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# Systematic Reflective Records:

## An Unexpected Journey into Teacher Inquiry

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**Abstract**

Historically, formative assessment has been credited with increasing student achievement. Student outcomes increase when constructive, immediate, formative feedback is provided in a systematic way for all students. Educators need to implement effective formative assessments in order to deepen learning through more critical thinking and reflection. Teachers who monitor student progress and make instructional adjustments based on gathered information implement formative assessment. Teachers in this study used teacher inquiry to reflect upon their practice in order to design a reflective record tool. This tool was intended as a supporting assessment in a Response to Intervention (RtI) service delivery model. Results showed teacher reflections in designing and field-testing a systematic reflective record tool.

**Keywords**: formative assessment; reflective records; teacher inquiry; alternative assessment; and systematic assessment

### Introduction

The authorization of Every Student Succeeds Act (ESSA. 2015) is the next iteration of the No Child Left Behind (NCLB, 2002) act and requires that states assess students in mathematics and literacy each year in grades three through twelve and once in science in grades three through five, once in grades six through nine, and once again grades nine through twelve. These federal United States laws couple state and district funding with district compliance with these mandates. It has been well established that states wishing to receive funding must use a compliment of assessments to monitor student progress. These assessments must include multiple measures and assess higher order thinking skills and the data must be disaggregated within the state, district, and school.

In the state of New Jersey, administrative code requires that students receive interventions through a scientifically-based intervention program related to the area of weakness (NJAC, 6A:14). Policy and law are pushing the educational reform agenda to address the needs of low achieving students in new ways that are innovative and responsive. The State, in response to federal requirements to develop evidence-based interventions for improving student achievement, has designed a framework called the New Jersey Tiered System of Supports (New Jersey Department of Education NJTSS, 2019). This framework calls for "…academic and behavioral supports and interventions to improve student achievement, based on the core components of the multi-tiered system of supports (MTSS) and the three-tier prevention logic of Response to Intervention (RTI)." (New Jersey Department of Education NJTSS, 2019). While the framework includes several complimentary components

for implementation such as family and community involvement, strong school leadership, and positive school climate and culture, our work focuses on the components closely related to instructional practice. These include the RtI delivery model of instruction, universal screening (assessments), and data-driven decision making. In looking to make instructional decisions for improved student achievement, teachers must have the proper assessment tools to inform their instruction, including reflective tools. The manner in which a teacher or other educational professional collects data, both formal and informal, is critical to addressing the achievement gap and monitoring student progress. It has become the responsibility of teachers to not only collect data, but use data in meaningful ways that inform instruction (Dana & Yendol-Hoppey, 2020). Therefore, teachers must use assessment tools that maximize a teacher's ability to gain insight into a student's achievement but are also simple, effective and user friendly.

While it is a requirement for states and school districts to collect quantitative data per federal and state regulations, it is also critical that schools incorporate methods for collecting qualitative data that provides additional information about a student's achievement, behavior and performance. Reflective records in the literacy classroom allow a teacher to observe, document and explain events and student behaviors in the classroom. In some cases, this 'small data' can be more valuable in increasing student achievement (Honan, 2015). Reflective records are a critical component of the overall assessment landscape because of their larger impact on student achievement. Our research reimagined how one could engage teachers by taking an inquiry stance (Cochran-Smith & Lytle, 2009) to develop a reflective tool to best serve their student needs in an intervention service delivery model. We asked teachers to engage in the development of a reflective records tool, allowing them the opportunity for reflection and inquiry revolving around the tool, their practice, and student performance. Our research questions were as follows: What reflections did teachers have on the development and utilization processes for a reflective records tool? How helpful did the teachers find the tool in collecting student reading data to provide timely and accurate feedback? Secondarily, as researchers, we explored how the inquiry environment propelled teacher professional growth revolving around assessment.

**The Response to Intervention (RtI) Service Delivery Model: An Overview**

In order to deploy interventions and augment student achievement, school districts must implement a service delivery model based in research on effective practice. One popular service delivery model that has been included in legislation (IDEIA, 2004) is Response to Intervention (RtI). This model is also referenced in the NJTSS (New Jersey Department of Education, 2019) as an exemplary model. RtI works under the assumption that varied intensive levels of instruction are required in order to remediate academic (or behavioral) difficulties in children. It is within the framework where interventionists – teachers responsible for deploying such interventions – can explicitly teach strategies based on the specific needs of their students. The framework consists of a triangle in which the level of intensity increases as students move up the triangle and receive more intensive interventions.

**Figure 1.** *Response to Intervention Triangle*

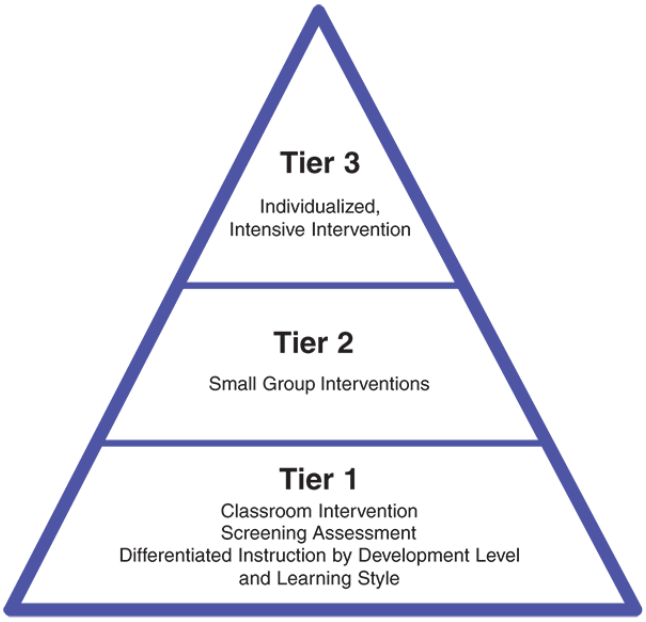


Figure 1 displays the various levels of intervention. There are three levels of instruction. Tier 1 instruction consists of general education instruction accessible to all students. Tier 2 instruction consists of higher intensity instruction; generally, in a pull-out and smaller group setting. Research suggests that approximately 15% of students require interventions at Tier 2. Similarly, Tier 3 intervention consists of even higher intensity instruction in a pull-out setting in a very small group (or individual) setting. Tier 3 interventions are required for an even smaller group of students, approximately 5% (Fuchs & Fuchs, 2007, Fisher & Frye, 2010). In essence, the RtI service delivery model consists of five core values: a multitier approach, student assessment in decision-making, evidence-based interventions, maintenance of procedural integrity, and development of systems in place (Glover & DiPerna, 2007). The focus of this paper is to consider how teacher inquiry led a group of educators to ask critical questions in developing a tool for collecting reflective records. The intent is to better understand how the inquiry cycle was used to gather information on the development of the tool to better document student performance to inform instructional practice using the RtI model.

## Reflective Records: An Assessment Tool to Provide Feedback

The process of giving and receiving feedback is important in the learning process. Early research by Vygotsky (1978) suggests that social interactions in a systematic manner support cognitive growth. Further, research by Bandura (1977) links self-efficacy and academic performance. Bandura's (1977) lists sources of self-efficacy, one of which includes receiving feedback from others. From the early theories of learning to today, feedback from others has been a fundamental driver in improving student academic performance. It is within this feedback where the learner is then able to develop an accurate portrayal of his or her beliefs and abilities in academic learning. This makes accurate feedback critically important to the learning process. Teachers must be equipped with the tools necessary to provide clear, succinct, appropriate feedback in order for a student to demonstrate growth.

More recent research has focused on how feedback is linked to more specific learning theory (Thurlings, Vermeulen, Bastiaens & Stijnen, 2013) and how various types of feedback can provide students with individualized and personalized levels of learning support (Hattie & Timperley 2007; Hattie & Yates, 2014; Hattie, et al., 2013) in hopes that feedback enhances learning outcomes. Thurlings, et al., (2013) suggests that key learning theories such as behaviorism, cognitivism, social cultural theory, metacognitivism, and social constructivism are directly linked to feedback, and the feedback derived from behaviorism is most direct, whereas all other feedback is more complex. It is clear that immediate feedback has a strong basis in learning theory and researchers have designed tools to collect feedback in systematic ways, but we endeavored in the process of allowing tool development to be part of the teacher inquiry process. Considering feedback is most effective when immediate, corrective, focused, and specific where students are guided to the correct solution or answer, and is task oriented (Thurlings, et al., 2013), teachers should be engaged in asking critical questions, using an inquiry stance (Cochran-Smith & Lytle, 2009), about the effectiveness of the feedback tool as s/he uses the tool itself. Thus, using the inquiry process allows educators to reflect on the most effective way to provide this necessary feedback in a way consistent with educational psychology research.

Authentic assessment allows for the teacher to take an active role in observing students' reading experiences (Boyd-Batstone, 2014). These assessments can come in various forms including certain methods of teacher observation. Reflective records are an authentic assessment and a way to assess students' processes and products and allow the teacher to record a range of experiences, and, at times, some unintended outcomes of reading abilities (Boyd-Batstone, 2014, Rhodes & Nathenson-Mejia, 1992). Specifically, a reflective record is a narrative taken while observing a specific skill or behavior (McFarland, 2008). The teacher observes and records both objective and subjective annotations in a way that allows her to capture success, failure, engagement, and motivation (Dana & Yendol-Hoppey, 2020). Reflective records are powerful tools, as they tell the story of the individual reader and are "…a vehicle for helping us make sense of what students do as readers and writers." (Rhodes & Nathenson-Mejia, p.503). Reflective records can be standards-based and should include clear, observable data with specific observations (Boyd-Batstone, 2004). This can sometimes be a struggle for teachers, as they may need assistance in identifying standards and observations to glean the most accurate picture of a child's reading ability. This is a skill that must be developed or scaffolded for teachers through teacher inquiry. This is where we found the opportunity to engage teachers in their own reflection, critical thinking, and inquiry as a way to improve the manner in which feedback is collected. In fact, it is interesting to note that there are often times a gap between the feedback the teacher thinks s/he provides and the feedback the student thinks s/he has received, known as the empathy gap (Hattie & Yates, 2014). This presents an interesting disparity regarding feedback, as teachers think they do it often and well, while students do not. If the purpose of feedback was made clear and a user-friendly system was put in place, perhaps the gap would not exist. Much of what a teacher observes is objective and requires the teacher to have a trained eye (Goodman, 1985; Clay 1993). When the teacher conducts an analysis of reflective records this allows her to make inferences, identify patterns, and identify strengths and needs. The analysis should include specific evidence and examples to support any evaluations or inferences (Boyd-Batstone, 2004, Rhodes & Nathenson-Mejia, 1992). Once again, this research indicates the systematic methodology needed to gather reflective data, but additional support must be given to the teacher in order to do this most effectively, and teacher inquiry is a powerful way in which to provide this support.

When used effectively, a reflective record can be an invaluable tool for teachers and students and can assist in the learning process. Teacher feedback and participation is necessary to reflect upon practices in collecting this type of data and to develop a tool that makes data collection timely, efficient, and user-friendly to the teacher. Engaging teachers in a research process whereby they ask reflective questions about how to design their own tool helps to maximize the effectiveness and usefulness of a reflective record.

**Empowering Teachers in the Development Process Through Inquiry**

The primary crux of this study was to empower teachers to develop an assessment tool that allows them the opportunity to provide students with corrective feedback. By having teachers involved in this process there would be greater potential to close the empathy gap (Hattie & Yates, 2014) mentioned previously. Moreover, it was important for the teacher participants in this study to reflect on their instructional experiences. As the researchers, we were intentional to make teachers the action-researchers in this study because of the professional power involved in developing their own assessment tools.

Empowering teachers to have first-hand experience in developing, using, and reflecting upon an assessment tool for reading instruction was aimed at improving teachers' understanding of student reading in order to make deliberate instructional decisions. Teachers, after all, are in the classroom on a daily basis teaching and assessing specific reading skills; they ought to be the developers of the tool in which they will assess students. Even recently, informal teacher experiences through ethnographic inquiry have significant value to teacher growth (Gillis & Mitton-Kükner, 2019) through supports from school leaders.

It has become more prevalent for pre-service (Puustinen, Säntti, Koski, & Tammi, 2018; Rinke & Stebick, 2013) and in-service teachers (Dann, Czerniawski, Dixon, & Hanley, 2018) to be researchers in their own classrooms to problem solve instructional concerns with students and the curriculum. Teacher inquiry is naturally designed to enhance professional development, data-based decision making, differentiated instruction, and teacher evaluation (Dana & Yendol-Hoppey, 2020) because it is based on the premise that teachers begin to ask questions about their own teaching practice with their students. The focus of teacher inquiry is to gain better insight into the teaching-learning-assessment cycle within one's own classroom.

This critical role allows teachers to become investigators in areas that directly relate to their student's needs. Our exploration moves beyond traditional professional development in recording, using, and adapting reflective records and suggests teacher inquiry is now even more important for 21st century teachers because of the ever-changing landscape of the profession: a profession that requires problem-solving, creativity, and research-based decision making (Cochran-Smith & Lytle, 2009) in order to solve instructional issues. If we are to expect teachers to use instructional strategies that are scientific, we must offer teachers professional development in the inquiry stance to promote curiosity, evaluation, collaboration, planning, and problem-solving. There is a natural intersection of andragogy and teacher inquiry, and our district initiative explores the ways in which teacher inquiry connects with Knowles' (1984) principles for adult learning to be effective. When teachers were asked to participate in the development of an assessment tool for monitoring student literacy achievement, they became engaged in a collaborative problem-solving process that had the power to assist other teachers and their students. This approach also frees teachers from the isolation they may feel when tackling instructional issues in their own classroom;

giving them a collaborative discussion group (Cai, Morris, Hohensee, Hwang, Robison, & Hiebert, 2018). Furthermore, research suggests that teachers must participate in the teaching and learning processes in their classroom through research (Dann, et al., 2018), rather than simply teaching curriculum content to students. Dann, et al. (2018) also suggests that the critical component of teacher research is language, "…words we choose to characterize something that happened cannot be neutral. They will belong to a value system or paradigm that will frame what happened as an object of knowledge…" (p. 72). Thus, it is critical for teachers to be researchers of their own practice and engage in conversation with colleagues regarding their personal impressions, findings, and reflective conclusions.

**The Current Study**

Our work aligns to work of Serravallo & Goldberg (2007) as the reflective records chart allows for conversations about the reader's process and use of strategies and intersects with the research on teacher inquiry (Cochran-Smith & Lytle, 2009). Further, we designed our inquiry in a way that it supported through previous research whereby we created a culture of professional problem-solving (Simon, 2015). This work also provided evidence that collaborative partnership between higher education and K-12 education is beneficial for inquiry work. As mentioned, teachers require some sort of structure in order to collect accurate feedback in a clear and efficient manner. The structure should give the teacher the specific skills and/or strategies to observe in order to deliver appropriate feedback. The strategies our work focused on are those identified by Fountas and Pinnell (2006).

The current study aimed to work collaboratively with reading intervention teachers to develop a tool for collecting feedback, use the tool, and subsequently collect reflections from teachers who used the reflective record tool. Thus, the inquiry cycle became a natural and necessary part of our research. As discussed by Svanes and Skagen (2017), it is critical that data on feedback be collected in the classroom context as part of the natural teaching and learning process. The goal of this study included working through three related phases. In the first phase, the researchers sought to collaborate with teachers to develop an existing reflective record sheet. Once again, this sheet was based on the work by Fountas and Pinnell (2006) and the primary strategies Fountas and Pinnell identify. Teachers were instructed to use and modify the tool but maintain the integrity of the record keeping tool in its purpose of collecting reflective data. Secondly, teachers were to use the tool and reflect upon the results gathered from the tool. This is where teachers were engaged in the inquiry portion of our study. The second phase has teachers reflect and revise the tool after using it with students. In stage three, teachers used the revised tool and reflected on their experience. Essentially, we were asking teachers to be participants in developing a reflective records tool, thus allowing them the opportunity for reflection and inquiry revolving around the tool, their practice, and student performance. Our research questions were as follows: What reflections did teachers have on the development and utilization processes for a reflective records tool? How helpful did the teachers find the tool in collecting student reading data to provide timely and accurate feedback? Secondarily, as researchers, we explored how the inquiry environment propelled teacher professional growth revolving around assessment.

# Methods

## Population

The data collected for this study was taken from a medium-sized suburban district located in New Jersey. The district serves approximately 3,500 students in grades PreK-8. This includes six school buildings: two PreK-4 elementary schools, two K-4 elementary schools, a 5-6 school, and a 7-8 school. Students who attend this school district are sent to a regionalized high school for Grades 9-12. New Jersey School Performance Reports (2019) describes the district as having "an excellent reputation for maintaining high standards of instruction. The instructional program is based upon a comprehensive K-8 curriculum." (p. 43).

## School Demographics

The district's K-4 elementary schools have varying demographics. Elementary school demographics are presented in detail in Table 1. At the time of this research both School C and D qualify for Title I targeted assistance funds based on their socioeconomic diversity.

**Table 1**

*School Demographics*

| School | White Students | Students with a Disability | Economically Disadvantaged Students | English Language Learners |
|---|---|---|---|---|
| School A | 83% | 17% | 7% | 0.3% |
| School B | 70% | 34% | 13% | 3% |
| School C | 61% | 22% | 19% | 9% |
| School D | 56% | 18% | 36% | 17% |

*Note.* Adapted from New Jersey School Performance Reports (2019). All percentages are rounded to the nearest whole number where possible.

The district maintains records of students who qualify for free or reduced lunch status. This is used to identify school buildings that qualify for Title I funds, and this information is gathered by way of parent report in the beginning of each school year. Parents receive the application for free/reduced lunch in September and are identified by the State of New Jersey as qualifying for this status based on income.

## Participants

The participants in this study were seven (7) intervention teachers and two (2) literacy coaches. The literacy coach job description in this district includes a job goal of supporting staff to implement research-based reading/literacy strategies within the classroom. Their main priority is to work directly with classroom teachers, through team teaching, modeling, and/or coaching, in an effort to support classroom teacher's pedagogy in the area of literacy. Interventionists, by contrast, are responsible to work directly with small groups of students in order to provide reading and literacy interventions. Their experience ranged from approximately five to fifteen years and virtually all had their Master's degree. All teachers provide intervention instruction to students who are identified as struggling readers via the

district's assessment tools. The intervention program is offered using a tiered system of support, specifically the Response to Intervention (RtI) service delivery model.

## The Role of the Authors

The authors of this article served in two distinct roles during this research study. Author one served as a consultant to the district to assist in designing a cohesive research-based reading intervention framework over the course of multiple school years. Author two served the district in an administrative position. Author one was primarily involved in the collection of data and facilitating the procedures found in this research paper, while the administrator provided support, resources, and oversight.

## Procedures

### *Phase One: Development*

During the initial phase, participants developed a reflective record keeping sheet. This development process was facilitated by one of the researchers, an outside consultant for the school district who grounded the process in Fountas and Pinnell's literacy framework (2017). The researcher brought samples of other effective reflective record keeping tools as samples, to guide the nine participants through the process. By the end of the professional development day, a user-friendly tool to pilot had been created and shared electronically. See Appendix 1. The next step was implementation. Each interventionist needed to modify the tool slightly to meet her instructional and progress monitoring needs; this process of individualizing the tool, yet maintaining the integrity of the systematic protocol empowered each teacher. They were charged with refining the reflective record keeping tool to meet their individual instructional needs and to use the tool with one reading group that could benefit from a systematic process of collecting data. Each teacher had a variation of the tool but maintained the critical components: the type of data to collect and the frequency of data collection. The manner or coding they used to capture the students' reading behaviors and strategies varied from teacher to teacher based on their training, education, and previous progress monitoring experiences including AIMSweb data, DIBELS data, and running records. Throughout the two-month implementation period, each teacher was asked to log on to the secure, private blog to reflect on her reflective data collection experiences. The teachers reflected via this private blog by responding to an open-ended, reflective prompt posted and facilitated by the consultant. These reflections included their reflective thoughts as well as any examples or visuals. The visuals included changes made to the record keeping tool as well as student work samples. See Appendix 2. The inquiry completed during these two months of implementation allowed the participating teachers to pilot the data collection tool over time and with students they taught on a regular schedule. They reviewed the data in various settings: lesson planning, intervention team meetings, child study team meetings, parent conferences, IEP meetings, etc. The teachers also engaged in conversations with the consultant for implementation support, tool refinement, and professional encouragement needs. The posts and conversations included simple updates to share when and how they used the first tool, as well as questions and ideas for revision. This process of inquiry informed the teacher's individual teaching-assessment cycle with authentic, timely, and systematic information so that student instruction transformed from lesson remediation to acceleration.

### *Phase Two: Feedback*

After the initial two months of implementation, where the teachers piloted their individual tools in various settings with students of varying abilities, the participants moved into Phase

Two and the participants recreated the tool yet again after a guided reflection process. See Appendix 3. They appreciated the opportunity to reflect, revise, and retry and used the blog as a forum to reach out to colleagues in other buildings as well as the consultant for advice, support, and to simply share the updates. The blog not only provided the space to capture this thinking, but also served as an accountability factor. If the consultant didn't see blog posts, she emailed the teacher directly to support the teacher. This cyclical process of inquiry was supported through conversations, practical application, and collaboration across intervention groups within and beyond classrooms. It was also during this phase that teachers realized that while they prefer to take notes traditionally, using ink and paper, their data could be so much more powerful and influence real change if they had an electronic version.

***Phase Three: Collecting Findings.***

The final phase of the research study was to bring the participants together in a meeting where they could reflect on the entire experience. The participants joined a focus group to discuss their experience in developing the reflective records tool, revising the tool, and using the tool with students. We used a focus group format which consisted of standardized questions, but also allowed for free-flowing conversation. The questions for the focus group were a result of the researcher's participation in the blog, the emails with the teachers, and the perspective she brought to this inquiry project as an outsider. However, the questions were not necessary, as the teachers had clearly established a safe, professional learning community and were very comfortable sharing their insights, challenges and celebrations. As suggested by Dann, et al. (2018) language is a critical component of teacher-as-researcher. Phase three sought to promote conversation among teachers who engaged in testing the reflective assessment tool over several months, this reflective conversation led to yet another revision of the tool. See Appendix 3. This conversation provided the teachers the time and space to share experiences and even further improve the assessment tool itself or even processes for gathering student reading data using the tool.

Gee (2011) discusses discourse analysis as studying ways in which individuals use language. Specific to our study, we were looking for teachers to comment on the process of developing and using a tool to take better reflective records. We are less concerned with discourse analysis in terms of analyzing grammar and more concerned with looking for themes and trends within the comments made by teachers. Therefore, we take Gee's (2011) stance of filling in the context of what is being reported by the teachers using various tools. Our aim was to look for trends in the comments made by teachers and synthesize these trends to further improve the reflective records assessment tool. The findings illustrate snapshots of the conversation that occurred after teachers had an opportunity to engage in this inquiry project.

## Findings

The findings presented in this paper represent, first, the un-analyzed comments made by teachers, in essence the raw data provided through this inquiry, reflective research process. Additionally, we looked for the trends found in the conversation among the teachers in the final phase of our study. Some of the comments included:

> *It is cumbersome, the record keeping…I am totally engaged in my instruction while teaching and can't stop my flow so I am doing a lot of it after the fact…trying to recall what I said.*

*This has been overwhelming - looking at everything…trying to do too much…having all the information while working distracted from the single teaching point. It felt more like a report card.*

*Very cumbersome*
*I record notes differently, but I realize that what the classroom teacher doesn't read it this way…we have different systems. I realize that we need to have common language at the least. Seeing all of the information in the table really helped me plan and converse with the classroom teacher.*

*Could we link these ideas to the standard? Then when I plan I know how they are linked and connected. We could have the targeted skills under the headings of the standards or a broader skill.*

*I still like our original form, I have adapted and made it work for me. I find that I take less time to plan if I can see all of the data. It did take me some time to take notes while teaching…but once I became familiar with our language and the template, it worked.*

*I struggle to connect my notes to my lesson plan, since I can't seem to record the behaviors in the moment. But I like that this has helped me to identify certain skills and strategies.*

*I found it to be most helpful to remove the sections that I am not working on right now, it was less overwhelming.*

*I can go through the whole file to see where they come from but I struggle with sifting through all of the information to make new groups. I cannot do this. Too much time. Who has this? Who has that? If this tool was an app I could see just what needs to be done and what to expect and who to group with whom.*

*Could we transform this to an app? Could this app be organized to record kids?*

*Check out the Confer App*

The trend that appears in several of the comments from the teachers refers to the difficult nature of the tool. See Table 2 for a description of the comments found in the feedback from the teachers.

In general, teachers reported some positive experiences in working with the tool but found it a challenge to use as instruction was occurring. Due to this, teachers took it upon themselves to go back and fill notes in the tool after the instructional period, which was a significant deterrent in using such a systematic approach. Additionally, at least two teachers indicated that the tool did not match standards or lesson plans. In other words, the usability of this tool in developing groups or designing instruction was disconnected. Therefore, the teachers began to think of ways to use a record keeping tool in a more efficient and connected way. This led the conversation to the development of a digital app that would assist teachers in using a tool like this, but allowing them to connect the tool to lesson plans and standards.

**Table 2**

*Percentage of Teachers Reporting Generalized Comments Regarding the Tool.*

| **Comment** | **Percent of time this comment was made** |
|---|---|
| Teachers reported that tool was overwhelming or cumbersome. | 50% |
| Teachers indicated further adaptation is needed (this does include comments about an app). | 70% |
| Teachers comment about researching an app to develop. | 30% |
| Teachers suggesting linking the tool to lessons or state standards. | 30% |
| Teachers reporting the tool is overall useful. | 40% |

Upon further discussion, the participants envisioned a tool where data could be exported into visuals and other reporting mechanisms to streamline time required to prepare for data-driven meetings when analyzing teacher performance and student learning.
We began to investigate multiple apps: Snapfolio (created by David Lowe) was a powerful tool, but is no longer available since he began to develop an app called Confer. However, it seems as though funding or technology requirements froze this development as it is not yet available. The reason these apps seemed so appealing is the organization, compatibility, transfer of data, and ability to generate reports. For example, the app was organized by standards with the user option available to include district or school objectives and standards. There was a feature that would allow students to be recorded while orally reading. Teachers could search through the dataset to identify which standards have been taught and learned, which standards have been learned, which standards have not been taught, etc. But overall, the biggest draw to Confer would be the ability to truly monitor progress over time, over multiple settings and across various teachers so that any teacher could access the data, input data, and generate reports to make the most informed instructional decisions for the at-risk student. Each of these apps allowed the teacher to record their reflective records while also allowing them to organize these comments systematically so that student progress is monitored while aligning to standards.

## Discussion

Overall, the teachers were invested in the tool implementation, because of the process of inquiry. They were involved from the onset; their professional experience and expertise mattered. Throughout the entire process participants shared their ideas, reactions, confusions, ideas, and reflections in multiple ways. Since the consultant created a safe space for sharing struggles and celebrations, face-to-face discussions were honest, constructive conversations. In between professional development visits, the participants shared thoughts via a confidential blog, email, and phone calls. These methods of sharing thoughts added to the safe space where teachers were free to share their thoughts and reflections, making our researcher visitations productive and comfortable.

In our view, the teachers developed a tool, but in actuality and more importantly, they engaged in action research, more specifically teacher inquiry, as they worked through the inquiry process set forth by Dana and Yendol-Hoppey (2020). In fact, the development of the tool was less critical than the process of reflection that the teachers had experienced. Early on, teachers identified their *wondering* and began to *collaborate* immediately. The

collaborative conversations propelled their *research plan*. Upon implementation of data collection tool exploration, the teachers immediately reviewed and *analyzed their data* to make changes. Teacher inquiry is critical to the education profession because it is a type of individualized, personalized, and meaningful professional development for educators (Cochran-Smith & Lytle, 1999). As the results demonstrate, some teachers adapted the tool, many made suggestions for improvement, and others found alternative ways to make the tool useful in their own practice. They engaged in professional development that was germane to their own professional practice. Teachers used the inquiry process to consider solutions to issues they identified within their own classrooms. Upon conclusion, their findings were shared with building and district administrators. As a result of this inquiry process, teachers became more assessment literate and they demonstrated how to assess what students know and can do using an organic, systematic data collection tool. The teachers interpreted their results and applied this data to accelerate student learning while also sharing their tools with colleagues with whom they worked in and outside of the classroom. In summary, this is teacher inquiry at its best. It allowed teachers to become collaborative problem-solvers (Simon, 2015) in order to best enhance student learning through assessment. Furthermore, this journey was unanticipated but a welcome portion of our project. We found that the more important lessons for us as researchers was not how the tool was developed but the climate that was created among professionals in trying to find a solution to a problem.

There were two primary limitations to this study, which informs future research in this area. First, we collected teacher reflections regarding the assessment tool itself. We did not collect teacher reflections on the process of developing and using the assessment tool. In other words, we did not provide a direct opportunity for teachers to reflect on their own learning. If we had the opportunity to do this study over again, we would ask participants to simultaneously reflect on the tool and on their learning experiences. Second, there were changes in leadership in the school district where this study was conducted, ending the project prematurely. Further research should consider how teacher leaders can provide specific time and space for this type of exploration.

Originally, we set out to empower teachers to take charge of their own learning and get feedback on the tool for student use. In the end, we strengthened the teacher empowerment process and transformed these empowered teachers to be teacher-leaders of inquiry—a much more powerful approach to accelerate student learning and engage teachers in professional development.

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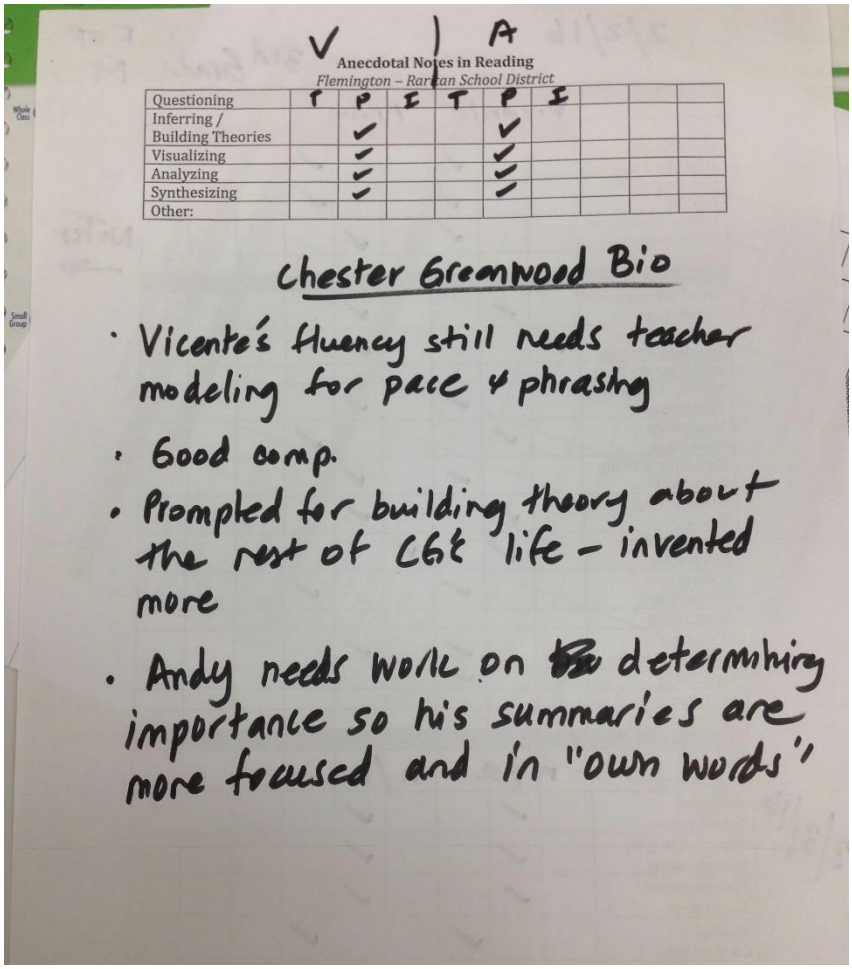
**Appendix 1**
**Pilot Tool**



V | A

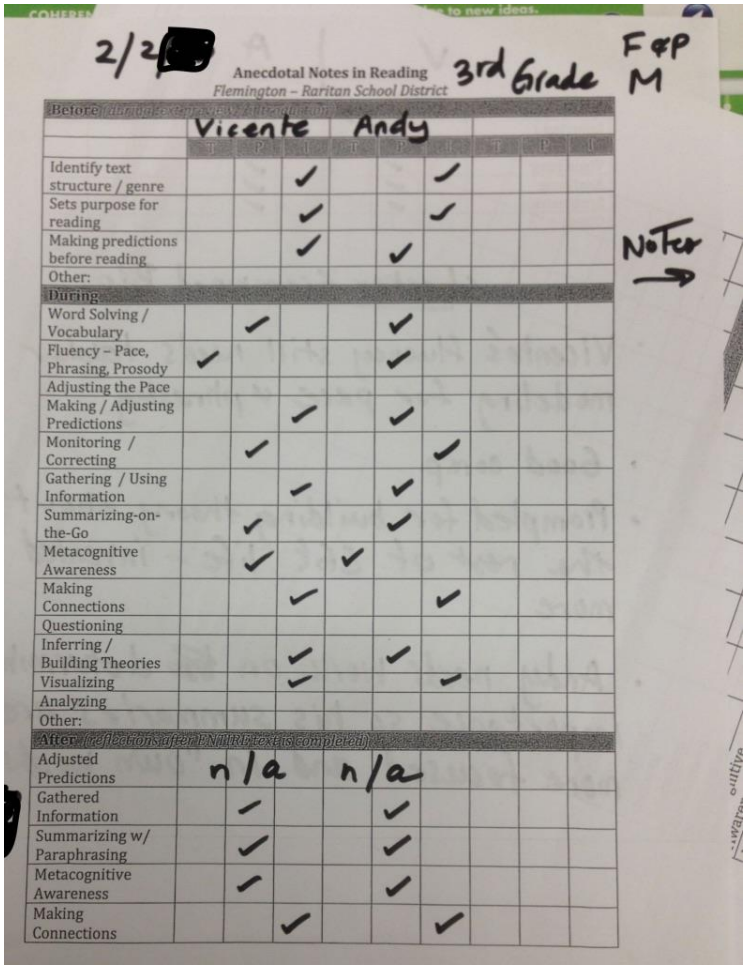
Anecdotal Notes in Reading
*Flemington – Raritan School District*

| | P | P | I | T | P | I | | | |
|---|---|---|---|---|---|---|---|---|---|
| Questioning | | | | | | | | | |
| Inferring / Building Theories | | ✓ | | | ✓ | | | | |
| Visualizing | | ✓ | | | ✓ | | | | |
| Analyzing | | ✓ | | | ✓ | | | | |
| Synthesizing | | ✓ | | | ✓ | | | | |
| Other: | | | | | | | | | |

Chester Greenwood Bio

- Vicente's fluency still needs teacher modeling for pace & phrasing
- Good comp.
- Prompted for building theory about the rest of CG's life – invented more
- Andy needs work on determining importance so his summaries are more focused and in "own words"

## Appendix 2
## Revised Tool



2/2[redacted] Anecdotal Notes in Reading 3rd Grade F&P M

*Flemington – Raritan School District*

| | Vicente | | | Andy | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | T | P | L | T | P | L | T | P | L |
| **Before** | | | | | | | | | |
| Identify text structure / genre | | | ✓ | | | ✓ | | | |
| Sets purpose for reading | | | ✓ | | | ✓ | | | |
| Making predictions before reading | | | ✓ | | ✓ | | | | |
| Other: | | | | | | | | | |
| **During** | | | | | | | | | |
| Word Solving / Vocabulary | | ✓ | | | ✓ | | | | |
| Fluency – Pace, Phrasing, Prosody | ✓ | | | | ✓ | | | | |
| Adjusting the Pace | | | | | | | | | |
| Making / Adjusting Predictions | | | ✓ | | ✓ | | | | |
| Monitoring / Correcting | | ✓ | | | | ✓ | | | |
| Gathering / Using Information | | | ✓ | | ✓ | | | | |
| Summarizing-on-the-Go | | ✓ | | | ✓ | | | | |
| Metacognitive Awareness | | ✓ | | ✓ | | | | | |
| Making Connections | | | ✓ | | | ✓ | | | |
| Questioning | | | | | | | | | |
| Inferring / Building Theories | | | ✓ | | ✓ | | | | |
| Visualizing | | | ✓ | | | ✓ | | | |
| Analyzing | | | | | | | | | |
| Other: | | | | | | | | | |
| **After** | | | | | | | | | |
| Adjusted Predictions | n/a | | | n/a | | | | | |
| Gathered Information | | ✓ | | | ✓ | | | | |
| Summarizing w/ Paraphrasing | | ✓ | | | ✓ | | | | |
| Metacognitive Awareness | | ✓ | | | ✓ | | | | |
| Making Connections | | | ✓ | | | ✓ | | | |

NoTer →

**Appendix 3**
**Guided Reflection Tool**

| **Before** *(during text preview / introduction)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | T | P | I | T | P | I | T | P | I |
| Identify text structure / genre | | | | | | | | | |
| Sets purpose for reading | | | | | | | | | |
| Making predictions before reading | | | | | | | | | |
| Other: | | | | | | | | | |
| **During** | | | | | | | | | |
| Word Solving / Vocabulary | | | | | | | | | |
| Fluency – Pace, Phrasing, Prosody | | | | | | | | | |
| Adjusting the Pace | | | | | | | | | |
| Making / Adjusting Predictions | | | | | | | | | |
| Monitoring / Correcting | | | | | | | | | |
| Gathering / Using Information | | | | | | | | | |
| Summarizing-on-the-Go | | | | | | | | | |
| Metacognitive Awareness | | | | | | | | | |
| Making Connections | | | | | | | | | |
| Questioning | | | | | | | | | |
| Inferring / Building Theories | | | | | | | | | |
| Visualizing | | | | | | | | | |
| Analyzing | | | | | | | | | |
| Other: | | | | | | | | | |
| **After** *(reflections after ENTIRE text is completed)* | | | | | | | | | |
| Adjusted Predictions | | | | | | | | | |
| Gathered Information | | | | | | | | | |
| Summarizing w/ Paraphrasing | | | | | | | | | |
| Metacognitive Awareness | | | | | | | | | |
| Making Connections | | | | | | | | | |
| Questioning | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Inferring / Building Theories | | | | | | | | | |
| Visualizing | | | | | | | | | |
| Analyzing | | | | | | | | | |
| Synthesizing | | | | | | | | | |
| Other: | | | | | | | | | |