5	3.3
8th Post	4	3.8	3.8	3.5	4	4	3.5	3.5	3.3

Table 3.5 Content Area Comparison of Survey Responses

| | On a scale of 1-5, how important is analytic writing in your curricu-lum? | On a scale of 1-5, how comfort-able are you with teaching analytic thinking? | On a scale of 1-5, how comfort-able are you with teaching analytic writing? | Rate how comfortable you are with the following instructional strategies related to analysis | | | | | How many activities related to analysis do you incorporate on a weekly basis? |
				Think aloud	Facilitat-ing group discussions (i.e., Socratic Seminars)	Conferen-cing with students about their writing	Close reading process	Peer revision	
Read. Pre	4	3.3	2.7	4.3	4.3	3.7	4.3	2.3	1.7
Read. Post	3.7	3.3	2.7	4.3	4	3	3.7	2.7	2
Eng. Pre	4.6	3.8	4	3.2	4	4.4	3.6	3.4	4
Eng. Post	4.6	3.8	4	3.6	3.8	4.8	3.8	3.6	3.6

3.2.1.5 Open-Ended Instructional Strategy Survey

Between the second and third professional development sessions, the participating teachers completed a short survey identifying which instructional strategy they used and giving some feedback about the implementation of that instructional strategy. The two instructional strategies that teachers learned about in the second session were close reading and academic discussions. The questions on this survey can be found in Appendix B. Of the eight responding teachers, 75% (n=6) used the academic discussion strategy and 25% (n=2) used the close reading process strategy.

Thematic content analysis was used to determine trends in teacher responses. The teachers who used academic discussions used a variety of texts and genres. These genres included poetry, fiction, and a play. One teacher planned a group discussion that occurred while the class read the text together for the first time, while the other five planned a discussion that occurred after students completed reading a text.

For the teachers who implemented academic discussions, the main themes to emerge were the ability for students to engage in higher-order thinking through discussions and the challenge that the discussion presented for struggling readers. Teachers shared that students were able to sustain a conversation about the learning goal for that lesson. In some cases, that was to examine the structure of a text, while, in other cases, it was to examine what defines a main character. One teacher stated that students "tied text to literary elements and other texts (even outside of my class). I had one group taking the question from a play and making comparisons to Poe, which they are learning in English." This comment illustrates how analytic instruction can move students toward seeing connections to other texts. Teachers also shared the struggles that students had with academic discussions. Two teachers reflected on the challenges that struggling readers had with

the discussions. For example, one teacher wrote, "Struggling readers struggled to come up with their own answers and more so tried to repeat or summarize what others said" while another teacher wrote, "When stuck or dealing with a more complex question, it seemed like they were doing bare minimum instead of finding ways to understand/ support/ work through it." Others wrote that students struggled to assert themselves and keep the discussion going.

Only two teachers used the close reading strategy. The strategy took place over four days for both teachers. Both teachers used close reading to guide student comprehension and analysis questions of two different texts. It is also worth noting that the teachers who used this strategy used it with different populations of students; one teacher used it when reading a complex text by Edgar Allan Poe with 7th graders, and the other used it with a Tier 3 ELA class, which is a small-group class of learners who are at least two grade levels below their peers. The Tier 3 class was able to analyze an instructional text on a "granular level," and they spent time focusing on single phrases and making inferences. The 7th grade teacher used close reading to move students toward understanding the symbolism in the Poe text. This teacher identified that students were somewhat vague in their responses and that the discussion format allowed students to remain vague in their discussion with each other instead of being corrected by a teacher.

3.2.2 Department Chair Interviews

After the three professional development sessions, interviews were conducted with the department chairs for the reading and English departments. Thematic content analysis was used to analyze the department chairs' responses, and the summary of that analysis is included below along with next steps based on their interviews.

3.2.2.1 Reflections on Professional Development

Both department chairs shared that an effective part of the professional development sessions was that the instructional strategies presented were easy to implement in the classroom. One department chair stated that the professional development was helpful because the strategies were "straightforward, quick activities to do within the classroom that apply to any literature [text]." She went on to state that ELA teachers already have a lot to think about when planning their instruction, so having the right scope of instructional strategies that could yield immediate results was beneficial, which was a comment echoed by the other department chair. The other department chair shared that the sessions were helpful in learning about new strategies but also shared that there was a need for more time to dive into the strategies and learn how to best implement them into classrooms.

3.2.2.2 Curriculum and Assessment

Along with a focus on instruction, the department chairs both pointed to curriculum as another place where work can be done to improve analytic writing outcomes for students. One department chair pointed out that the curriculum can be revised throughout the school year but that teachers do not have time to thoughtfully revise the curriculum based on their instructional experiences in the classroom. She went on to explain how their curriculum has evolved over time, expressing that analytic writing used to be a stand-alone unit in the curriculum, and now the departments are starting to weave analysis instruction into each unit, which is a self-identified next step for curriculum development.

Both department chairs also made clear that analytic instruction is at the center of their department's professional development needs. One department chair shared that her department "likes analysis being the center of the curriculum. We think it is the skill that separates English

from other classes but also enriches the other classes." The other department chair shared that analysis has become familiar to her department over the years, but a lack of training led to insecurities about their ability to teach it. She asserted that more training would be helpful in breaking down those insecurities and developing consistencies across the reading and English departments when it comes to analysis instruction.

3.2.2.3   Department Chair Model

Both department chairs also reflected on the organizational structure of having teacher leaders. Both shared that they found it beneficial to have a department chair structure. A few years ago, there were no teacher leaders, which led to less consistency within departments. One department chair shared that teachers feel more comfortable having a teacher leader as a sounding board who can funnel questions and suggestions to building and district administration on behalf of a department instead of having to voice concerns individually.

Additionally, the department chairs shared concerns about the challenges of balancing the role of being a department chair while also being a teacher. One of the department chairs explained that "One of the problems is the time. . . . Sometimes the time to meet with [other department chairs] is limited." In addition to sharing that their departments need additional professional development around analysis instruction, both department chairs expressed concern about being the leaders of all professional development that is provided to teachers in their departments. One department chair stated, "I need professional development as much as anyone else in my department." Currently, department chairs are responsible for planning and leading many of the professional development sessions for their department throughout the year. One of the department chairs said, "Allowing us to sometimes be the teachers who attend . . . or collecting ideas for what we really need as a department but not me planning it because I'm not an expert in all of those

areas." The other department chair spoke about how the analysis professional development was helpful because it "gave us straightforward, quick activities to do within the classroom that could apply to any literature, and then we could see immediate results with those activities of analysis."

3.2.2.4 Recommendations for Future PD

Building off the professional development sessions, both department chairs advocated for more time to engage in collaborative planning with their departments, which was echoed in the teachers' post-survey findings above. One department chair stated that a next step could be to bring one text to a meeting and co-plan what students would do with that text using the close reading and academic discussion strategies that were discussed. Another next step in instructional planning is to focus more on analytic writing. Both department chairs shared that their departments are developing a stronger sense of analytic thinking but that there are still questions about how to bolster students' analytic writing skills. One department chair shared that professional development around scoring calibration would be helpful because "one teacher's idea of strong analytic writing could be different from another." These ideas lead to a larger theme around refining the programmatic elements of ELA curriculum, assessment, and instruction. This would include creating more time for collaboration and creating ongoing supports for teachers to access to help with analytic writing. It also leads to a discussion of assessment approaches to analysis instruction and aligning teacher expectations for students in each grade level related to proficient analysis.

Another theme from the department chair interviews was the focus on providing additional support for high achieving students. One of the department chairs expressed questions about how to taker higher-level students to the "next level" when it comes to analysis. She went back to the idea of having some concrete, straightforward strategies that could be easily implemented for

higher-level learners who already have the foundational aspects of analysis mastered. The department chair shared an example of how she has seen improvement in her lower-level students but that she is looking for "some resources or similar approaches on how to expand analysis into the already advanced child's thinking." This comment connects with findings from the open-ended survey that also expressed concern over challenging higher-level learners in analytic thinking and writing. One teacher expressed that when asking a high-achieving student to elaborate on a close reading question, the student said, "I like to keep it simple." Given the high number of students who achieve proficiency on the PSSAs, focusing on how to push high-achieving students to elaborate on their thinking and find deeper connections in text would help teachers support a large majority of the students in the studied school.

3.2.3 Star Reading Assessment Results

As a part of analyzing student outcomes with analytic thinking, sub scores on the district-administered Star Reading assessment were examined. Students took the Star Reading assessment in August and December. Star provides mastery reports aligned to the PA Core Standards. One standard, related to citing evidence to support analysis, is the one that is measured for this study. This standard is measured twice in a test session: once for informational texts and once for narrative texts. Star Mastery scores operate on a scale of 0-100. The August and December Star results are listed in the subsequent tables as a baseline for where students began at the start of the year. The August Star results serve as a pre-test for students' ability to analyze text. The December Star results function as a post-test based on the instruction that teachers gave to students based on their learning from the professional development sessions.

When analyzing Star results and change from August to December, it is important to recognize that these results are viewed as a snapshot of how students performed in August and December. It is also important to recognize that the Star results are not solely connected to the intervention in this study and instead take into account all of the instructional practices that teachers have done between August and December to help students learn how to analyze.

Overall, each grade made improvements on both analysis mastery scores, with 7th grade averaging an improvement of 2.5 points from August to December and 8th grade averaging an improvement of three points from August to December. Scores were also disaggregated by gender, teacher, and IEP status. Both males and females made equivalent improvements on both analysis measures with females slightly outperforming males. Students with IEPs also made improvements. Eighth grade students with IEPs made more improvement than 7th grade students with IEPs, growing by five points compared to 7th grade's two-point improvement. Higher growth is needed for students with IEPs since their scores are lower than the average grade-level score. For example, the average 7th grader scored 74.5 on the informational analysis standard in December, while 7th graders with IEPs scored an average of 49. A consideration for future study would be to include special education teachers in professional development on how to scaffold students with IEPs to be able to analyze informational and narrative text.

The largest discrepancy between results occurred between teachers. In 7th grade, teachers teach in ELA teams with one English and one reading teacher on a team. While the overall average on citing text evidence improved for 7th grade from the August Star test to the December test, one teacher team maintained their August mastery score for narrative text and decreased their informational text score by two points. This discrepancy between teachers is also true when looking at students' overall improvement on Star's percentile rank. Positive percentile rank

movement indicates growth relative to students' peers. The same teaching team described above also had a -2.0-percentile rank decrease since the beginning of the school year compared to the 4.0 and 3.0 percentile rank increases of the other 7th grade ELA teams. It is difficult to determine the cause of this stagnation and decrease in scores based on the data provided, but it indicates that further professional development opportunities are needed to reinforce analytic thinking and writing techniques. Furthermore, additional individualized coaching and collaborative lesson planning support could be helpful for that teacher team.

Table 3.6 Star Average Mastery by Grade Level

	7th Grade		8th Grade	
Star Administration	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)
August 2022	72	80	81	74
December 2022	74.5	82.5	84	77
Growth	+2.5	+2.5	+3	+3

Table 3.7 Star Average Mastery by Gender

	Female		Male	
Star Administration	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)
August 2022	78	79	75	76
December 2022	81	82	78	78
Growth	+3	+3	+3	+2

Table 3.8 Star Average Mastery by 7th Grade Teacher

	Teacher 1		Teacher 2		Teacher 3	
Star Administration	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)
August 2022	69	78	70	80	77	84
December 2022	74	81	74	82	76	84
Growth	+5	+3	+4	+2	-2	0

Table 3.9 Star Average Mastery by 8th Grade Teacher

	Teacher 1		Teacher 2		Teacher 3	
Star Administration	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)	Analysis (Info)	Analysis (Narrative)
August 2022	80	72	79	71	84	77
December 2022	82	75	83	75	87	80
Growth	+2	+3	+4	+4	+3	+3

Table 3.10 Star Average Mastery by Special Education

	7th Grade		8th Grade	
Star Administration	Analysis (Info)	Analysis (Narrative)	Analysis (Informational)	Analysis (Narrative)
August 2022	47	60	60	51
December 2022	49	62	65	56
Growth	+2	+2	+5	+5

In conclusion, the above data show the gradual changes in students' analytic skills according to the Star assessment. Overall, each grade level is making moderate improvements since the beginning of the year. There is some concern about the variability in scores between teachers and the limited growth that students in special education are earning. These are considerations that will lead to next steps and recommendations in the following section.

4.0 Learning and Actions

4.1 Discussion

4.1.1 Summary of Study

The goal of this study was to examine research-based practices for incorporating analytic instruction into daily teaching routines of middle school ELA teachers and to identify the prerequisite knowledge that is needed for teachers to successfully incorporate those practices. To reach this goal, three professional development sessions focused on the implementation of instructional practices were developed and delivered over a two-month period. Two of those professional development sessions were used to establish what analysis means in ELA classrooms and to provide two instructional practices for quality analysis instruction. The third session functioned as a debriefing session and occurred after teachers used one of the two instructional strategies in their classrooms. A pre- and post-survey was used to gauge general changes in teacher use of analysis instructional activities. An open-ended survey was given between the second and third professional development sessions for teachers to reflect on the strengths and challenges of using their selected instructional practice. After the three sessions, interviews with two department chairs were conducted to get further information about what teachers in the reading and English departments learned from the sessions. Finally, results from the Star Reading universal screener were used to determine the amount of student growth that might be attributed to the use of using analytic instructional practices in their classrooms. The following section will detail the key findings that emerged across the four data sets as they relate to the inquiry questions for this study.

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Then, there will be an analysis of the strengths and limitations of the change idea followed by next steps and implications for the place of practice and analytic writing instruction.

4.1.2 Key Findings

4.1.2.1 Inquiry Question 1

How do middle-school ELA teachers successfully incorporate analytic thinking and writing practices into their daily teaching routines?

The results from this study indicate that teacher collaboration is important for seeing successful student outcomes. Both department chairs shared in their interviews that having time to collaborate and plan analysis instruction is crucial for student success. Their argument aligned with what some teachers mentioned during the third professional development session when several teachers voiced that they benefited from hearing about other teachers' experiences and ways of approaching the same instructional strategy that they tried. Teacher collaboration was also a theme in the pre- and post-survey, the latter of which showed teacher collaboration as the highest average rating for further professional development opportunities, an improvement from the pre-survey results. The collaboration that occurred during the third professional development session was an example of the beginning stages of a professional learning community (PLC). At their core, PLCs can be defined as a group of educators convening to critically examine instructional practices in a "learner-oriented, growth-promoting way" (Stoll et al., 2006, p. 223). While the reading and English departments meet once a month, they do not focus on instructional strategies and improving student learning. A future consideration or next step would be to develop these two departments as a professional learning community where topics like analysis instruction or vocabulary development could be the focus of meetings.

The pre- and post- survey results also showed a slight drop in teachers' comfort with teaching analytic thinking. One explanation for this slight drop is that teachers learned about the complexities of teaching analytic thinking through the professional development sessions and that that awareness caused teachers to think differently about their ability to use analytic thinking instructional strategies. For analytic writing, it is possible that teachers' comfortability ratings remained the same because they were focusing more on teaching analytic thinking strategies and did not spend much time reflecting on analytic writing. Because the survey results did not show the desired improvement, more professional development is needed to develop teachers' comfortability with teaching analysis.

The survey data also showed a slight decrease in the number of analysis instructional activities, decreasing from an average of 3.7 to an average of 3.3 per week. This decrease may be attributed to teachers having a better understanding of what an analysis instructional activity entails. Teachers spent an average of two days trialing either the close reading or academic discussion strategies according to their survey data. By learning that these activities may span a few days to get students to move to higher-level thinking that analysis requires, teachers may have decreased the number of analysis activities they are doing in a week in favor of doing more meaningful activities with students. Research on analytic writing requires deeper approaches to teaching with a text; therefore, teachers will focus more on the depths that they use with a text than covering a text at the comprehension level only (Thompson, 2018).

All average comfortability ratings remained within one point of each other, including the two that were the focus of the professional development sessions: facilitating group discussions and the close reading process. Both showed a slight decline from the pre-survey responses with facilitation group discussions falling from an average of 4.1 to 3.9 and close reading falling from

3.9 to 3.8. While these both show a slight drop in average comfortability, scores of 3.9 and 3.8 are still high scores on a 5-point scale, showing that teachers are generally comfortable with both focal instructional strategies. One possible explanation for these drops is that teachers thought they understood how to facilitate group discussions and use the close reading process at the outset of this study and then learned that there were more elements to each of these instructional methods than they originally thought. Since they just learned about new ways to approach these techniques, their comfortability with using them in the classroom may have dropped slightly as they navigate how to use these in their classrooms.

Beyond the survey findings about comfortability, data also showed that teachers felt most comfortable with small changes to their instructional practices as opposed to large overhauls. Both department chairs spoke about the benefits of having actionable, easy-to-implement strategies to try in their classrooms. They also shared the benefits of having step-by-step instructions for how to implement these strategies and a sample of what a plan would look like. During the second and third professional development sessions, teachers shared that both instructional strategies (close reading and academic discussions) were easy to use and did not require a large amount of planning. They also expressed that these strategies could fit into their curriculum with any text material and could be implemented throughout the school year. This feedback shows how the research of Applebee et al. (2003) and Brown and Kappes (2012) can be translated into concrete instructional practices that teachers can replicate when it comes to academic discussions and close reading respectively. Participant feedback also fits with the development of PLCs, whose focus is on instructional activities that impact the day-to-day practices of teachers (Vescio et al., 2008).

4.1.2.2 Inquiry Question 2

What prerequisite knowledge is needed for middle school ELA teachers to implement research-based analytic writing strategies with fidelity?

One common understanding that is crucial for all teachers to have is a common definition of analysis in ELA classrooms. Pre-survey results showed that seven of the eight participating teachers used the PDE definition of analysis, and after the professional development sessions, all eight teachers used the PDE definition of analysis on the post-survey. The importance of a shared understanding of analysis came up in department chair interviews; the English department chair spoke about the need for consistency across and within grade levels with respect to expectations for analytic thinking and writing. Creating consistency on analysis in ELA classrooms has been the focus of several resources from the Pennsylvania Department of Education (2021b, 2022). However, this study shows that to develop consistency, there must be local-level understanding and support from administrators and teacher leaders who commit to adopting common definitions and using them across a district.

Survey results showed areas for growth among understanding how analysis instruction can support other aspects of the ELA curriculum and standards. Teachers reported a decrease in their identified connection between analysis instruction and the speaking and listening standards, from 62.5% (n=5) identifying a connection on the pre-survey to 25% (n=2) on the post-survey. This decrease indicates that teachers need more time to work through academic discussions in order to see how analysis instruction can support students' ability to speak and participate in group discussions. In addition to the decrease in speaking and listening, there were other decreases from the pre- to post-survey in the areas of reading informational text, grammar, and writing. These decreases show that more professional development is needed to ensure that all teachers

understand how analysis instruction can be linked to all the areas listed in this question. A particular focus should be given to the connection between analysis instruction and writing since analytic writing was a focus of the professional development sessions. The professional development sessions focused more heavily on analytic thinking, which may be why teachers did not continue to report connections between analysis and writing, so future professional development should clearly show the link between analysis instruction and the development of students' writing.

The survey data also showed that teachers prefer having more collaboration time with colleagues as a key professional development opportunity. This was shown in the increase from an average of 3.0 on the pre-survey of professional development options to 3.9 on the post-survey. One possible explanation for this improvement is attributable to the professional development sessions, which provided time to collaborate with colleagues and hear each other's experiences with academic discussions and close reading. This time is not built into teachers' schedules, so having the opportunity to collaborate in a structured setting around a specific topic is recommended to administrators to consider, especially because collaboration time with colleagues was the only professional development option to increase in preference from pre- to post-survey.

The second highest ranking topic was professional development on foundational reading and writing skills. Foundational reading and writing skills were defined for the teachers as the skills students need to be able to analyze and communicate their thoughts about analysis. For reading, these would include the big five areas of reading (phonics, phonemic awareness, fluency, vocabulary, and comprehension). For writing, these would include the stages of the writing process (pre-writing, drafting, revising, and editing) as well as the areas of focus and organization. During the third professional development session, some teachers expressed concern about students being

able to comprehend text or write simple sentences, which may also contribute to the desire for more professional development about foundational reading and writing skills.

The other key takeaway about prerequisites needed to teach analysis is not about the knowledge but instead about the system of professional development needed to develop teacher knowledge and skill. The Star Reading results showed some discrepancy between teachers in student growth for the analysis standard from the beginning of the year to the students' assessment in December. Having a system for ongoing professional development in the form of data meetings to review student results and creating opportunities for teachers to continue sharing their ideas with each other will be beneficial for continuing teachers' growth in teaching analysis. Vescio et al. (2008) found that PLCs require structural shifts that move teachers toward learning together in their professional development which includes examining their day-to-day instructional activities. With respect to PLCs focused on analytic writing, some of those shifts should be toward discussion of instructional practices of close reading, academic discussions, and dialogic assessment.

4.1.3 Strengths of Change

One key strength of the change came from teachers' observations of how students engaged with the analytic instructional techniques. Several teachers indicated that all students were able to participate in the academic discussion and close reading strategies. In their open-ended survey responses after implementing an analytic teaching strategy, teachers shared that students showed that they were able to independently define a theme and find examples from a text to support that theme. Another shared that students were able to listen to each other and build off of each other's opinions during a discussion around how point of view impacts the theme of a text. These findings are reflective of the strategies that Applebee et al. (2003) and Brown and Kappes (2012) focused

on for academic discussions and close reading respectively. Both strategies also align with the goals outlined in Thompson (2018b) that explain that teaching analysis should involve unpacking why an author makes choices in their writing.

Another strength of the intervention was that teachers were able to collaborate with each other. Several teachers shared that it was beneficial to work together when they plan their instruction and talk about each other's experiences implementing those strategies. The third professional development session was crucial in making sure that teachers could hear each other's experiences, and it helped them determine how to proceed with using the strategies in future lessons. This collaborative approach parallels research-based practices in developing a PLC, which is focused on collaboration and reflective professional inquiry (Stoll et al., 2006). For example, teachers reflected on their implementation of close reading or academic discussions and collaborated with each other to develop their lesson plans and debrief the impact that the strategies had on student learning.

4.1.4 Limitations of Change

The main limitation of this change and the study is the timeframe in which the study took place. The intervention occurred over the course of two months, from the end of October to mid-December. In that time, teachers participated in three professional development sessions and had a few weeks to implement one of two instructional strategies at least once. Long-term student outcomes related to their ability to analyze text will be determined through students' scores on the PSSA. Having a longer span of time with which to examine teacher practice would lead to more generalizable statements of the impact of high-quality analysis instructional activities on student achievement. A next step resulting from this study will be to continue monitoring teacher usage of

analysis instructional strategies through lesson plans and walkthroughs. Another key step will be to examine how students perform on the PSSA, especially with respect to the TDA prompt.

Another limitation of the study was that it focused on professional development and the introduction of instructional strategies for analysis in ELA classrooms, but it did not examine the implementation of those instructional strategies. The data collected for this study was based on how teachers reflected on the use of those instructional strategies, which assumes that teachers had enough knowledge to make informed judgments about an instructional strategy that they were trying for the first time. A continuation of the work in this study should include observations of teacher practice and how they align to the core principles of analytic thinking and writing instruction.

A third limitation of the study was that only eight of the 11 teachers engaged in the surveys, while all 11 ELA teachers participated in the three professional development sessions. Not having those three teachers responding to the surveys does not allow for examination of how those teachers' instructional practices were impacted by the professional development sessions.

4.2 Next Steps and Implications

4.2.1 Next Steps for Place of Practice

The place of practice has now begun to help all teachers understand how to support analytic thinking and writing instructional strategies in the classroom. One important next step, which came out of the survey data, is that teachers still need additional support learning how to teach analytic writing. While some strategies were included in the close reading and academic discussion

protocols, teachers focused on the analytic thinking aspects of those protocols and did not spend a lot of time on connecting student thinking to writing. Detailing more specific writing strategies provided by Beck et al. (2019) and Graham and Perin (2007) is an important next step to help teachers address both parts of analysis instruction in ELA classrooms.

In addition to further professional development about instructional strategies to teach analysis, the place of practice will also benefit from professional development about assessment of students' analytic thinking and writing. Several teachers wrote in their open-ended reflections that they were comfortable with the instructional strategies that they learned but that they needed more support in knowing how to evaluate quality responses to analytic questions. One of the department chairs spoke about this in her interview as well. She said that there is a lack of consistency in how those in her department view quality analytic writing both within and across grade levels. Further professional development on analyzing student work and planning lessons in response to student work would support teachers' ability to plan follow-up tasks in response to the work that students produce.

Another implication for the place of practice is that there are opportunities to refine the ELA curriculum to further address analysis. Currently, teachers can revise their curriculum at any point during the school year. This includes being able to add instructional strategies and model lessons into the curriculum. As teachers continue to learn about analytic writing instruction, there are opportunities to revise their curriculum to address analysis throughout their units by changing learning goals for units to directly reflect analytic writing and include texts that are complex enough for middle school students to analyze. There are also opportunities to include some model lessons into the curriculum as guides for other teachers. This would be helpful given the impact of teachers being able to collaborate on analytic writing activities through the professional

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development sessions. Including these activities in the curriculum is another way for teachers to share ideas without setting aside dedicated time for collaboration. It also allows the curriculum to function as a resource library for teachers who, according to one department chair, are looking for easy-to-implement strategies.

Currently, teachers have the agency to revise their curriculum at any point during the school year. This approach democratizes the curriculum revision process; however, some teachers report that they are unsure of what additions to the curriculum they are required to use in their classrooms. Department chair interviews indicate that some courses are more consistent than others and that adding a routine review of curriculum changes as a part of department meeting times would be helpful in creating consistency across teachers who teach the same curriculum. These curriculum conversations would also lead to further collaboration among teachers, which was the top choice of continued professional development for teachers because of the study.

Along with refining the curriculum revision process, there are opportunities to delineate what content and strategies are covered in reading and English classes. Currently, that separation is decided by teaching teams of reading and English teachers. Having a more consistent approach to what occurs in reading and English classes would help in solidifying the curriculum used in each class and create a strong cohesion between the courses regardless of who the reading and English teacher is.

In thinking about the leadership needed to drive these changes, it is important that department chairs have more time to dedicate to leading department initiatives. Both department chairs spoke about the lack of time available to plan and oversee their department because they are teaching a full course load. Without having time carved out to collaborate with other department chairs and lead initiatives like the curriculum revision process, department chairs will continue to

have surface-level impact on their departments and will require other administrators to intervene and provide direction and support.

4.2.2 Implications for Analytic Writing Instruction

As a result of this study, there are a few areas for future study for the field of analytic writing instruction. The first is to provide more analysis instructional guides for teachers. Teachers found the instructional routines useful and expressed a desire to have more instructional routines made available to them. The PDE recently released descriptions of analytic writing and guidelines for how to analyze student work (PDE, 2022). Now that the PDE has defined analysis and given examples of various student writing with analysis, creating instructional guides with evidence-based teaching strategies is a logical next step in helping teachers teach students how to analyze grade-level text.

Building off the need for more straightforward instructional practice guides, there is also a need to focus on analytic writing strategies in future professional development sessions particularly around how to provide effective feedback. Graham and Perin (2007) suggested that more research is needed to understand research-based approaches to feedback but acknowledged that it is an important step in developing students' writing habits. Beck et al. (2020) wrote about the need to provide feedback in a one-on-one setting where the teacher provides individualized mini lessons to students tailored to their writing needs. In this study, writing strategies were paired with analytic thinking instructional strategies to build the connection between analytic thinking and writing, which aligns with Deane et al. (2012), who asserted that short lead-in tasks help students build up to cognitively demanding tasks like writing essays. However, teachers shared that they mainly focused on developing students' analytic thinking skills with the close reading

process or the academic discussion instructional techniques. Further professional development on instructional techniques to help students move from analytic thinking to analytic writing will be beneficial to teachers.

5.0 Reflections

5.1 Reflections on Leadership

The process of completing this dissertation in practice broadened my perspective on leadership. School leaders face a variety of problems with degrees of intensity. This makes distributed leadership an important component of one's leadership style. In distributed leadership, leaders share responsibilities with others in the system and have mutual accountability for accomplishing goals (Timperley, 2005). Leaders are unable to solve complex problems on their own. Instead, they must collaborate with the users who are closest to those problems to see progress. Key to this understanding is the idea of shared leadership. In this study, I worked with the teacher leaders of the English and reading departments. That collaboration involved getting their feedback about the professional development and working with them to create the sessions. However, it did not involve me turning all responsibility over to them. Finding the balance between delegating and consulting others is an important element of leadership.

Another fundamental element of leadership is the idea that leaders are representatives for constituents. Depending on the problem, the constituents may be students, families, staff members, or another group of people with a vested interest in education. When approaching difficult problems, it is important for leaders to remember that they lead a group of people and are key decision makers for these groups. Therefore, leaders must consult with the users or constituents to understand the impact of decisions. They are also responsible for explaining the rationale behind these decisions based on the impact they have on others. To better understand the problem of practice, I sought feedback from teachers and students at various points to determine the best

approaches for addressing the problem of teaching analytic thinking and writing. Through that process, I had to consider the perspectives of many individuals and how they can best support students.

Within this study, these leadership ideas come to fruition most clearly in the administrator's relationship with the department chairs. In this study, I worked closely with the two department chairs in the areas of analytic thinking and writing. I interviewed them prior to developing the study to get an understanding of the root causes of the problem and collaborated with them when developing the topics of the professional development sessions. As an additional layer of leadership in our district, I have learned that one of my responsibilities is to develop their skills as leaders and empower them to take ownership of department initiatives. In this study, I was the one driving the intervention, but in future areas of focus, it will be important that I take on the role of collaborator around the direction of the department and offer support in setting that direction without setting it myself.

Another key element of working with department chairs is to develop positive, collaborative relationships with them. While this study took place over the course of six weeks, there were years of relationship building that occurred leading up to this study that allowed for the study to be collaborative. Those previous years included listening to the department chairs and supporting them as they tackled the challenges of the pandemic and how education has changed. It also included myself as a leader facilitating meetings alongside the department chairs to show that I am fully invested in the work of the reading and English departments. At times, that also meant helping the department chairs seek resources outside of the district to provide professional development for all teachers. As shared through the study, department chairs sometimes feel that they are required to be the expert in their content area and do not always get the chance to

participate in professional development; therefore, it is my job as their leader to connect them with learning opportunities so that they also get a learning experience while they are also getting a leadership experience. To improve the department chair model, it would be helpful to systematically provide department chairs with more dedicated time during their school day to focus on department chair responsibilities and department initiatives.

Finally, and most importantly, a leader is most effective when they can walk with their teachers through challenging problems. In this study, I had the privilege of being invited to co-teach one of the lessons a teacher was trying out. I recognize that this invitation was only offered because of the relationship I have fostered with this teacher as they have worked through changes to their instructional practice with me. Having the trust of the staff to be able to collaborate to the level where teachers invite their administrators to co-teach with them is an incredible honor and the most valuable experience I can have as an instructional leader. Some teachers have the experience that administrators lose sight of what it is like to be in the classroom and make decisions without that perspective. As such, school leaders must continuously find ways to remain connected to their teachers and students to have a pulse on the challenges facing education. Not only will this lead to better solutions to problems, but it will also lead to deeper trust with teachers and students, especially when having to make difficult decisions.

5.2 Reflections on Improvement Science

Improvement science can be the engine that powers educational leadership. The tools used in the improvement science methodology are user-friendly and easy to replicate across any problem faced in education. As a result of learning about improvement science through the EdD

program, I created a graphic (Figure 5.1) summarizing the improvement science process. This is adapted from the works of Bryk et al. (2015), Hinnant-Crawford (2020), and Mintrop (2020). I keep this flowchart in my office and have referred to it to think through various problems of practice.
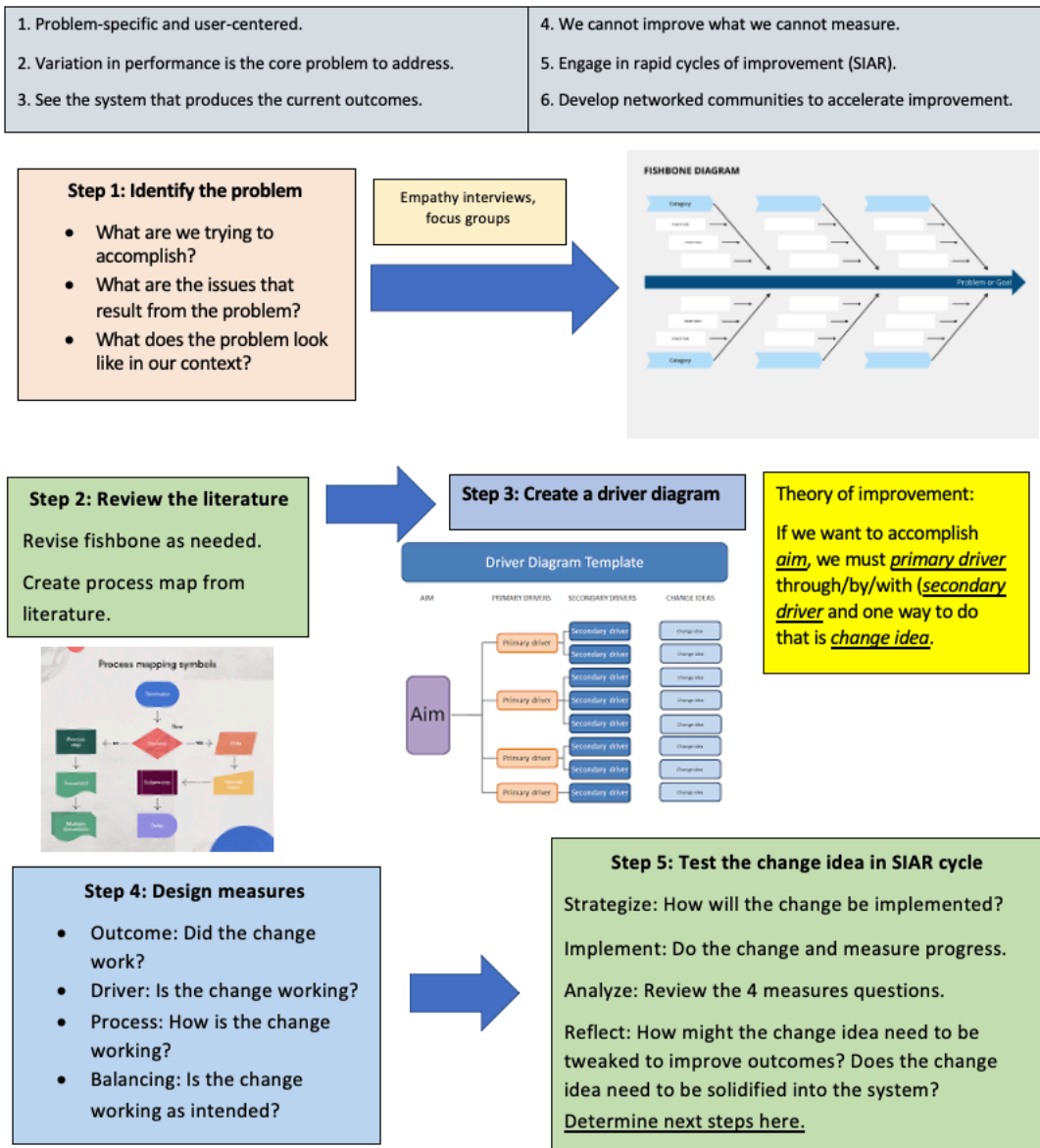

Figure 5.1 Improvement Science Process

Of the components of the improvement science process, one of the most helpful elements has been the driver diagram. The driver diagram, as defined by Hinnant-Crawford (2020), includes the ideal outcomes, the parts of the system that can be improved, and possible changes that can be implemented to realize that systemic improvement (p. 119). In my dissertation process and when approaching problems of practice, the driver diagram has been helpful in excavating the various causes of a problem. I am often solution-oriented, and the driver diagram reminds me that to find appropriate solutions, the root causes of complex problems must first be explored. I have used versions of driver diagrams with my colleagues, and they have helped us consider root causes that we had not thought of before. These diagrams have also helped me to identify root causes that are within and outside of my control. Being able to acknowledge that some root causes are outside of my sphere of influence has been a powerful takeaway for myself and my colleagues as we determine what aspects of a problem we can address in order to make progress for change.

Along with the driver diagram, the PDSA cycle process has been a very applicable, practical, and replicable tool from improvement science. PDSA cycles are defined as trial and learning methodology through which the researcher implements an intervention that is system-specific and studies its impact through measurable outcomes (Hinnant-Crawford, 2020). In Figure 1.6, I describe PDSA cycles through the four parts of strategize, implement, analyze, and reflect. While this dissertation involved implementing the plan, do, and study elements of a PDSA cycle, I have found the tool to be very helpful when implementing with a team of colleagues who are invested in seeing the problem of practice improve. From this dissertation, the next iteration of the PDSA cycle will be to act on further professional development related to analytic writing strategies. Since the professional development structure worked well for analytic thinking, I will create another series of professional development sessions that focus on analytic writing strategies

and the research behind effective writing practices, which will be followed by a period of time where teachers can implement a strategy that we will debrief altogether after teachers have had time to implement. Another key to PDSA cycles is ensuring that there are measures that will indicate whether the problem is being addressed or if the problem is affecting other aspects of the system. Defining these measures ahead of time allows for the practitioner to be able to monitor success and adjust the intervention if needed. For the PDSA cycle focused on analytic writing, an additional measure will be to examine student writing, which responds to the department chair feedback about needing to calibrate scoring of analytic writing.

Another important reflection was the scope of impact for the improvement science process in this study. PDSA cycles are designed to be short, but they also don't lead to significant changes within one cycle since the purpose is to create future iterations of the cycle. This study allowed me to begin what will be an ongoing effort to improve teachers' ability and capacity to teach analytic thinking and writing in middle school ELA classrooms. Future PDSA cycles will include focusing on analytic writing strategies, which teachers shared in their reflections on the current PDSA cycle. Another cycle may include having teachers engage in the act of writing their own response to an analytic writing prompt, which will show depth of understanding related to analysis beyond just understanding the definition of analysis. A leader with an improvement mindset will always think about the next iterations of improvement given that one cycle is not enough to make significant change. As a leader, it is important to build the rationale for these changes among teachers so that they buy into the work that comes with improvement science.

One of the ways to build that buy-in with teachers is to have them engage in improvement science in other areas of their work. As I mentioned above, I have used elements of improvement science to problem solve for challenging student cases where we used fishbone diagrams to

identify the root causes of challenges that a particular student is dealing with. We also have used PDSA cycles to develop routines for data meetings among our ELA, math, and science teachers. We planned the initial data meetings over the summer with the department leaders to engage the stakeholders who are closest to the problem, which is how we can improve student outcomes in tested subject areas. We implemented the first data meeting in September and sought feedback about what worked and what needed to be improved and revised the structure of those meetings when we met again in December. This iterative process has allowed teachers to have collaborative time and has led to collective learning about the best ways to improve student performance. The benefit to this structure is that teachers have an integral voice in the improvement process, which builds their buy-in and creates more lasting change. Finally, engaging others in the improvement science process also helps build their own capacity for engaging in improvement science in their own practice as an educator.

5.3 Growing as a Scholarly Practitioner

School leaders face many challenges and engage with various degrees of problems of practice daily. The heart of an EdD program is that candidates learn how to address these problems of practice and effect meaningful, systemic change. Some may think that being a scholarly practitioner is about learning to connect theory and research to practice. That connection is an important component; however, my EdD studies have taught me that to address problems of practice, a scholarly practitioner must not only examine research but also the contextual factors that impact the problem. Without taking the view that both research and context-specific elements matter, a scholarly practitioner will function either as uninformed or misguided. Without research,

a practitioner is unable to identify research-based practices for addressing a problem. Without context, a practitioner is unable to determine the appropriate ways to apply research and theory to a specific system.

In addition to having a solid understanding of the research resources and contextual elements that impact a problem of practice, scholarly practitioners must also be systems thinkers. Schools and districts are a complex set of systems that cannot be easily influenced or changed because of the history that has built a system to function the way that it does. Therefore, scholarly practitioners must dedicate time to understanding the various elements of a system by getting to know those who are most closely connected to the problem of practice. Scholarly practitioners must engage in interviews and focus groups where they talk to the users in a system who are affected by the problem. These conversations can reveal the emotions and roadblocks that exacerbate a problem and may lead to new solutions that are user-centered. Moreover, it will take the work and dedication of those users to make meaningful change toward solving a problem.

One of the future areas of study within my school context will be the exploration of how to help high-performing students grow academically. In this study, teachers shared that their high-performing students struggled with the lack of direct answers associated with analysis of text. One of the department chairs also shared that teachers need better strategies for supporting growth among high-performing students, which make up the majority of our school. An examination of my school's growth data over years also shows that high-performing students do not grow on standardized assessments. While high-performing students were challenged by the instructional strategies used in this study, there is a need for bolstering teachers' toolboxes with an array of instructional strategies that will support the growth of high-performing students. One possibility would be to leverage instructional strategies that engage students in writing more frequently. As

we collaboratively identify those strategies, the structure of this study through professional development sessions is an applicable way to test out those strategies. Starting with a professional development session that defines the area of focus and creates common understanding of the problem, followed by a session that introduces and provides models for how to structure a lesson using research-based instructional strategies, is a great way to introduce teachers to applicable strategies that can be applied to their classrooms. Crucial to this process would be the time to trial the strategies with students followed by a third session where teachers come together to discuss strengths and challenges with the implementation of those strategies. The conversations that emerged from the third session during the study were beneficial for troubleshooting implementation and are needed to solidify teachers' implementation of the new strategies.

As I developed this study and implemented the three professional development sessions around analytic thinking, another area of scholarship that I am exploring is implementation science. The research that I found related to analysis in ELA classrooms has been largely conducted over a decade ago. However, the gap between the scholarship and implementation in classrooms remains large. While the research is present, there is a disconnect in how that research gets translated into classrooms. Some researchers, including Hamilton et al. (2022), assert that this generation of educational research needs to focus on implementation and improvement. Hamilton et al. (2022) posit a framework for leaders around how to systematically implement research-based strategies. Part of their framework that intrigues me is the idea of de-implementation, which they define as the initiatives that will cease in order to make room for initiatives that will have a genuine impact on the system.

As we have developed systems in education, there is a focus on adding new or different processes or initiative to a system that is already very taxed. These compounding initiatives are

referred to in Hamilton et al. (2022) as "initiative fatigue." I can see this occurring in my place of practice, especially as we have shifted our views of education since the COVID-19 pandemic, which has required us to respond to student needs and gaps in learning differently. It is even possible that initiative fatigue would set in because of elements of my study. I did not make space for a focus on analytic writing but instead found time within teachers' existing school day to train teachers on best practices that they can implement in their classrooms. One way that I could have approached my study would be to give teachers the freedom to de-implement a practice like narrative writing to focus on analytic writing. As I continue my scholarly endeavors around improving student outcomes, I look forward to investigating more about implementation and improvement science and using those tenants to guide my practice as a scholarly practitioner and leader.

5.4 Conclusion

The EdD experience and implementation of improvement science within a place of practice has shifted my perspective on how to approach problems in education. Seeing the whole system is a key factor in being an educational leader. Understanding a system also requires knowing the context and history of the place of practice. The study of analytic writing instructional strategies in middle school ELA classrooms provided me the ability to examine the context and various other factors that cause analysis of text to be a challenge for middle school students. By talking to those closest to the problem and developing a structure that allowed teachers to learn research-based practices and implement them, I was able to study how a change idea can impact a system. More importantly, I was able to see how to use data to track the effectiveness of a change idea and

develop a plan of action for subsequent changes. This iterative process of improvement is one that will help my place of practice and me continue to get better at identifying the root causes of problems, developing interventions to address the problem, measuring the success of that intervention, and creating a follow-up intervention to further address the problem. It is this cadence and rhythm that will allow educators to successfully attack the complex problems faced today.

PASSAGE 2

Read the following science fiction passage about penguin research on a space station. Then answer question 8 in your answer booklet.

The Penguin Whisperer

by Guy Stewart

When Candace Mooney walked into the space station *Courage* Penguin Research Lab, Dejario Reynas had a penguin in his lap and two at his knees.

"What are you doing?" she exclaimed.

Dejario stood up quickly, sliding the penguin to the floor. "I'm not playing with them," he said, a guilty look on his face. "I'm collecting data."

The PRL was an inner-ring lab of *Courage*. Emperors were adapted to extreme temperatures and pressures, and scientists studied how they could go from deep ocean water to the surface like little submarines. Finding out how emperors stored oxygen in muscle tissue and survived sudden pressure drops might keep people alive longer during loss-of-pressure emergencies.

Candace rolled her eyes. "What kind of data?"

"Um, how wing length can be used to predict diving speed . . ."

Candace shook her head. "You were trying to be a penguin whisperer again." She tugged on her gloves, grabbed a squeegee, and started pushing frigidly cold salt water across the floor to the recycle vents. "Grow up, Dejario. Penguins stopped being our pets when we were ten and a half. They're just lab animals now."

Dejario herded the emperors up a ramp to the Antarctic habitat and shooed them inside. "The birds listen to me!" he insisted, his breath making a cloud in the frosty air. "They do!"

Candace stared at him. "You're wasting your time. Besides, your dad said to stop it. It bothers the penguins."

"Dad doesn't understand the emperors like I do!"

"Yeah, sure. He's only the Lead Veterinary Researcher." Candace went back to cleaning the floor, vents, walls, and tables. Her Intensive Training Team was currently in charge of keeping the PRL clean and the penguins fed. She glanced into the penguin habitat through an immense transpaluminum window. The birds seemed so playful and happy—waddling, diving, swimming—chasing their live food for sport before eating it. Candace sighed. When she was ten, she'd loved penguins. She used to watch them for hours. But that seemed so long ago, well before she'd been accepted by the ITT and begun her science rotation. The PRL's research was much too important for fooling around with the animals.

"Playing with penguins, like a kid," Candace muttered. She shoved her squeegee around Dejario's boots, making him jump out of the way. "What a big fat waste of lab time."

Candace heard her mother's voice over the public address. "This is not a drill. Micrometeoroid impact and penetration of Inner Ring, Life Science Quadrant, Section Two. All quadrants have been sealed and are on independent life support. Please remain calm and stay in your section. Rescue or maintenance staff will contact you when your area has been secured."

"That's across the hallway," Dejario said. His breath came out as a puff of fog.

The intercom lit up again. "Candace, are you there?"

In two steps, she was across the lab. Her own breath made a cloud as she answered, "I'm here with Dejario Reynas, Mom. We're fine."

Dejario said, "Have you heard from my dad?"

"We're still contacting all the sections. Stay there. Station Control, out." The intercom clicked off.

"Mom? Mom!" Candace said, but the intercom stayed silent. She banged it with her fist in frustration and then backed away as sparks flew out and sizzled.

"You and your temper!" Dejario said. "Talk about growing up. Now you've broken it!"

"I didn't break it! It's probably fine."

"Then why'd it spark?"

They glared at each other. Sometimes Candace wondered why they were friends at all. But she had to admit that sparring with Dejario could lead to unusually interesting ideas.

"It's colder in here than it was before." He turned his head toward the tank. "There's a skin of ice on the water."

It was always cold in the PRL, but Candace had never seen ice on the pool before. Usually, silverfish with antifreeze for blood flicked freely through the water. They were food for the penguins, but scientists also studied how the sleek fish were able to stay flexible at sub-zero temperatures. She checked the habitat monitor. "Water and air temperatures have already dropped a lot," Candace confirmed.

"Let me see," Dejario said, elbowing her out of the way. "The temperature is dropping almost a degree a minute! At that rate, the water will be frozen solid in an hour. In less than two hours the carbon dioxide in the air will start to freeze."

"Won't we be back on the sunny side of Earth soon? That should give us some time."

Dejario thought. "We're in geosynchronous orbit over Auckland, New Zealand, this month. Night just fell, so we'll be in Earth's shadow for twelve hours. If someone doesn't fix the heaters, we'll be corpsicles."

"Don't say that!"

"Why not? It's true."

Candace had lived on *Courage* long enough to know that the possibility was real. Researchers on this and other stations were occasionally lost in accidents. The risk went with the assignment.

Dejario slumped against the habitat window. Candace shook him. "We can't just give up, Dejario! Can't you think of anything?" She gazed into the penguin habitat. "How do the emperors survive?"

"During the worst storms, they huddle."

"Just huddle? That's all?"

"Well, the whole flock bunches together as tightly as it can. That way the birds in the middle keep warm enough not to freeze."

"Then the ones on the edge just die?"

He looked up at her in alarm. "Oh, no! They wiggle their way in toward the center, then migrate back out to the edge, then squeeze back in again. It's a behavior called colloidal jamming. Scientists in the early twenty-first century recorded it."

"What kind of jam?"

"Jamming! The massing penguins modulate metabolic heat loss by dispersing through the huddle in coordinated periodic waves . . ."

"English, Dejario! English!"

He took a deep breath, letting it out slowly in a gelid cloud. After a thoughtful moment he said, "You ever make dough?"

"Yeah. With Mom."

"Kneading dough forces the dry flour into contact with the milk and eggs until the mixture is evenly wet and dry. Right?" He glanced into the habitat. The penguins were beginning to crowd together, each squeezing and jamming the others while slowly migrating through the huddle, keeping the flock evenly warm. "Like that."

Candace shivered as she studied the undulating wave of penguins. The ice on the pool was now four centimeters thick. "Could we join their colloidal jamming—it sounds like the name of a band— until we get help?"

"Maybe. But Dad's right, penguins don't like people around them."

"No problem," Candace said, forcing a smile. "You're the Penguin Whisperer. They like you."

A booming, moaning sound vibrated through the PRL's walls—ice forming and expanding in the confined space. The intercom by the door sparked again.

"They have no idea what's going on in here," Candace said. "They think we're safe and sound. Whispering to your penguins to let us huddle with them is the only way we'll get out of this . . . alive." She took a final reading on the monitor station as the ice cried out again. "Air temp is –27°C."

Dejario took her hand. "Come on. Slowly." He slipped on the icy floor as he turned, and Candace helped him to his feet. Together they walked clumsily up the frozen ramp and unlocked the habitat door.

Peering inside, Dejario took off his gloves and threw them onto the ice and then knelt down, shoving his hands into his pockets. Candace followed his lead, and together they skidded on their knees to the edge of the waddle of penguins.

A large emperor nipped his jacket as Dejario sidled near. Dejario didn't flinch. He whispered calmly and soothingly until the penguins seemed to recognize him and allow him into their huddle.

Candace wasn't so lucky. After she received two warning nips from skittish penguins, an especially large bird bit her hand. Though tears sprang to her eyes, Candace didn't make a sound. Without thinking, she reached over and pinched the emperor back. It squawked and made room for her.

She was not nipped again as she and Dejario were carried on a kind of wave to the warm center of jostling penguins. Continually moving, they flowed out again to the edge of the huddle and then turned and were folded back into the scrum.

They'd gone through the waddle four times when the rescue crew, looking like shiny abominable snow monsters, arrived in their white hazmat suits. They picked up Candace and Dejario and rushed them out of the PRL to a warm physics lab. A rescuer popped her helmet off and exclaimed, "It was sixty-eight below zero in there!"

Candace looked at Dejario and said through chattering teeth, "What's the w-worry? The Penguin Whisperer and I were just doing the colloidal penguin jam."

"The what?"

Candace and Dejario burst out laughing. Finally Dejario managed to say, "I predict it will be a dance craze that will sweep the station."

Text-Dependent Analysis Prompt

8. The penguins play an important role in the passage. Write an essay analyzing how the author uses the penguins as a means to reveal characteristics of both Candace and Dejario. Use evidence from the passage to support your response.

Writer's Checklist for the
Text-Dependent Analysis Prompt

PLAN before you write

- Make sure you read the prompt carefully.
- Make sure you have read the entire passage carefully.
- Think about how the prompt relates to the passage.
- Organize your ideas on scratch paper. Use a thought map, outline, or other graphic organizer to plan your essay.

FOCUS while you write

- Analyze the information from the passage as you write your essay.
- Make sure you use evidence from the passage to support your response.
- Use precise language, a variety of sentence types, and transitions in your essay.
- Organize your paper with an introduction, body, and conclusion.

PROOFREAD after you write

☐ I wrote my final essay in the answer booklet.

☐ I stayed focused on responding to the prompt.

☐ I used evidence from the passage to support my response.

☐ I corrected errors in capitalization, spelling, sentence formation, punctuation, and word choice.

Score	Description
4	• Effectively addresses all parts of the task demonstrating in-depth analytic understanding of the text(s) • Effective introduction, development, and conclusion identifying an opinion, topic, or controlling idea related to the text(s) • Strong organizational structure that effectively supports the focus and ideas • Thorough analysis of explicit and implicit meanings from text(s) to effectively support claims, opinions, ideas, and inferences • Substantial, accurate, and direct reference to the text(s) using relevant key details, examples, quotes, facts, and/or definitions • Substantial reference to the main idea(s) and relevant key details of the text(s) to support the writer's purpose • Skillful use of transitions to link ideas • Effective use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Few errors, if any, are present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present do not interfere with meaning
3	• Adequately addresses all parts of the task demonstrating sufficient analytic understanding of the text(s) • Clear introduction, development, and conclusion identifying an opinion, topic, or controlling idea related to the text(s) • Appropriate organizational structure that adequately supports the focus and ideas • Clear analysis of explicit and implicit meanings from text(s) to support claims, opinions, ideas, and inferences • Sufficient, accurate, and direct reference to the text(s) using relevant details, examples, quotes, facts, and/or definitions • Sufficient reference to the main idea(s) and relevant key details of the text(s) to support the writer's purpose • Appropriate use of transitions to link ideas • Appropriate use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Some errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present seldom interfere with meaning

2	• Inconsistently addresses some parts of the task demonstrating partial analytic understanding of the text(s) • Weak introduction, development, and/or conclusion identifying an opinion, topic, or controlling idea somewhat related to the text(s) • Weak organizational structure that inconsistently supports the focus and ideas • Weak or inconsistent analysis of explicit and/or implicit meanings from text(s) that somewhat supports claims, opinions, ideas, and inferences • Vague reference to the text(s) using some details, examples, quotes, facts, and/or definitions • Weak reference to the main idea(s) and relevant details of the text(s) to support the writer's purpose • Inconsistent use of transitions to link ideas • Inconsistent use of precise language and domain-specific vocabulary drawn from the text(s) to explain the topic and/or to convey experiences/events • Errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present may interfere with meaning
1	• Minimally addresses part(s) of the task demonstrating inadequate analytic understanding of the text(s) • Minimal evidence of an introduction, development, and/or conclusion • Minimal evidence of an organizational structure • Insufficient or no analysis of the text(s); may or may not support claims, opinions, ideas, and inferences • Insufficient reference to the text(s) using few details, examples, quotes, facts, and/or definitions • Minimal reference to the main idea(s) and/or relevant details of the text(s) • Few, if any, transitions to link ideas • Little or no use of precise language or domain-specific vocabulary drawn from the text(s) • Many errors may be present in sentence formation, grammar, usage, spelling, capitalization, and punctuation; errors present often interfere with meaning

Appendix B Teacher Survey

Appendix B.1 Analysis Instruction Survey

Pre/Post Survey
Link to Pre-Survey
Link to Post-Survey

1. What grade do you primarily teach?
   a. 7th grade
   b. 8th grade
2. What department do you primarily work with?
   a. English
   b. Reading

Section 2: Understanding of Analysis

3. On a scale of 1-5, how important is analytic writing in your curriculum?
   a. 1. Not important
   b. 2. Slightly important
   c. 3. Moderately important
   d. 4. Very important
   e. 5. Extremely important

4. On a scale of 1-5, how comfortable are you with teaching analytic **thinking**?
   a. 1. Not at all comfortable
   b. 2. Slightly comfortable
   c. 3. Moderately comfortable
   d. 4. Very comfortable
   e. 5. Extremely comfortable

5. On a scale of 1-5, how comfortable are you with teaching analytic **writing**?
   a. 1. Not at all comfortable
   b. 2. Slightly comfortable
   c. 3. Moderately comfortable
   d. 4. Very comfortable
   e. 5. Extremely comfortable

6. Which of the following is the best definition of analysis?
    a. Reading a text to identify the larger message the text is communicating about the world.
    b. Examining the literary elements of a text (i.e., structure, language choices) to draw conclusions about its themes, message, tone, purpose, etc.
    c. Making an argument about the quality and literary merit of the text
    d. Summarizing a text, identifying the key word choice decisions the author made, and identifying the theme and tone of a text

7. Rate how comfortable you are with the following instructional strategies related to analysis.

	Not at all comfortable	Slightly comfortable	Moderately comfortable	Very comfortable	Extremely comfortable
Think alouds					
Facilitating group discussions (i.e., Socratic seminars					
Conferencing with students about their writing					
Close reading process					
Facilitating peer revision					

Section 3: Collaboration and Lesson Planning

8. In your average class, how many instructional activities related to analysis do you incorporate into your lesson plans on a weekly basis?
    a. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more

9. Which aspects of your written curriculum and ELA standards are aided by a focus on analysis? Check all that apply.
    a. Vocabulary
    b. Reading literature standards
    c. Reading informational text standards
    d. Grammar
    e. Writing
    f. Speaking and listening standards
    g. None
    h. Other (Google Forms allows participants to add their own categories.

10. In the past three years, how often have you collaborated with your department colleagues about analytic thinking and writing?
   a. Very frequently
   b. Frequently
   c. Occasionally
   d. Rarely
   e. Never

11. Rank the following professional development opportunities in order of how useful they would be to support your ability to teach and assess analysis.
   a. More collaboration time with colleagues
   b. Training from the local Intermediate Unit
   c. Professional development about foundational reading and writing skills
   d. Reviewing student writing together to determine high quality responses
   e. Selecting new texts to use to teach analysis

Appendix B.2 Teacher Reflection Survey (completed between session 2 and 3)

[Link to reflection survey](#)

1. Which analysis technique did you use?
   a. Close reading
   b. Discussion

2. On which day or days did you use this technique?

3. In what ways did students demonstrate analysis skills while engaging in the technique?

4. How did students struggle to engage in the analysis technique?

Appendix C Professional Development Outline

- Session 1: Understanding Analysis
    - Definition of analysis, according to PDE
    - Analysis as the cornerstone of middle school ELA classrooms
    - Explanation of the components of analysis
        - Analytic thinking
        - Analytic writing
    - Best instructional practices for teaching analysis
        - Analytic thinking with writing connection
            - Close reading
            - Discussion techniques
    - Follow-up: Bring a unit/ series of lessons that will be taught in the next few weeks to the next session.

- Session 2: Collaborative Planning
    - Use analysis teaching techniques handout to plan an upcoming lesson that incorporates instructional strategies related to analysis.
    - Model instructional practices with "Tell-Tale Heart" by Edgar Allan Poe
        - Close reading questions
        - High-demand discussion techniques
    - Collaboration time with grade-level colleagues using the unit that teachers brought for the session.
    - Follow-up: Complete reflection Google Form after using either close reading or high-demand discussion techniques

- Session 3: Debriefing
    - Small groups (with the same grade level/ course groups as before)
    - Guiding questions for small group discussion
        - What strategies went well with students? How do you know?
        - What strategies need more time to implement well?
        - Where in future units could these strategies fit?
        - What further areas are needed for support of your ability to teach students to analyze?
    - Whole group debrief
        - What did you learn about using analysis activities in your classroom?

Appendix D Department Chair Interview Questions

1. What are your reflections about the professional development overall? What went well and what could have gone better?

2. What are your recommendations for further professional development about analysis instruction?

3. We spent a lot of time talking about instruction. What are your experiences with creating curriculum around analytic thinking and writing?

4. What are your experiences with creating assessments and analyzing assessment results around analytic thinking and writing?

5. As leaders, what do your departments think about the focus on analysis instruction?

6. As the leaders of the reading and English department, what are the strengths of the department chair model? What are the challenges of the department chair model?

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