



2017-18

OSPI/AESD Professional Development Learning Network Evaluation

AESD ASSOCIATION OF
EDUCATIONAL
SERVICE DISTRICTS

Nine ESDs. One Network.
Supporting Washington's Schools and Communities.

Table of Contents

Executive Summary.....	2
Professional Learning for Educators	2
Professional Learning for School Leaders	3
Factors that Shaped the Fellows Experience	3
Short-Term and Long-Term Outcomes	4
Introduction	6
Methodology—Theory of Action Development	6
Professional Learning Outcomes	8
Overview of Professional Learning Sessions	8
Professional Learning to Support School Leadership.....	9
OSPI/AESD Fellows’ Network	11
Short-Term Outcomes of the OSPI/AESD Professional Learning Network	12
Enhancing Professional Knowledge	13
Influencing Colleagues	13
Developing Networks	14
Long-Term Outcomes	15
Increased Number of Educators Using Pedagogical Content Best Practices.....	15
Improved Student Academic Performance.....	15
Improved Student Non-Academic Measures.....	17
Discussion.....	19
Conclusion.....	20
Appendix A. Professional Development Evaluation Briefs	22
Professional Development Evaluation: English Language Arts 1.....	22
Professional Development Evaluation: English Language Arts 2.....	26
Professional development evaluation: Early Learning 1.....	32
Professional Development Evaluation: Early Learning 2	37
Professional Development Evaluation: Math 1	43
Professional Development Evaluation: Math 2	47
Professional Development Evaluation: Science.....	50
Appendix B. Works Cited	55

Executive Summary

Washington State's Educational Service Districts (ESDs) serve schools across nine regions in the state. The ESDs provide professional learning opportunities for administrators and educators in their region. Each ESD has four Regional Coordinators (RCs) who deliver professional learning—one RC for each content area: English Language Arts (ELA), early learning, math, and science. One professional development opportunity available to educators is the Washington State Fellows' Network (Fellows' Network), which aims to improve student academic and non-academic measures. Fellows commit to a three-year program facilitated by RCs that is designed to increase leadership capacity and enhance content knowledge, skills and abilities. The Office of Superintendent of Public Instruction (OSPI) and the Association of Education Service Districts (AESD) Professional Learning Network also offers specialized trainings for school leadership. During the 2017-18 school year, almost 1,100 Fellows participated in the Fellows' Network, and over 1,300 professional learning sessions occurred.

In February 2017, OSPI and the AESD launched efforts to create an evaluation plan for AESD professional development activities, including the Fellows' Network. Under the supervision of the Puget Sound Education Service District (PSESD), the OSPI/AESD Network of Professional Development contracted with Kauffman & Associates, Inc., (KAI) to develop the [OSPI/AESD Network Professional Development Program Evaluation & Operations Manual](#). KAI completed the manual in August 2017. In addition, through collaboration with stakeholders, OSPI, AESD, and KAI developed a supporting [Theory of Action \(TOA\) and logic model](#). KAI designed an evaluation plan to test the Theory of Action and logic model and explore the effects of professional development on school leadership, teachers, and students.

Building on the prior year's work, efforts under the Professional Development Network during the 2017-18 school year was dedicated to the evaluation plan's implementation. Data collection began in September 2017 and concluded in June 2018. The evaluation used surveys, interviews, focus groups, and student artifacts to measure OSPI/AESD professional learning outcomes. This evaluation report provides formative and summative information to OSPI and Washington state's ESD superintendents, assistant superintendents, and RCs. Further, the report provides evidence of the effectiveness of professional development for stakeholders, including the Washington State Legislature.

Professional Learning for Educators

Many themes emerged from this study. One striking theme was the way participants viewed the ESDs as long-term professional development partners. They did not attend isolated workshops; rather, they made long-term commitments to the ESDs' service offerings. Koellner, Jacobs, & Borko (2010) found that successful teacher professional development should entail ongoing engagement, which fuels a continuous cycle of inquiry.

A second recurring theme was relationship-building. School administrators and teachers expressed gratitude to the ESDs for being partners who helped refine and improve their

knowledge, skills, and abilities. Strong collegiate relationships formed between the ESD RCs and the participating teachers. RCs became trusted educational advisors and coaches.

A final theme was having a sense of belonging to a community of learners. Fellows and non-Fellows felt a strong sense of belonging to their ESD professional learning community within their content area. They sought out ways to maintain a connection after the professional development sessions by regularly checking their RC's online page for links to resources.

Professional Learning for School Leaders

School leaders participated in professional learning sessions and in the Fellows' Network. They embraced the use of CBAM and attributed increased student achievement to their deeper understanding of how teaching staff experience change. They shared how they take a longer-term view of change, and that they are able to ease teachers' minds about new changes as they learn how to implement them successfully.

School leaders felt their time was well spent at the professional learning sessions. They shared that they better understood state requirements, standards implementation, and classroom equity issues. With this knowledge, they created inclusive learning environments for diverse students and their families. They provided equitable access to quality instruction, used culturally relevant classroom pedagogy, and engaged in culturally sensitive school-to-family communication. The following suggestions to further improve the professional development sessions emerged across the content areas:

- Allow Fellows more time to reflect on the content with their colleagues.
- Offer follow-up sessions.
- Provide more opportunities to work in small groups.

Factors that Shaped the Fellows Experience

The Fellows' Network is a highly specialized professional development program. It is designed to improve content and pedagogical knowledge, while growing instructional leaders. Though Fellows' experiences varied and were shaped by multiple factors, all reported positive experiences. These factors included the number of Fellows per district, the Fellow-Administrator relationship, the Administrator's perceived value of the program, the department heads' willingness to collaborate with their Fellows, and school finances.

The structure of the Fellows network within the school districts differed across the state, ranging from a single Fellow to a complex network of Fellows. Some districts had well-thought strategic Fellows teams, which they customized to meet the specific needs of their district. For example, one strategic Fellows team included the secondary administrator, high school science teacher, middle school science teacher, elementary science teacher, elementary instructional coach, district science specialist and preK-12 STEM coordinator. With its intentional construction, the team successfully implemented schoolwide initiatives. Teams that included at least one building administrator and a teacher also reported their successful implementation of

schoolwide initiatives. Fellows and administrators provided the following suggestions to further strengthen the Fellow-administrator relationship.

- Create a strategic communications plan to promote a deeper understanding of the Fellows' Network among school administrators and to encourage their engagement in the program.
- Include the Fellows' administrators in a convening.
- Develop a clearer vision of the Fellows' work and how it aligns with their schools' improvement initiatives to ensure their school administrators provide them with time to prioritize this work.

Fellows strongly concurred that the program helped them strengthen their leadership skills using the Concerns-Based Adoption Model (CBAM). Fellows provided the following recommendations to further enhance the OSPI/AESD Fellows' Network.

- Reduce isolation from other Fellows, especially those from small, rural schools.
- Promote a network of Fellows district-wide with one each in the elementary, middle, and high school.
- Seek innovative ways to fund Fellows' involvement in the program.
- Establish a web-based platform through which Fellows can collaborate.

Short-Term and Long-Term Outcomes

The current study's evaluation plan was designed to explore the short- and long-term outcomes identified in the Theory of Action. Short-term outcomes relate to immediate changes in teachers' knowledge, skills, classroom practice, etc. The **short-term outcomes** of the OSPI/AESD professional learning efforts included:

- increased professional knowledge, skills, and abilities;
- Fellows' enhanced ability to influence their colleagues; and
- new or expanded professional networks.

By attending professional learning sessions, known as Fellow Convenings, many educators and school leaders reported growth in content knowledge, state and national standards, content-specific pedagogical strategies, formative assessments, and understandings of how students learn. Participants also gained an understanding of culturally sensitive pedagogy, improved communication and collaboration skills, and greater confidence in facilitating professional learning among their peers. Additionally, Fellows established or expanded their professional networks, such as through professional learning circles and district leadership teams.

The evaluation measured long-term outcomes by closely working with the Fellows and other training participants in their content areas. Long-term outcomes occur span an academic year and longer. **Long-term outcomes** included:

- increased use of pedagogical best practices among educators;
- improved student academic performance; and
- improved student non-academic indicators, such as increased engagement.

Additionally, across the four content areas, teachers described the influence of their new knowledge, skills, and abilities on student assessments and students' mastery of content. For example, teachers described individual cases of student growth in their schools:

- a steep increase, from 48% to 83%, in the percentage of 11th- and 12th-grade English Language Learner (ELL) students who met proficiency in writing;
- a 19% increase in Measures of Academic Progress for math scores for ELL students, and students with special needs in 1st grade; and
- 40% more kindergarteners reached benchmark in reading, as rated by the DIBELS test.

Participants reported greater student engagement and more confident learners after implementing best pedagogical practices in their classroom. For example, students with low-proficiency, including those with special needs, expressed excitement to learn about math through active, locally relevant lessons. And English language learners (ELLs) became fully engaged classroom members due to their teachers' mastery of ESD resources, which provided explicit language support for authentic dialogical experiences.

Overall, the data strongly suggest that the ESD trainings and Fellows' experiences have made it possible for teachers to influence student learning. The evaluation findings show that the OSPI/AESD model of professional learning empowered educators and school leaders to improve learning for all students. They gained the tools and information to enhance student achievement, engagement and confidence, leading to a better outlook on life and learning.

Introduction

The Washington State Office of Superintendent of Public Instruction (OSPI) is the state's education agency. OSPI carries out federal and state laws regarding education. For example, OSPI is responsible for implementing the Every Student Succeeds Act, Washington State Learning Standards and assessments, teacher and principal evaluations, and graduation requirements.

Washington State's Educational Service Districts (ESDs) serve schools in nine regions across the state. Each ESD is an expert at delivering professional learning opportunities to meet the unique needs of the administrators, educators and student populations in their region. Each ESD has four Regional Coordinators (RCs) who deliver the professional learning. There is one RC for each content area: English Language Arts (ELA), early learning, math, and science. They have broad networks and strong relationships with their schools and communities.

The nine ESDs form the Association of Education Service Districts (AESD). Together, the ESDs help school leaders and educators expand their knowledge, skills and abilities to ensure effective teaching for all students. OSPI and the ESD superintendents and assistant superintendents collaborate to continually improve learning for students in Washington State.

In February 2017, under the supervision of the Puget Sound ESD, OSPI and AESD began to create a plan for evaluating AESD professional development activities. The OSPI/AESD Network of Professional Development contracted with Kauffman & Associates, Inc., (KAI) to develop a TOA, LM, and evaluation plan. KAI is a professional services firm with extensive experience in program evaluation, including educational programs. Washington State's key stakeholders, such as OSPI and AESD leadership, state Assistant Superintendents, Regional Coordinators (RCs), and Fellows across all nine ESDs, collaborated to create the [OSPI/AESD Network of Professional Development Program Evaluation & Operations Manual](#), which was completed in August 2017. This manual is the plan for evaluation AESD professional development activities.

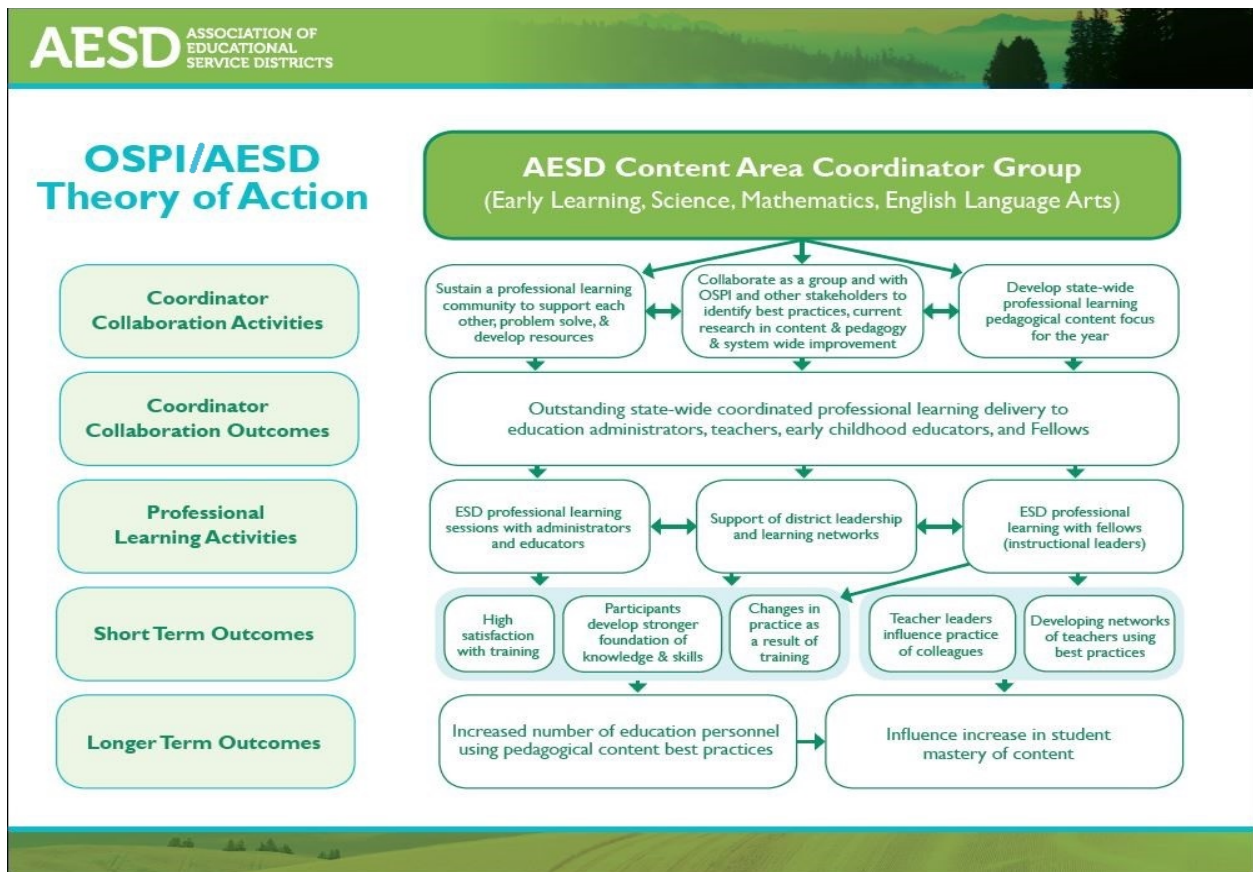
Building on the prior year's work, OSPI/AESD dedicated the second year of KAI's contract to begin implementation of the evaluation plan. KAI collected data from September 2017 through June 2018 to help understand the results of OSPI/AESD professional development. By sharing their expertise OSPI, AESD leadership, ESD Superintendents and Assistant Superintendents, RCs, and the Fellows Advisory Committee guided KAI's data collection and analysis processes and the dissemination of the findings.

Methodology—Theory of Action Development

In November 2016, the OSPI/AESD Professional Learning Network began developing a Theory of Action (TOA) and logic model. A TOA models the assumptions underlying a program's design that will lead to desired outcomes. To inform the TOA, Regional Coordinators (RCs) across all ESDs and content areas participated in a series of guided discussions about the nature of their work and the intended outcomes of the professional development offerings.

KAI used this information to create a TOA that depicts the theoretical relationship between the RCs' actions and the desired outcomes of the professional development offerings. In a simple diagram, the OSPI/AESD Professional Development TOA (Figure 1) illustrates how a coordinated statewide professional learning program will result in an increased number of education personnel using pedagogical best practices. This TOA provided a framework for the evaluation to test assumptions regarding the Fellows' Network by collecting data to confirm, modify, or refute the relationships presented in the TOA. It provided context to clearly identify what works well and what needs improvement.

Figure 1. OSPI/AESD Theory of Action



To test the assumptions in the TOA and evaluate outcomes of the OSPI/AESD Fellows' Network and professional learning sessions, KAI collected data through:

- 60-minute phone interviews with six teachers using a 19-question protocol to explore their experiences with OSPI/AESD professional learning sessions;
- five online surveys that gathered quantitative and qualitative data across the four content areas;
- a series of five to six one-hour sessions with eight participants to identify the long-term outcomes of their involvement in the Fellows' Network or professional learning experiences at their ESDs; and

- interviews with six administrators to understand how they interact with the Fellows.

Appendix B includes Evaluation Briefs that provide portraits of professional learning across the Network.

KAI used statistical software for quantitative analysis of survey data and Dedoose software for qualitative analysis to identify common themes that emerged in the interviews and focus groups. Development of the TOA is detailed in the [OSPI/AESD Network Professional Development Program Evaluation & Operations Manual](#).

Professional Learning Outcomes

The Washington State Fellows Network, a growing network of Washington State educational leaders, works to improve student learning through ongoing professional development. Each of the nine districts has four RCs—one for each content area. The 36 RCs provide technical assistance for school districts, schools, teachers, administrators, families, professional organizations, and the public. They also facilitate professional learning sessions for teachers, central and district office staff, and the OSPI/AESD Fellows' Network. The goal of the Fellows' Network is to improve student academic and non-academic measures. The following section includes tabular data from the surveys completed by the RCs and Fellows.

Overview of Professional Learning Sessions

During the 2017-18 school year, 1,353 professional learning sessions occurred. Table 1 lists the number of professional learning sessions by content area and title.

*Table 1. Number of professional learning sessions by content area and title reported in Coordinator Intake Survey**

Title	Number of sessions reported	Percent of total sessions
ELA: Assessments	86	6%
ELA: Common Core State Standards	100	7%
ELA: Content Literacy	32	2%
ELA: Instructional Strategies	155	11%
ELA: Reading Foundational Skills	81	6%
ELA: Special Populations	76	6%
ELA: Strengthening Student Educational Outcomes	80	6%
ELA Subtotal	610	45%
Math: Rational Num., Ratios and Relationships	4	<1%
Math: Assessment	24	2%
Math: Content Workshops	48	4%
Math: Early Numeracy Modules	6	<1%
Math: Fellows	34	3%

Title	Number of sessions reported	Percent of total sessions
Math: Instructional Practices/Routines	143	11%
Math: Mathematics Leadership	23	2%
Math: Open Educational Resources	38	3%
Math: Regional Leadership	7	<1%
Math: Special Populations	6	<1%
Math: Statewide HS Math Professional Development	2	<1%
Math: Studio Day	2	<1%
Math: Washington State Learning Standards	32	2%
Math Subtotal	369	27%
Science	162	12%
Science Subtotal	162	12%
Early Learning (EL): Early Numeracy	14	1%
EL: WaKIDS	14	1%
EL: Full Day Kindergarten	10	<1%
EL: Early Learning Fellows Session	23	2%
EL: Other	12	1%
EL Subtotal	73	5%
Other: (not indicated)	139	10%
Other Subtotal	139	10%
Total	1,353	100%

**Sessions that spanned multiple topics may be counted in more than one topic area.*

Professional Learning to Support School Leadership

The OSPI/AESD Professional Learning Network offers specialized trainings for district leaders, such as superintendents, district assessment coordinators, and directors of curriculum and instruction. The participants completed surveys at the end of the sessions. The following sections summarize participant feedback and suggestions by content area.

School Leadership ELA Trainings

Participants underscored the importance of opportunities to share with team members and colleagues in other districts. They also commented on the usefulness of the sessions on engagement strategies with highly capable learners and English Language Learners (ELL) for reading and writing. Participants suggested:

- incorporating grade-level-specific teaching and learning strategies, evidence-based research, and models of learning for highly capable students in future ELA learning sessions;
- providing more time to reflect on content with colleagues;
- offering follow-up sessions; and

- continuing to reinforce the importance of a safe learning space that encourages discourse.

School Leadership Early Learning Trainings

Attendees noted that they plan to use their new knowledge to:

- develop new teaching and implementation strategies with teachers;
- increase awareness of the importance of early learning experiences; and
- improve district-wide professional development for early learning teachers.

Participants offered the following suggestions.

- Adjust the delivery structure to provide more group discussion and small group activities
- Include content about key elements of a well-designed early learning environment, early learning pedagogies, and equity.
- Increase the number of professional learning sessions that are known as Fellows Convenings.

School Leadership Math Trainings

Participants expressed appreciation that the professional development covered a broad understanding of equity issues. Suggestions from participants included:

- avoiding repeated content from previous workshops;
- extending time within a single small group to allow for deeper reflection; and
- increasing opportunities for district teams to participate in small groups together.

School Leadership Science Trainings

Participants expressed satisfaction with the presentations about three dimensions (3D) science learning in the Next Generation Science Standards (NGSS). Learning science in 3D is learning that combines disciplinary core ideas, science cross-cutting concepts, and science and engineering practices. They also noted that STEM-integrated classroom activities and NGSS content aligned with formative and summative assessments. Participants suggested:

- providing additional hands-on activities and more time for reflection;
- increasing opportunities for district teams to work together;
- modeling examples of formative assessments for group feedback;
- including information on integrating NGSS in secondary school;
- discussing how to mitigate resistance to NGSS integration; and
- offering post-training follow-up sessions.

OSPI/AESD Fellows' Network

Fellows are selected through an OSPI application process. They commit to a three-year program designed to increase leadership capacity and enhance knowledge, skills, and abilities. Fellows work collaboratively with their district leadership to complete an Action Plan outlining how the Fellow's leadership will support the implementation of their personal goals which may include adoption of the Common Core State Standards (CCSS), Early Learning Guidelines, or participating in leadership opportunities. They must also participate in regional professional learning sessions, called Fellows Convenings, and implement what they have learned back in their schools or district. The program also encourages Fellows to share information with others to promote continual growth for all educators and school leaders.

While the Action Plan has the potential to be an effective tool, the process of completing one is loosely structured and left up to the administrator and individual Fellow to decide. Competing priorities make it easy for the Action Plan to become outdated and not useful. However, the Action Plan is an ideal tool to use for documentation as ideas are tried, refined, or rejected. Administrators and Fellows can benefit from embedding a formal, iterative process to collaboratively discuss the Action Plan, which can help refine and improve building and classroom initiatives and Fellows' leadership capacity.

OSPI plays a vital role in supporting the Washington State Fellows' Network. Within OSPI's Learning and Teaching Department are four Content Directors (math, science, English Language Arts, and early learning). The OSPI Content Directors, an ESD Content Champion, the ESD Assistant Superintendents, and the ESD RC work together to hold four Washington State Fellow Convenings in their ESD each year. Each ESD RC tailors the convenings to meet their local ESD needs while working toward system-wide educational improvements.

The Fellows' Network increased the number and quality of instructional leaders and educators. Throughout the 2017-18 school year, there were almost 1,100 Fellows in the program. Of these Fellows, 732 completed a survey indicating 35% taught math, 25% taught science or STEM, and 14% were early learning teachers. Table 2 lists the number Fellows that responded to the survey by years of experience and content area.

Table 2. Number of Fellows that responded to the survey by years of experience and content area

Content area	Years in Fellows' Network	# of Fellows	Percent of total Fellows within content area
Early Learning	1st Year	48	7%
Early Learning	2nd Year	49	7%
Early Learning	3rd Year*	7	1%
Early Learning Subtotal		105	14%
ELA	1st Year	107	15%
ELA	2nd Year	36	5%
ELA	3rd Year*	31	6%

ELA Subtotal		189	26%
Math	1st Year	114	16%
Math	2nd Year	61	8%
Math	3rd Year*	26	11%
Math Subtotal		253	35%
Science or STEM	1st Year	76	10%
Science or STEM	2nd Year	53	7%
Science or STEM	3rd Year*	51	7%
Science or STEM Subtotal		181	25%
Other	1st Year	3	<1%
Other	2nd Year	1	<1%
Other	3rd Year*	0	0%
Other Subtotal		4	1%
Total		732	100%

**Third-year Fellows' totals for each content area were coded to include responses that indicated fourth-year Fellows, since the Fellows' Network has only been in existence for 3 years.*

Considerations for the Fellows' Network

Fellows provided the following recommendations for enhancing the OSPI/AESD Fellows' Network.

- Reduce isolation from other Fellows and promote a professional learning community for teachers, especially those at small schools.
- Create a strategic communications plan to promote awareness of the Fellows' Network among school administrators and encourage their engagement in the program.
- Develop a clearer vision of the Fellows' work and how it aligns to school improvement initiatives to ensure school administrators provide them time to prioritize this work.
- Examine innovative ways to fund local Fellows' involvement in the program.
- Establish a web-based platform for Fellows to engage in discussions and collaboratively edit documents.

Short-Term Outcomes of the OSPI/AESD Professional Learning Network

During the 2017-18 school year, the Content Area RCs delivered courses and sessions to Fellows, educators, and administrators who were not part of the Fellows' Network. The following sections describe the short-term outcomes of their efforts, which are (1) enhancing teaching or administrative professionals' knowledge of educational practices, (2) influencing colleagues' educational practices and (3) building networks for educational improvement. Short-term outcomes relate to immediate changes in teachers' knowledge, classroom practice, etc. that are realized in less than one academic year.

Enhancing Professional Knowledge

By attending convenings and other professional learning sessions, many educators and school leaders reported improved knowledge and skills. Areas in which they reported growth include content knowledge and pedagogical strategies, state and national standards, formative assessment and how students learn. Participants also gained understanding of culturally sensitive instruction approaches. Further, attendees expanded their leadership skills. Fellows working in primary grade levels learned how to create relevant lessons that integrate multiple content areas and include hands-on scenarios. Additionally, participants improved their understanding of differentiated instruction, which helps students with various levels of proficiency master content. Fellows also learned how to effectively create formative assessments that measure three dimensions of learning: practices, cross-cutting concepts, and disciplinary core ideas. A multi-week course helped improve participants' understanding about how to use data to inform their instruction approaches.

Early Learning Fellows, including school leaders, shared how they wove early learning pedagogical strategies and content knowledge together to better accommodate students' needs. A Fellow shared, *"Teachers arranged their classrooms to accommodate students' individual and group needs to communicate and work jointly. Students were initially allowed exploration time with the many math manipulatives that were in the classroom before they were given specific instructions and tasks to complete or problems to solve. The manipulatives were used to compose and decompose numbers, in measuring objects, and in geometry. During the activities, the role of the teachers was to ask probing and clarifying questions to help students with their understanding."*

Fellows also learned how to apply the Growth Mindset Theory (Dweck, 2008) in the classroom. Dweck's Growth Mindset Theory states that people who believe personal attributes can change with effort may experience positive outcomes, like better academic achievement, compared to someone with a fixed mindset. This work encouraged teachers to reevaluate their ideas about education, their role, and their ability to help students excel. As a group, they reflected on specific scenarios that trigger fixed-mindset beliefs and discussed the benefits of reframing those mindsets.

Influencing Colleagues

Fellows unanimously reported that the program developed their communication and collaboration skills. They felt much more confident facilitating learning among their peers by using materials and examples from the convenings. For example, they learned how to clearly communicate meeting objectives and acknowledge various levels of expertise when working with peers.

During the 2017-18 school year, the Fellows studied the Concerns-Based Adoption Model (CBAM) each time they convened. Fellows embraced the focus on CBAM as a way to strengthen their leadership. CBAM aims to build greater understanding about how teachers experience change when modifying classroom instruction. Using this model, Fellows consider teachers'

feelings and perceptions to achieve long-lasting improvements. A teacher shared, *“Due to our Fellows work, I understand better how to implement change through the CBAM principles. [CBAM] deepened my understanding of how to bring ease to people’s minds about new changes and how to implement them successfully.”*

Fellows shared what they have learned throughout their schools, and teachers made changes in their classrooms as a result. Fellows reported their peers have shifted toward a more student-centered approach to learning. Their use of lecture-style instruction has decreased, and the use of small groups has increased. Additionally, teachers have shifted their role from expert to coach. One Fellow elaborated that the professional learning she shared with teachers at her school, *“has helped their practice in the classroom in terms of how they’re doing things in small group instruction. Now, they’re coaching in the classroom instead of standing in front, doing the teacher-lead kind of thing. I think that those are big changes for our teachers because that’s not the way we used to do things.”*

Developing Networks

Through their participation in the program, Fellows created or expanded networks, such as professional learning circles and District Leadership Teams (DLTs). Ideally, DLTs included a secondary administrator, a high school science teacher, a middle school science teacher, an elementary science teacher, an elementary instructional coach, a district content specialist, and an elementary administrator. Fellows facilitated the DLTs, during which participants shared out-of-classroom practices, tackled problems, and gave each other feedback. A Fellow reported that their DLT increased their teachers’ confidence in their leadership abilities.

The network resembles an apprenticeship model where experienced Fellows help new members navigate the network, share practices and offer peer support. A Fellow shared, *“I think that having some people who’ve been [Fellows] for a little while, and then the new people coming in so that they can learn from each other—I think that that’s really helpful.”*

The program helped Fellows broaden their influence to include leadership of others and leadership of the community. A math Fellow described how the program enhanced her capacity to be a leader in their extended community. By partnering with another Fellow in the district, she expanded their annual math event from one school to all schools in the district. Bringing together all the district’s math teachers helped build a support system that had a positive effect on learning.

Early Learning Fellows also expanded their reach by networking with local preschool programs. A Fellow shared, *“We have been working with them for some time, and we meet with them monthly ... to have those conversations about professional development that we have been participating in ... [and] work on kindergarten readiness.”*

Long-Term Outcomes

Fellows and training participants reflected on long-term outcomes of their engagement in the Fellows' Network and ESD professional learning sessions. They noted how their learnings have influenced students. The long-term outcomes they identified included: (1) an increased number of educators using pedagogical content best practices, (2) improved student academic performance, and (3) improved student non-academic measures. Assessment scores, surveys, and interview responses tell the story of how their professional learning enhanced learning for their students.

Increased Number of Educators Using Pedagogical Content Best Practices

More educators use pedagogical content best practices as a result of the professional learning sessions and the Fellows' Network. Fellows who are also school leaders encouraged other educators to improve pedagogical practice. For example, an elementary school successfully implemented the district's success criteria and established classroom observations to monitor whether teachers were applying the criteria. This Fellow's insights from the convenings motivated this change. Student learning improved after the school implemented the success criteria. *"Growth this year has been much higher than last year,"* shared the administrator, attributing this improvement to her participation in the Fellows' Network. *"The Fellows' work was huge. Fellows increased my capacity and ability to be a good leader."*

Fellows who are also school leaders used what they learned to inform and implement schoolwide changes, including adoption of standards-based grading and center-based instruction. These school improvement milestones reach across all grade levels and impact all teachers. A principal elaborated, *"The strategies [taught at the professional trainings] supported our transition to center-based instruction. Now, all of our classroom teachers use small groups to differentiate their instruction in content areas. Classroom environments have been modified to include reading centers, writing centers, technology centers, and a myriad of other centers to extend learning and provide hands-on experiences for students."* They applied CBAM to effectively implement new approaches.

At an individual level, the network encourages teachers to adopt new practices in the early stages of learning. Teachers receive this information in easily digestible amounts and have support from a seasoned community of learners. For example, several new Fellows explained how the convenings helped them learn about challenging topics, such as how NGSS or CCSS aligns with their curriculum and teaching practices. In addition to mentorship from experienced Fellows, they also receive support from RCs, who work to ensure Fellows are not overwhelmed.

Improved Student Academic Performance

Participants described improvements in student performance on district assessments and mastery of content, and more students meeting or exceeding national and state standards. Administrators, instructional coaches, and teachers on special assignment worked

collaboratively with building educators to develop a shared vision about how to boost student learning. They achieved dramatic improvements across the four content areas. The following sections describe improvements in student performance for each content area.

English Language Arts

Through their professional development, ELA teachers developed knowledge that aligned with Washington State's Common Core State Standards (CCSS) in the areas of writing and argumentation.

For example, an ELA instructor used his ESD training to help 11th- and 12th-grade students improve formal skills in written and verbal argumentation and effectively provide evidence to support claims. His students used discussion cards to engage in meaningful discourse and develop argumentation skills. Initially, 48% of his students in one class were proficient writers. After incorporating what he learned through professional development, his students' proficiency increased to 83% by May. A student corroborated that the discussion cards improved her ability to write stronger, more complex arguments.

Another ELA Fellow participated in the Fellow Convenings, National Board Certification, science, literacy, and technology courses offered by the ESD. Through a book study and collaborative meetings with the other Fellows, she developed a mindful approach to differentiating instruction for her students. The RC also guided the Fellow through resources for helping all students prepare for the state assessment.

Early Learning

Early learning Fellows reported that the implementation of strategies they had learned in the program positively impacted their students' achievement, especially in math and reading. In one school's K-2 classrooms, many students' early literacy and math scores doubled between Fall and Winter 2017.

Another Fellow tracked the implementation and subsequent effects of strategies she shared with the classroom teachers. In an assessment conducted in the fall, 56% of students scored well below benchmark for first sound fluency. These students needed intensive support to raise their achievement. Teachers adjusted their approaches, such as by offering more individual or small-group instruction. They also used formative assessments to monitor and modify their approaches. An assessment in the spring indicated only five percent of students were well below the benchmark.

Math

Fellows who attended the math convenings reported improved understanding around algebraic thinking, geometry, number sense and mathematical modeling. For example, a math teacher described an ESD training as a safe place to practice with other teachers on how to use open-ended problems that have multiple solutions. He developed several problem-based, locally relevant lessons, such as by creating problems that incorporated the three bridges that surround their town. He explained, *"I wanted to use something that they see every day. Every*

day, the bus goes over the bridges, and I got them to think about it.” These pedagogical strategies led to significant improvements in his students’ math achievement, including advancement among students with low proficiency and special education students.

Regional Math Coordinators coached Fellows through book studies on CBAM and Jo Boaler’s book *Mathematical Mindsets*. Each chapter contained activities related to the chapter’s topic. The Fellows shared the teaching resources and ideas from the convenings with teachers to help them learn how to empower students to see math as an opportunity for growth.

Science

Science Fellows focused on the application of the NGSS and equitable access to science content. For example, Fellows shifted their approach to introducing science concepts. Instead of beginning with theory and factual information, they started with a pre-test that asked students to share what they already knew. They promoted active learning and projects that target misconceptions and encourage students to reevaluate their ideas about science and increase their understanding.

Students’ lab sheets and notes, teacher observations, and formative assessments pointed to the effectiveness of the approaches learned through the Fellows’ Network. Additionally, an assessment conducted in fall 2017 and again in winter 2018 showed improvements in earth and space science.

Improved Student Non-Academic Measures

Student non-academic measures improved following implementation of new knowledge, skills, and abilities learned. For students, these improvements include increased student engagement. For teachers, these improvements included enhanced confidence and self-efficacy, and deepened understanding of cultural competency and equity.

Increased Engagement of All Students

Fellows and educators reported higher student engagement across all cultural backgrounds and proficiency levels. They described heightened student engagement from applying what they learned from the RC trainings. Qualitative and quantitative data on academic and non-academic factors confirmed this trend. Highlights of this data include the following.

- Low-proficiency students, including those with special needs, were excited when learning mathematical modeling through active, local, place-based lessons.
- ELL students developed confidence and fully engaged in classroom discussions by using sentence stem cards and other resources.
- Strategic grouping by interest, project, and language promoted interaction among early learning students and helped them solve difficult problems while communicating respectfully.

- Elementary school students used every second of timed journaling periods, and their dependence on teachers' input to move forward on writing assignments lessened as engagement increased.

These are just a few of the ways that professional learning session participants increased their ability to create student-centered environments that help diverse students learn. This approach to learning helped improve students' initiative, productivity, and perseverance.

Increased Confidence and Self-Efficacy

The professional learning sessions give school leaders and teachers tools to increase students' confidence and self-efficacy. For example, a Fellow who is a principal worked with teachers to shift their mindsets about students' math ability. By acknowledging that every student's math ability can improve with effort, teachers helped to free students from believing they have low math ability. Students expressed enjoyment in learning, practicing, and eventually mastering the math standards at their grade level. At the end of the year, students shared the impact the math class had on their perceptions of math:

At the beginning of the year, I depended on other people to do the math because I thought I couldn't do it. But now I am doing my own math and I know I can do math!

At the beginning of the year, I was nervous about math, but I saw that you didn't care about how bad at math I was. You cared about how much I learned, and you got rid of a lot of my self-doubt.

This year, you shared a lot of skills with me that I didn't know until now. I feel that I understand everything I need to survive middle school math.

At the beginning of the year, I was worried that I won't do good, but I learned I was great! Now I am ready for sixth grade because I did lots more [math] strategies and know more math!"

Pedagogical best practices in ELA also bolstered students' confidence in writing. A student shared, "When I first signed up for and started English 111, I was skeptical of how much my writing would improve in such a short time period. Fortunately for me, however, this class taught me skills to help me grow as a writer that will not only benefit me in my English classes, but in all other genres, as well."

Deeper Understanding of Cultural Competency and Equity

Professional learning participants deepened their understanding of cultural competency and equity. Using this knowledge, they created inclusive learning environments for diverse students and their families. They provided equitable access to quality instruction, used culturally relevant classroom pedagogy, and engaged in culturally sensitive school-to-family communication.

Fellows expressed commitment to providing equitable access to quality instruction, especially in small rural schools. *“I’ve really been working hard on having all students have the availability of science instruction for them, no matter which school they’re in or any other aspect of their lives ... that they still have that same access [as other students],”* declared a science Fellow.

Some convenings focused on ways to weave cultural relevance into the classroom. In the convenings, Fellows learned about how instruction can be more inclusive of all students. They practiced strategies that elicit and build on students’ interests and leverage their cultural knowledge and background to help them learn. Teachers shared that this approach benefited every student in the classroom. Since culture often influences meaning, Fellows learned to evaluate an existing curriculum for how well it matches students’ culture, language and literacies. Fellows gained skills in developing supplemental teaching materials that are inclusive.

Participants felt that what they learned about cultural competency positively impacted their students’ coping skills, connectedness to school and teachers, and general outlook on life. Fellows also realized that the inclusion of families in their students’ academics helps provide equitable access to quality education. Family engagement helps teachers understand how to align their approaches with the customs and mores of their diverse school families. Feeling that family engagement was a priority, a school leader/Fellow brought back the information from the convening and promptly shared it with all of her staff. She described the effect of partnering with families, noting, *“[I brought back what I learned] and ways to partner with the community, how to meet the needs of our families, and to partner with them in the teaching process. This has a direct impact on how I give feedback to staff and [how I] think about my role and influence as a school leader.”*

Discussion

The OSPI/AESD Fellows’ Network and model of professional learning supports a culture of authentic learning by encouraging educators to share their expertise and experiences. For some Fellows, the program is similar to an apprenticeship, in which some participants learn from their more experienced peers. During the 2017-18 school year, teachers found value in state-wide, coordinated professional learning. RCs engaged teachers who had various levels of expertise, from those with 20+ years of experience to teachers in their first year of instruction.

Across content areas, participants learned about teaching approaches and strategies for the classroom, district initiatives, and development of relationships with the larger community. First-year Fellows reported reaching new comprehension and understanding. Seasoned teachers described mastering new strategies. The Fellows confirmed the following short-term outcomes of the professional learning activities:

- high satisfaction with training;
- strengthened knowledge, skills, and abilities;
- changes in practice;
- positive influence on colleagues’ practice;

- the development of teacher networks; and
- enhanced leadership skills.

As a starting point, the program focused on leader self-awareness. Next, they explored leadership of others and the community. Through involvement in a community of practice, new teachers learned by observing the RCs modeling authentic leadership traits. Professional learning attendees expressed ongoing commitment to professional learning. They voiced intentions to continue growth by attending as many sessions as possible.

Long-term outcomes included an increased number of education personnel using pedagogical content best practices, enhanced student academic achievement and improved student non-academic measures, such as engagement and confidence. However, there are opportunities to intensify long-term outcomes. For example, teachers need a platform for sharing what they learn as they work through the professional development. Between the convenings as they are currently set up, Fellows do not always have ways to engage with each other.

In the community of practice, organizers and participants come together to refine programs and processes. However, the participants interviewed did not mention documentation of their approaches, which suggests the Washington State Fellows' Network has not fully formalized its process. Documentation is important to ensuring the scalability and sustainability of the OSPI/AESD professional learning community of practice across Washington State.

Conclusion

Teachers and Fellows viewed their ESD as a long-term professional development provider and formed strong collegial relationships with the RCs. They trusted and depended on the RCs as educational advisors and coaches to improve their practice. Teachers and Fellows had a strong sense of belonging to their ESD professional learning community within their content area and sought out ways to stay connected after the professional learning ended. They were committed to practicing what they had learned, implementing new resources, and coming together to discuss challenges and successes. This cycle of inquiry positioned teachers and Fellows to be successful in the classroom and improve student learning.

Second, the evaluation contributed to OSPI/AESD's understanding of the impact of the Fellows' Network. Data strongly suggest that the program effectively developed Fellows' leadership skills. Fellows felt equipped to influence other teachers and encourage them to make changes in their practice. They deepened their content knowledge and learned critical skills, such as how to align instruction and formative assessments with the new state standards. With the knowledge, skills, and abilities gained through participation in the program, the Fellows' helped their students make steep gains in assessments across all content areas.

School leaders and administrators equally benefited from the OSPI/AESD professional learning experiences. Carrying out legislative mandates and statewide initiatives, the ESDs worked with school leaders and administrators to teach strategies that provide equitable access to

education for diverse students. Education leaders learned how to engage families in the academic process. This engagement enhanced two-way communication with families and led to a stronger connection to the school and teachers.

Lastly, opportunities exist for OSPI, AESD, and the ESDs to work together to make the already strong Fellows' Network even stronger. One such opportunity is the development of a strategic communications plan designed to build school administrators' knowledge and appreciation of the program. Most of the Fellows' administrators saw the value of the program and desired more frequent communication from OSPI and their ESD. Stakeholders need to collaborate to identify educational topics to include in the strategic communications plan to garner support and advocacy for the Fellows' Network. For example, one educational topic could include ways to use the Fellow's Action Plans, which are currently underused. The Action Plans have the potential to become powerful tools across Washington State to build the Fellow-Administrator relationship, contribute to data collection and establish institutional memory.

Overall, the OSPI/AESD model of professional learning empowered educators and school leaders to create an environment inclusive of all students. This environment transformed students' attitudes toward school and their beliefs in their skills and knowledge. It also increased all student engagement, including students with special needs, students at-risk of dropping out, ELL students, and highly capable students. The enhanced student engagement translated into improved learning, and, as a result, students' academic achievement scores on state assessment tests increased.

Looking ahead, future research opportunities include exploring how the Fellows' Leadership Program: (1) improves teacher job satisfaction, (2) contributes to perseverance in demanding work environments, and (3) assists with retaining teachers of color. This research would assist Washington State and serve as a valuable contribution to teachers' professional development literature worldwide.

Appendix A. Professional Development Evaluation Briefs

To better understand the effect of participants' involvement in the Fellows' Network or Professional Learning Experiences (PLEs) with their ESD, PSESD piloted an in-depth study of eight participants conducted by an evaluator from KAI. Participants in the study included Fellows and non-Fellows across all content areas. Fellows included administrators, specialists, instructional coaches, and classroom teachers.

The evaluator met one-on-one with each participant in a series of five to six 1-hour sessions per participant. The evaluator began the first session by describing the Theory of Action, assumptions and short- and long-term outcomes. The evaluator then interviewed the participant to gain a deeper understanding of how they are implementing what they had learned in the PLEs. The evaluator also consulted with the Regional Coordinators to gain clarity on the PLE learning objectives. Throughout the remaining sessions, the evaluator and the participant collaboratively explored student academic and non-academic measures that illustrated teachers' implementation of their new knowledge in the classroom. Various methods of analysis revealed growth in these academic and non-academic (ex. engagement) measures.

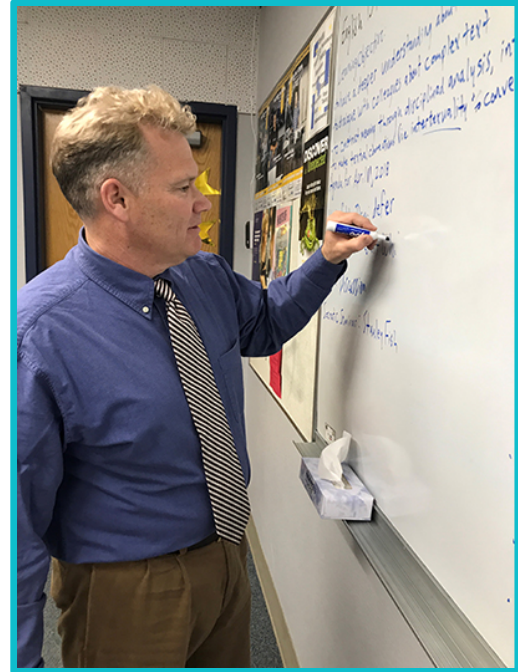
The Professional Development Evaluation Briefs in the following sections document the effects of PLE participation on students and the highly valued expertise of the ESDs and the content area Regional Coordinators. Participants shared how they trust the ESDs to deliver high quality, cultural, and locally relevant professional development that meets students' learning needs. They also expressed their gratitude for helping implement the Washington State's standards and assessments while building teacher expertise in using the online OSPI resources. These efforts by the OSPI, the ESDs, and school staff are needed to successfully raise student achievement across the state.

Professional Development Evaluation: English Language Arts 1

Philip Fournier has attended many English language Arts (ELA) professional learning courses at ESD 171 under the tutelage of Regional Literacy Coordinator and Guided Language Acquisition Design (GLAD) Trainer Shanna Brooks. Mr. Fournier teaches all grades in Manson High School, a bilingual school located in one of the fastest growing Latino communities in Washington State. One of the school's goals is to offer more dual credit courses, which prepare students for college and the workforce by providing the skills and knowledge to navigate the rigorous and ever-changing demands of 21st Century work.

Mr. Fournier teaches ninth-grade English courses, including regular and honors sections. These two courses are integrated with the ninth-grade science classes. For these courses, Mr. Fournier said, *“The science teacher and I collaborate on creating real-life, integrated, project-based learning.”*

Mr. Fournier also teaches English 111-Composition, a University of Washington College in the High School course designed to show students how to think in complex and non-binary ways about knowledge and writing. In English 111, students develop skills to write academic papers, which they will undoubtedly need in their academic career and beyond. This course focuses primarily on one discipline, English, as a way of helping students recognize the differences between academic expectations across content areas to provide them with skills for achieving success across disciplines.



Philip Fournier, 9th-grade ELA teacher at Manson High School in Manson, WA

Implementation of Professional Learning

Since his first professional development course at ESD 171 in 2013, Mr. Fournier has been applying what he learned from the Regional Coordinator. One multi-week course that he said *“was pure gold”* introduced him to new strategies to effectively teach students how to use textual evidence to support claims with argumentative writing. It also taught him how to design formative assessments that registered students’ learning. He shared:

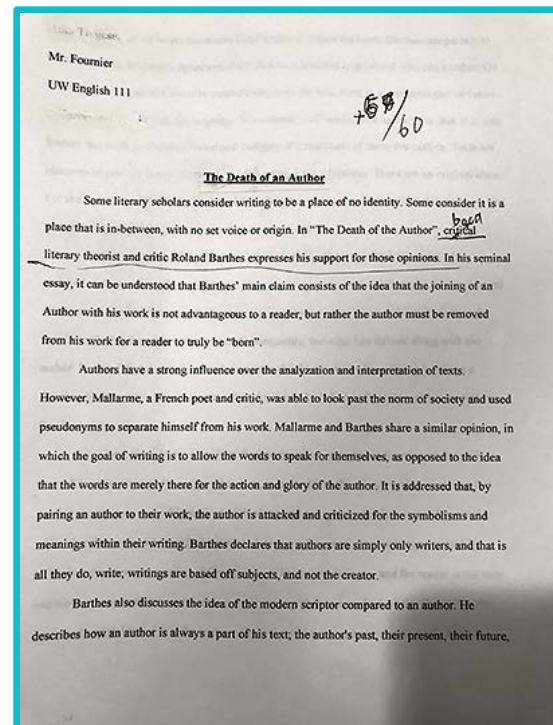
“The course was collaborative in nature, and I found this extremely beneficial because it prepared us to apply what we were learning immediately. Also, it held us all accountable because we needed to bring back our assessments.”

Another ESD course he completed focused on how to use the English Language Achieve Discussion Cards. These cards are designed to teach speaking skills and improve students’ communicative skills and their ability to express themselves with appropriate social and cultural norms for each situation. Mr. Fournier held a well-worn deck of cards as he enthusiastically explained:

“Explicitly using the cards has given students access to language so they can have rich conversations about science, math, and English Language Arts. The Discussion Cards have guided and assisted my students, specifically those who are bilingual, by providing them with explicit language support for authentic dialogical experiences in the classroom. In other words, the cards have given my students the opportunity to learn and practice conversational techniques needed to move a discussion forward, as well as the rhetorical devices, a critical foundation at the ninth-grade level, which are frequently

"Students are given an opportunity to significantly revise each of their major papers using feedback generated by me, their peers during reading sessions, and writing conferences."

"When I first signed up for and started English 111, I was skeptical of how much my writing would improve in such a short time period. Fortunately, for me, however, this class taught me skills to help me grow as a writer that will not only benefit me in my English classes, but in all other genres as well. I am now able to create stronger, more complex arguments that are important in an academic context. I can support these arguments with evidence and ideas gathered from outside sources, and I am better



Work example shows steep gains in a student's ability to write

able to synthesize these ideas into fluid, compelling arguments. And when writing these arguments, [I am] cognizant of my intended audience, and I am consequently able to cater to the needs of the genre I am writing for in order to be more successful.”

Mr. Fournier is dedicated to his students and committed to attending professional learning at his ESD to best serve them. He attributed the ESD’s ELL-focused professional learning courses with facilitating his ELL endorsement through the Pacific Lutheran University. Next, he plans to work with the ESD to learn how the ELA interim assessment blocks can be used to complement his current formative assessments to benefit his students. Mr. Fournier’s story illustrates best practices of educators reaching out to their ESD and the larger ESD network to learn new knowledge and bring it back to the classroom, school, and district.

Professional Development Evaluation: English Language Arts 2

Tori Nelson is an elementary school fourth-grade teacher at Winlock Miller Elementary in Winlock, WA, and is served by ESD 113 in Tumwater. Winlock Miller Elementary is a small rural school located in south-western Washington 45 miles south of Olympia. Winlock Miller serves Pre-K through fifth-grade students divided among 20 teachers. Students come from the following racial backgrounds: 65% White, 28% Latino, 6% two or more races, with the remaining students identifying as Asian and American Indian. Of these students, 80% use the free or reduced lunch program.

Ms. Nelson is active in professional learning offered by her ESD and has been in the Fellows' Network since it started. She has participated in the professional certification, science, literacy, and technology courses offered by the ESD. She believes that the opportunities provided to her through the Fellow's Leadership Program strengthened her love for teaching literacy.

The ESD 113 learning opportunities have spanned multiple areas, including certification classes, science, English Language Arts, literacy, and technology. Most of her work has been with the English Language Arts Regional Coordinator, Ms. Cheryl Vance, K-4 Literacy Administrator at ESD 113. Topics studied included Smarter Balanced assessment, formative and summative assessment, vocabulary, and differentiation of instruction. *"It was through these opportunities that I really developed a love for teaching literacy and developed a great professional relationship with Ms. Vance,"* She reflected. She further shared that, *"As an ELA Fellow, she [Ms. Vance] keeps me up to date on the latest information from the state regarding literacy. I then pass the information along to the rest of the staff in my building."*

Ms. Nelson was quick to point out that several books were key to her growth, such as *Reading Strategies* by Jennifer Serravallo. This book recommended effective strategies to differentiate instruction for struggling readers. The Regional Coordinator also guided the Fellows through copious resources on the Smarter Balanced website. *"This is what I was able to use to help ALL students prepare for the Smarter Balanced state test,"* Ms. Nelson enthusiastically shared. She continued to explain how it has taken her quite some time to build the skills and abilities to fully use the Smarter Balanced website, *"The website has so much information that it has taken a couple years [for me] to really be able to utilize it all. Cheryl has been able to help break it down into parts and provide detailed instruction on how it's to be used."*

A long-term, trusting, professional relationship grew with the ESD Regional Coordinator, who is committed to the growth of the teachers she serves. *"I can call or text her, email her, stop by her office, and she is always prompt with responses. She's met me for coffee to help go through material; she's very unselfish with her time,"* shared Ms. Nelson.

Specifically, she appreciated the work the Fellows did with interim tests for the Smarter Balanced Assessments because she *"was able to incorporate these at many different levels for my students."* This became an important step in learning how to use the Smarter Balanced interim assessments to inform individualized instruction and to then differentiate instruction.

Through Ms. Vance's instruction on informing instructional practice based on the Smarter Balanced interim assessments, Ms. Nelson had an epiphany on what differentiation really means in practice. She said, *"Differentiation was a word I learned in college, but it's one I really came to understand through her teachings."*

Implementation of Professional Learning

One way Ms. Nelson developed better student writers was through the use of student conferences to provide support and feedback to students. By conversing about their writing, she specifically listened for elements of the story they were writing, including characters, theme, plot, and instances of sensory or striking language. Making sure that there was a balance of teacher and student dialogue, when the student had finished telling their story, Ms. Nelson provided coaching and suggested strategies for approaching their writing. She learned about the importance of sharing the "how to" and the "why," so students know the reasoning behind a strategy for their future reference.

The fourth-grade teacher also used her new knowledge and skills to guide her students who were grappling with informative writing. She described her students' gains in informative writing and their development of confidence in dialoguing with their peers after she shifted her classroom practices from teacher-centered to a student-centered environment. *"I shifted my instruction to more student collaboration, rather than me giving direct instruction,"* she shared, and this shift then helped build on students' interest, prior knowledge and experience for topic ideas and to further develop their writing skills.

Through her professional development at the ESD 113 and mentoring by the Regional Coordinator, Ms. Nelson developed long-term and short-term writing goals for her whole class, as well as individualized/differentiated goals for her students. One student was a gifted writer and has dreams of becoming an author when she grows up. Ms. Nelson explained, *"While I want evidence that she is meeting required standards, I want to deepen my expectations to push her to be a life-long learner and gifted writer. I want to push myself to become the best educator I can be and keeping her challenged actually challenges me. This is the first year I have separated writing from other ELA components. Previously, I taught reading and writing together. I am using this process to expand my own abilities."*

Her differentiated short-term goals for this student are as follows.

- Develop variety in sentence beginnings, while avoiding overly repeating words.
- Provide transition sentences when switching topics or ideas.

Her differentiated long-term goals for this student are as follows.

- When writing explanatory/informative or opinion pieces, use proper paraphrasing and source citing techniques.

- Properly using evidence from text has been a major shift in standards recently, and these genres of writing will become more frequent as she progresses through grade levels.

The student, identified as gifted and talented, had writing needs that superseded the regular classroom. Ms. Nelson, therefore, differentiated instruction for her by providing her with a rigorous writing assignment where the student could work in the zone of proximal development, the place where she has great potential to grow intellectually. The assignment consisted of three parts: reading two articles, creating a Venn Diagram, and writing a five-paragraph essay. This essay required an introduction, transition sentences, and a conclusion. Ms. Nelson elaborated, *“I chose this assignment because it served as a stepping stone for her (the student’s) long-term goals. It also provided her with an opportunity to practice citing sources and paraphrasing. The short-term goals were specific to this assignment due to the chance to practice varying sentence beginnings. This type of essay was perfect for introducing transition sentences.”*

She further differentiated her instruction by providing her student with one-on-one instruction and then providing autonomy to complete the project. Through the student conferences, Ms. Nelson *“hoped to gain more understanding of her writing process, as well as determine whether or not she was capable of working independently and still meet all the assignment’s requirements.”* Ms. Nelson applied the formative assessment strategies learned in the convenings: *“Each class period, [I] met [with my student] for a few minutes to check on her progress and discuss questions or concerns. Her first draft lacked transition sentences. I used modeling and supports of examples from other texts. We really focused on her sentence fluency per her short-term goal.”*

Ms. Nelson went on to say, *“I focused the feedback on paraphrasing. I also wanted to continue to develop her citing skills. Finally, I wanted to mix genres, so she would have to use details from informative articles to strengthen a fictional narrative story. The first time through was without any tools. The second was with her fine-tooth comb (highlighter) to find information that would be helpful in her story. Next, I gave her a graphic organizer to take notes on each robot she read about. Finally, we discussed effective ways of incorporating those pieces of information in her story, while still making it fictional and creative.”*

Ms. Nelson influenced her student by connecting reading and writing by requiring written responses to comprehension questions that used a higher level than what is used in the fourth-grade readers. While much of fourth-grade-level work uses knowledge, comprehension, and application questions, she wanted to challenge her student cognitively by consistently having her delve into the synthesis and evaluation levels of abstract thinking.

Influence on Student Achievement

Ms. Nelson shifted her instruction from a direct instruction model to a more collaborative, student-centered approach. It clearly moved her student along the path of becoming an independent writer. Ms. Nelson said, *“I logged the times that she waited for my input before*

proceeding during the second sample, and it was nearly 50% fewer times of waiting for me to give her individual help and the requests were toward a higher cognitive level.”

After assessing her student’s work, Ms. Nelson determined that her next steps would be to expand her ability to develop a topic. *“She has great voice and uses emotion and specific word choice to capture her audience. Next, she needs to expand these strengths across genres. She can use her emotion to write researched opinion pieces. She can further develop the voice in her writing by taking informative articles and creating a narrative based on the ideas in the text,”* reflected Ms. Nelson.

Ms. Nelson differentiated instruction and writing assignments to challenge her student. Based on two articles, “Follow that Koala!” and “Frogs at Risk,” she had the student write a five-paragraph compare-and-contrast essay on koalas and frogs, complete with an introduction, body, and conclusion. The following is a sample of the student’s story:

Two animals that can be compared and contrasted are frogs and koalas. Although it may not seem like they have much in common because they’re very different, they actually do. Here are a few similarities.

Similarities for frogs and koalas come from their habitats. Both animals are losing their homes because of what people are doing to them. This is causing frogs and koalas to become at risk of being endangered. What’s happening is that loggers and farmers are cutting down trees. These two animals live in trees and eat leaves from them. Along with these similarities, they also have many differences.

In the article “Follow That Koala!” it says that koalas are furry animals that live in eucalyptus trees far in the northeastern coast of Australia. These furry mammals eat leaves, specifically the ones from the trees they live in. These marsupials carry their babies in a pouch like bag. They are now becoming endangered because farmers are cutting down many of the forests where koalas live. Because of this, koalas may run out of food in the future. Hunters also kill the animals for their fur. Koalas are warm-blooded. These are things that make them different from frogs.

In the article “Frogs at Risk” it says that frogs are scaly amphibians. Most live in the mountains and forests of Ecuador, in South America. Many types of frogs and toads are at risk of be endangered because of disease, weather changes and pollution. Frogs easily absorb pollution they sometimes are born with wrongly shaped body parts such as extra eyes or legs. Over 50 years, many amphibian species, such as frogs, have become extinct. Two of every five in 3,046 species North and South America are at risk of vanishing. Frogs lay jelly like eggs in the water. They develop lungs and live on land. They must live near water though, so that their skin stays moist. Frogs are also cold-blooded.

Frogs and koalas are both interesting animals. They have many differences even though they are alike in some ways.

The second assignment required the student to read three articles on non-fictional robots and use the information to create a fictional story about a robot citing information from the articles. Below is a sample of this story by the student entitled, "My Tiger Majesty."

"Is it here yet?" I asked my mom, Rieva. "I don't know, go and check!" she said. I ran down the hallway and to the front door. I looked at the doorstep. There was a ginormous box. "It's finally here! It's here! It's here!" I said, while starting my happy dance.

On the front of the big box, was a picture of a robot that looked like a white tiger. I tried to pull the huge box into our house, but it was too heavy. "Mom!" I called. "You're going to have to have to help me with this!" Mom came running to the front door. "Don't hurt yourself!" she warned. "I won't! Now will you help me please?" I asked. "Ok ok..." she said. She pulled the box into the house.

I asked Mom for a pair of scissors. "How about I do it myself," she suggested. "Ugh, ok," I said. She started opening the box with the pair of scissors. It took a while, and I grew impatient by the minute. Just when I was about to blow, she said she was done. "Yay!" I said as I ripped away the cardboard.

Finally, it was here, what I had been waiting for years. I stood back in awe. Both my mom and I were silent as we stared at the beautiful white tiger replica. It was a robot we had wanted since I was six. It even had fake black and white fur! I pushed the power button. The tiger's head turned to face us. "I'm going to call you Majesty!" I said to the tiger. I pet its belly. First it growled then it understood what I was doing. It rolled over, showing me its back. I scratched its back. I put a collar that was purple with blue jewels on her. It fit perfectly! "She's beautiful!" said Mom. "Thanks, I agree," I said while hugging Majesty.

When I was finished hugging her we went outside to play in the grass. We played fetch and tag. Majesty snuggles me and plays with me. She mimics real white tigers. She plays music for me, sings and dances for me. She takes care of me. In fact, one time she stopped me before I crossed the road when a car was driving by. Just like Robbie from the book I, Robot. She also loves to run around the house and she plays the piano!

I love playing with my new pet, Majesty!

From Ms. Nelson's assessment of her student's two essays, she came to the realization that she needed to further differentiate instruction and increase the level of texts to the sixth-grade level. With the increase in text complexity, Ms. Nelson also realized that she, *"wanted to continue to develop her citing skills."* Further Ms. Nelson said, *"I wanted to mix genres, so she*

would have to use details from informative articles to strengthen a fictional narrative story. My student met her goals in work sample one (she developed a variety of sentence beginnings and provided effective transitions), so the goals for work sample two were directly related to her long-term goal of providing effective citations. These goals helped take her writing to a higher level by introducing her to more specific vocabulary from the higher-level text."

These writing assignments and Ms. Nelson's mindful approach to differentiating instruction for her student has solidified her student's passion for writing. As Ms. Nelson reflected, *"After several conversations with her on the topic of writing and seeing her willingness to participate in every class discussion, I can conclude that she is confident in her language arts abilities. Every week in her homework she writes impressive summaries of what she read. She loves to journal and utilizes every second of our timed journal writing times. She can respond to a prompt or just come up with her own topic to write about easily. She is an exceptional peer editor for other students. She provides compliments and suggestions that are comparable to mine."*

The ESD training also prompted Ms. Nelson into striving for the prestigious National Board Certification. Both her professional development and eventual work through the National Board process showed her to the power of teacher feedback to push thinking into new directions to develop strong writers. The greatest satisfaction that Ms. Nelson received was the inspiring words from her student. Her student *"has repeatedly thanked me for challenging her and making sure she's not bored or, worse, not learning/growing. While I strive to push every student in the class, no longer will I underestimate what setting high goals might do for all my students. If I don't set high goals, no one will reach them."*

Finally, Ms. Nelson summed up her experience by sharing, *"I wouldn't be as effective academically if it wasn't for the professional development I have had at our ESD. Cheryl has been vital in helping me advance my career as an ELA specialist."*

Professional development evaluation: Early Learning 1

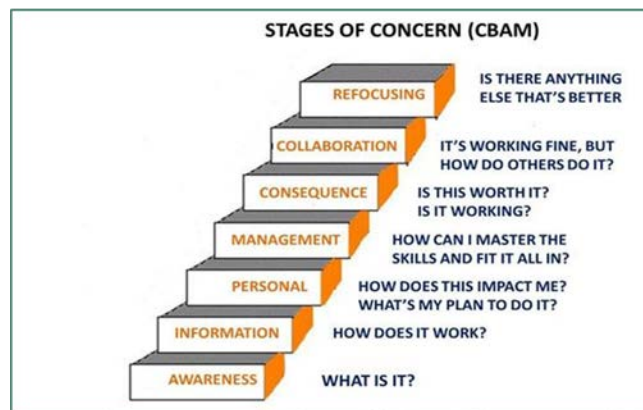
Stephanie Andler is an Assistant Principal at John Campbell Elementary School in the Selah School District. Selah, located in Eastern Washington, is known for its agriculture. John Campbell Elementary School serves approximately 830 K-2 ethnically diverse students, including Latino (28%), White (68%), two or more races (3%). Over half (52%) qualify for Free or Reduced-Price Lunch. The school employs 64 teachers, half of whom have their master's degree.

Ms. Andler is active in professional learning offered by her ESD and has been in the Fellows' Network since its inception. She has attended all the Early Learning convenings, as well as numerous courses offered by the ESD, and attributes her participation to the successful professional development she has provided to the K-2 teachers in her building.

As a Fellow and ESD training participant, Ms. Andler's learning focus has been on: The Concerns-Based Adoption Model (CBAM), early mathematics, teacher efficacy, knowledge of the standards, cultural competency and higher order thinking. The trainings have also focused on the application of Growth Mindset Theory (Dweck, 2008) in the classroom. Dweck's Growth Mindset Theory is the belief that individuals with a growth mindset (e.g. belief that personal attributes are malleable with effort) can experience many positive outcomes (e.g. including better academic achievement) compared to an individual with a fixed mindset (e.g. intellectual abilities are cannot be changed).

She embraced the current Fellows' Program focus on implementing change through developing a deeper understanding of how change is experienced by teaching staff. She explained, *"Due to our Fellows work, I understand better how to implement change through the CBAM principles. [CBAM] deepened my understanding of how to bring ease to people's minds about new changes and how to implement them successfully."* Ms. Andler shared how she now takes a longer-term view of the journey across the implementation bridge and considers teachers' feelings and perceptions while moving through the Stages of Concern (See Figure 1).

Figure 1. Stages of Concern (CBAM)



CBAM aims to build greater understanding about how individual teachers work through the change process, or Stages of Concern, when modifying classroom instruction. This helps Fellows to build communication and collaboration skills to improve teachers' receptivity to change. The diagram on the following page provides a set of clarifying questions about aspects of instruction for each of the seven Stages of Concern. The Fellow confirmed that CBAM helped her work with teachers in more meaningful ways to transform teaching and learning while being sensitive to teachers' feelings.

In conjunction with learning about how to guide her team of teachers successfully through the change process using the CBAM model, she also gained an understanding and knowledge about the development of mathematics in early learners. Further, the ESD trainings from the Regional Coordinators helped her to improve her ability to deconstruct the Common Core State Standards (CCSS) *"for mathematical practices and the implementation of higher order thinking in lessons."* She added that, along with learning how to break down the CCSS, she learned how to apply strategies to improve Cognitive Academic Language Proficiency (CALP) for English Learners (EL), *"I learned the importance of language structures and mathematical discourse and inquiry-based learning for students to solidify content."*

These EL strategies have dovetailed with her grasp of the deeper implications and awareness of being culturally competent in all areas of the school (e.g., classroom discussions, curriculum, collegial relationships, etc.) as well as outside the school environment. From her understanding of the critical nature of cultural competence that she gained from participating in the ESD training, she has transferred this knowledge into action. She has instructed her school staff on how to be culturally competent and respectful of other people's perspectives. She shared, *"I learned ways to meet the needs of our families and to partner with them in the teaching process. This has a direct impact on how I give feedback to staff and think about my role and influence as a school leader."*

As a whole, Ms. Andler's participation in the Fellows' Program and the ESD professional courses have contributed to her success as school leader. She has taken all the elements of her trainings and course work to successfully translate this into a systematic implementation of 2-week, cyclical classroom observations in all 26 classrooms in support of new curriculum learning targets.

Implementation of Professional Learning

Ms. Andler shared with her classroom teachers what she has learned from the Fellows' Network about mathematics in early learners: *"The Fellows' work built my knowledge on dissecting CCSS standards and the development of mathematics in early learners. I learned how to dissect content for the mathematical practices and the implementation higher order thinking in lessons."* In addition, she helped her teaching staff understand how to support a growth mathematical mindset by implementing mindset interventions or activities to show all children that they can enjoy and succeed in math. One way her team implemented the growth mindset in relationship to the achieving the CCSS standards was through a "learning pit" concept:

"They (the teachers) each taught their class the "learning pit" concept. That everyone goes into a pit when they learn something new and that it is a normal process. [A] "productive struggle." The students know it well, and we have teachers who tie it into the learning target each day. One teacher has students mark with a sticky or a magnet where they are in the pit to reflect how close they are to mastering each target."

The "Learning Pit" concept stems from Ms. Andler's professional development through the ESD. The Fellow Convenings used Stanford University's educators Carol Dweck's work on growth mindsets and Jo Boaler's work on students' negative feelings about mathematics. Ms. Andler provided practical strategies and activities to help teachers and parents show all children, even those who are convinced that they are bad at math, that they can enjoy and succeed in math.

Knowing that students make sense of the world through their cultural lens, she imparted what she had learned about cultural competence, family engagement, and equity for all students from the ESD. She taught the teachers how to modify their practice and interactions to align with the customs and mores of the Latino students and parents: *"All of this was wrapped up with ways for teachers/schools to be culturally competent and to embrace the perspectives of others. We learned ways to partner with the community and to meet the needs of our families and to partner with them in the teaching process. This has a direct impact on how I give feedback to staff and think about my role and influence as a school leader."*

Lastly, Ms. Andler used what she has learned about leading and implementing change to provide teachers with clear and transparent reasons why regular observations will result in improved student learning. Her objective was to carefully inform teachers' perspectives about change, specifically that change is a learning process, not an event. She shared this idea with teachers via their leadership team by, *"reassuring teachers that we are giving time to implement a new curriculum ... you're not going to be an expert. I want to help them develop a growth mind set. And giving them feedback along those lines of growth mindset, this has impacted teachers."*

At the beginning of the school year, Ms. Andler set up a classroom observation schedule and observed teachers once every two weeks. An intentional, but comfortable conversation asking a lot of questions to support a reflective culture took place after the observation. She explained, *"One teacher was originally really stressed out. She was worried about the new literacy curriculum we were implementing, as well as a group she was leading. I explained that change takes time and that it is normal to not feel routinized when implementing change. I explained that this change was normal and that we have to give ourselves permission to learn or a growth mindset ... and that inspired her ... you could see her whole countenance change."* Afterward, the teacher asked me to *"repeat that to everybody because it's so important for us to remember [that] we are learning together."*

Influence on Student Achievement

The cyclical classroom visits provided a way to observe and give feedback to teachers about pedagogical strategies and instructional alignment to the new curriculum's learning targets.

Using data, Ms. Andler and teachers noticed a positive correlation between the use of the learning targets and success criteria and student growth. In other words, the teachers who modified their instruction to use the new curriculum's learning targets and success criteria have realized greater gains in student scores compared to those teachers who did not use learning targets and success criteria. Ms. Andler explained that one of the success criteria defined in the rubric was the ability for students to articulate what they learned. She shared, *"Students need to know the target to hit and why it is important for them to have ownership of their learning. They also need to know how to measure success, so they can self-reflect. We set up a system that we would visit and provide feedback to every classroom in our school over the course of two weeks. I used my work with Fellows in my feedback that I gave to staff in my daily interactions."*

She also mentioned key supports that the convenings provided, such as reviewing and deconstructing the standards together as a group. She shared, *"A lot of the standards work we did [in the Fellows' Network] translated into the feedback given to teachers after the observation."*

Student growth was realized across content areas; however, growth was most profound in early literacy and math, as measured by the STAR360 assessment by Renaissance. STAR360 measures growth aligned to early literacy and math standards using interim and formative assessments. The early literacy assessment measures the development of skills students need to transition from learning to read to reading to learn. These skills include vocabulary, phonics, language, and numeracy.

To measure student growth, a baseline assessment was administered in the Fall 2017 to determine the percentage of students at grade-level expectation at the beginning of the year. A follow-up assessment occurred in the Winter 2017 to measure the change in the percentage of students at grade level. *"Growth this year has been much higher than last year,"* she shared, attributing this large improvement to her participation in the Fellows' Network. She explained, *"The Fellows work was huge. Fellows increased my capacity and ability to be a good leader."*

Table 3 displays the percentage of students who met grade-level expectations in early literacy for students in nine different teachers' classrooms: two in Kindergarten, one in first grade, and three in second grade classrooms. Growth in mathematics is illustrated in scores from three first grade classrooms.

Table 3. STAR360 Early Literacy and Math – Percentage of Students Meeting Grade Level

Teacher and Grade	Fall 2017 % at Grade Level	Winter 2017 % at Grade Level
Teacher A – Kindergarten	41%	82%
Teacher B - Kindergarten	53%	88%
Teacher A – 1st Grade	44%	94%
Teacher A – 2nd Grade	50%	94%

Teacher and Grade	Fall 2017 % at Grade Level	Winter 2017 % at Grade Level
Teacher B – 2nd Grade	50%	89%
Teacher C – 2nd Grade	47%	78%
Teacher A – 1st Grade	29%	64%
Teacher B – 1st Grade	16%	44%
Teacher C – 1st Grade	25%	52%

In many instances, the percentage of students meeting grade level doubled, indicating steep gains in components of early literacy and mathematics understanding between Fall and Winter 2017. Ms. Andler feels that these gains are due to the successful implementation of classroom observations made possible by participating in the Early Learning Fellows' Network. These early literacy and mathematics classrooms are just a sampling of increased scores realized at the school due to Ms. Andler's skilled leadership approach to guide the implementation of the new observation schedule.

Professional Development Evaluation: Early Learning 2

Krista Chatters is an Elementary K-5 Literacy Specialist at Greywolf Elementary located in Sequim, WA, which is served by ESD 114 in Bremerton, WA. Ms. Chatters has spent most of her career at the kindergarten through second-grade level. She has worked as a Title One literacy teacher and was trained as a Reading Recovery Teacher, an intensive intervention that works with the lowest-performing first-grade learners. Greywolf Elementary is a small rural school located on the Olympic Peninsula about 14 miles east of Port Angeles, WA. There are 26 classrooms in the school and 26 teachers. The school serves students from the following backgrounds: White (80%), Latino (10%), two or more races (8%), with the remaining 2% being Asian, African American, American Indian and Hawaiian/Pacific Islander. Of these students, 46% use the Free or Reduced-Price Lunch program.

Ms. Chatters is active in the professional learning opportunities offered by her ESD, and she has been in the Fellows' Network since it started approximately 3 years ago. The Fellows' Network was designed in collaboration with OSPI and the ESDs to improve student learning through ongoing professional learning and leadership development. She has attended all the English Language Arts (ELA) Convenings and numerous courses offered by the ESD. She attributes her success providing professional development to the K-5 teachers in her building to these learning experiences. Ms. Chatters meets with the kindergarten teachers every two weeks and with first- and second-grade teachers on a weekly basis to focus on instructional strategies for struggling learners served in the Tier Two Literacy Support Program.



Greywolf Elementary School in Sequim, Washington, where Krista Chatters is an Elementary K-4 Literacy Specialist.

Implementation of Professional Learning

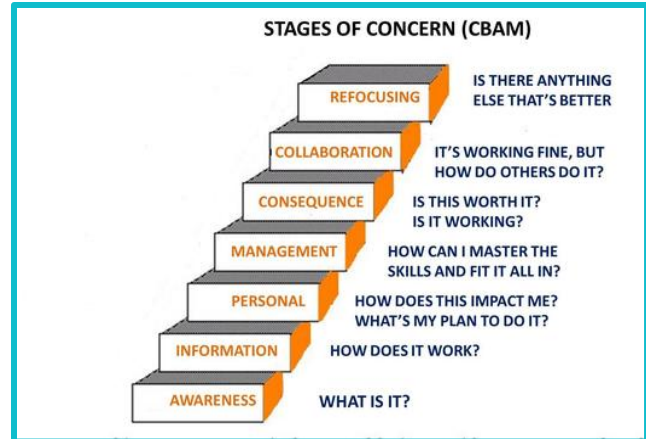
Ms. Chatters depends on the ESD and the Fellows' Network to build her knowledge, skills, and abilities to run the Tier Two Literacy Support Program. At Greywolf Elementary School, teachers receive new students every year who are behind in reading. In the fall 2017, of the new students to Greywolf, about 40% needed Tier Two Reading intervention.

When asked where her most significant improvements have been, she responded: (1) using the content-specific Smarter Balanced Assessment Resources, (2) using the English Language Arts (ELA) Menu of Best Practices, and (3) learning how to share that information with teachers to improve the whole system. She elaborated on how the ESD and Fellows' Network has improved her leadership skills, enabling a better exchange of content knowledge with the teachers:

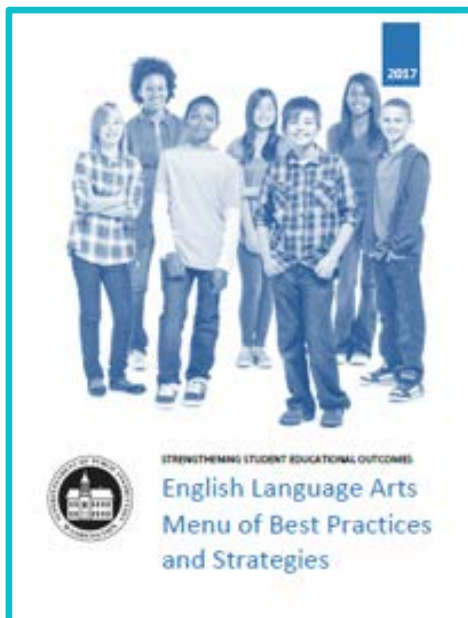
"Attending the OESD trainings has helped my own content knowledge grow and has helped me with [professional development] ideas for the K-5 staff. I do have a lot of opportunity to have that direct interaction with the teachers, and we talk about instructional practices, what's working, what isn't working, [and] then make changes."

This year, she has found the digital library playlist and literacy assessments very valuable, as well as evidence of claims and learning targets.

She embraced the Concerns-Based Adoptions Model (CBAM) used in the Fellows' Network. CBAM aims to build greater understanding about how individual teachers work through the change process, or stages of concern, when modifying classroom instruction. CBAM helps leaders work together with teachers in more meaningful ways to transform teaching and learning while being sensitive to teachers' feelings. Ms. Chatters found the model very useful to build her communication and collaboration skills to improve teachers' receptivity and provide appropriate support:



A diagram of the CBAM model dimensions that Ms. Chatters uses to support teachers in her trainings.



ELA Menu of Best Practices and Strategies that Ms. Chatters emphasizes in her trainings.

"To me, the leadership skill development in the area of delivering professional development has been the major area [of my growth]. It's all about increasing not only content knowledge, but leadership capacity, which is the number one area ... then, the supports [can be implemented] not only at the school level, but district implementation."

Application of Knowledge and Skills Learned

Regarding the application of knowledge and skills learned Ms. Chatters explained:

"We've had the capacity to remediate quite successfully in the past, but we've just been experiencing a wave of new students that are needing support in literacy. We don't have the manpower in the Wolf Den to do it all ... so it's more important than ever that Tier Two support is also happening in the classroom, so, in reality, kids can actually get a triple dose of supports when you're talking, especially acceleration."

To build the capacity of the classroom teachers to provide Tier Two support, she shared what she learned in the Fellows' Network and the ESD professional learning sessions:

"Using the ELA Menu of Best Practices and Strategies in my trainings has been an emphasis this year. Also, ongoing learning about SBAC [Smarter Balanced Assessment Consortium], CCSS [Common Core State Standards], literacy assessment information, and reading foundational skills has been key throughout my attendance as a Fellow the last 3 years. I have shared this information during ongoing staff [professional development] during late-start Mondays about every 4 weeks and also during half-day, grade-specific trainings about every semester."

"The whole Smarter Balance System topics have been really powerful," Ms. Chatters acknowledged; however, she cautioned that it is not just the content shared that has led to improved student scores. It is also her deeper understanding of how to facilitate adult learning. The Fellows' Network has increased her capacity and confidence to bring information back to her school and facilitate the learning with other teachers:

"Yes, the content is excellent but for my own ability to do this job effectively, leading is my greatest area of growth ... I think [leadership development] has become more intentional through the Fellows work. They will say, 'here's something you can do, or here's a format you can try with your teachers' and so they are very intentional about doing that now."

The staff look forward to Ms. Chatters returning from the Fellow Convenings and ESD professional learning courses, which gives her the opportunity to practice what she has learned this year using CBAM:

"The staff are just very open and love to learn ... they look forward to hearing what I have learned, and I'm very intentional to say, 'at my Fellows meeting these are some updates I learned,' and just sharing that I'm a learner, too, and not an expert. I'm not the expert. I'm very quick at saying, 'If I don't know, I'll go do some homework and find out.'"

An understanding of CBAM puts teachers at ease and opens channels of communication around student learning in a non-threatening way.

[Influence on Student Achievement](#)

Ms. Chatters shared how her engagement in ESD professional learning helped her lead efforts to support early literacy development at Greywolf Elementary. Being armed with the content knowledge and skills enabled her to affect teacher change. She said:

"When we first did our DIBELS, our kindergarten phonemic awareness data was concerning, and, at mid-year still, was not okay ... But that's all right; we can do something about that. When we first brought DIBELS in, our phonological awareness scores were still poor mid-year and so looking at the data was difficult at first."

Ms. Chatters guided the teachers through the cycle of inquiry while being sensitive and providing support along the way:

“We were thinking, ‘What’s happening here?’ And asked ourselves, ‘Is it because we only have a half day, or is it our curriculum,’ and so on ... We were able, as a team, to figure out some issues ... and it was actually so powerful, and we realized we actually did have the curricular materials to do a decent job to teach this.”

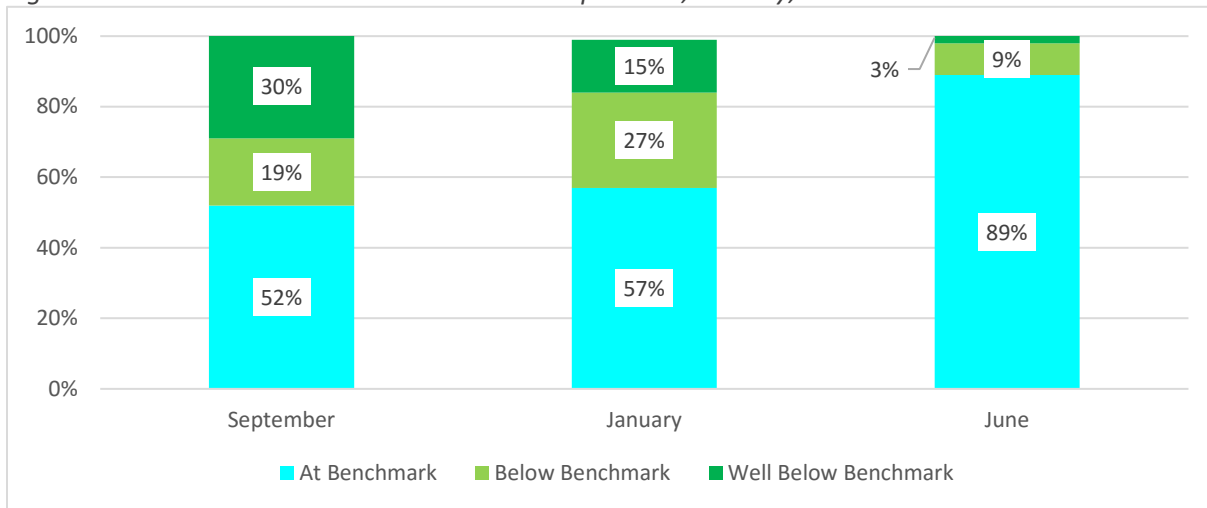
By implementing CBAM, the teachers arrived at a consensus, achieved buy-in, and agreed to include this additional content in their classroom instruction. With the assistance of the Regional Coordinator and training, Ms. Chatters said the teachers at Greywolf Elementary are “becoming better ourselves at understanding what Tier Two is, how do we teach it, and training the parents and giving them the resources, and so on. All of a sudden we found some great moments of change.”

A theme across most, if not all, the ESDs has been to increase the capacity and expertise of teachers to deeply understand how to use student data to modify instruction. The data also can lead teachers to get specific, targeted professional development that Regional Coordinators’ can design, develop, and facilitate. Ms. Chatters said:

“So that’s been kind of really exciting. And so, I think that the staff has really seen data can be really powerful because it can lead us to trainings that will make our jobs more effective with our students.”

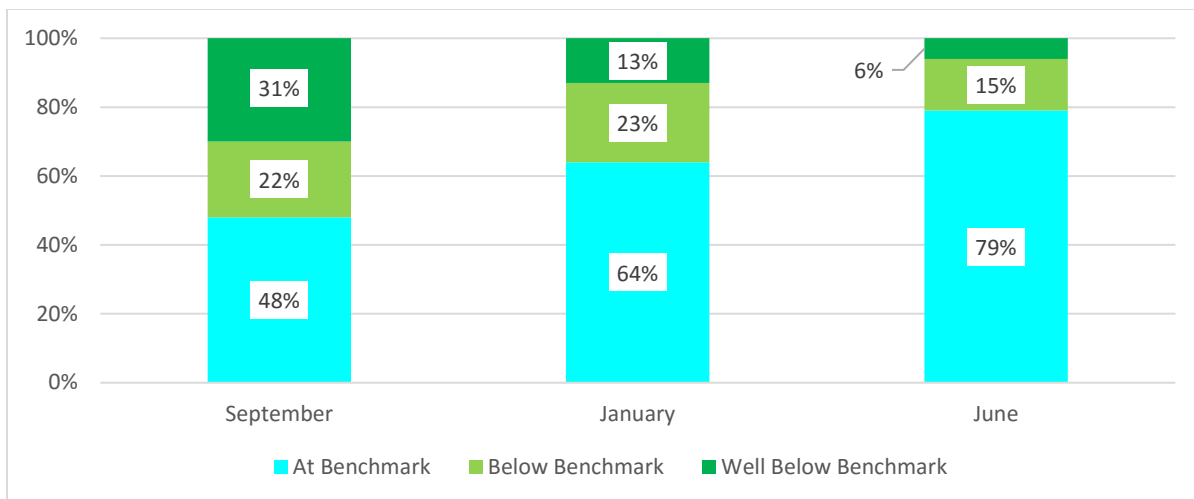
Data strongly suggest that the ESD trainings and Fellows’ experiences have made it possible for teachers to influence student learning. Reflecting on her first year as a Fellow, Ms. Chatters shared student growth on the DIBELS assessment. On the test administered in September 2015, 52% of the kindergarten students were at benchmark, 19% were below benchmark, and 30% were well below benchmark. (See Figure 2.) Students gained proficiency throughout the year, as evidenced by the scores in January, as teachers applied what they had learned from Ms. Chatters. At the end of the school year in June 89% of the kindergarten students were at benchmark, 9% were below, and 3% were well below.

Figure 2. 2015-16 School Year – DIBELS scores September, January, and June



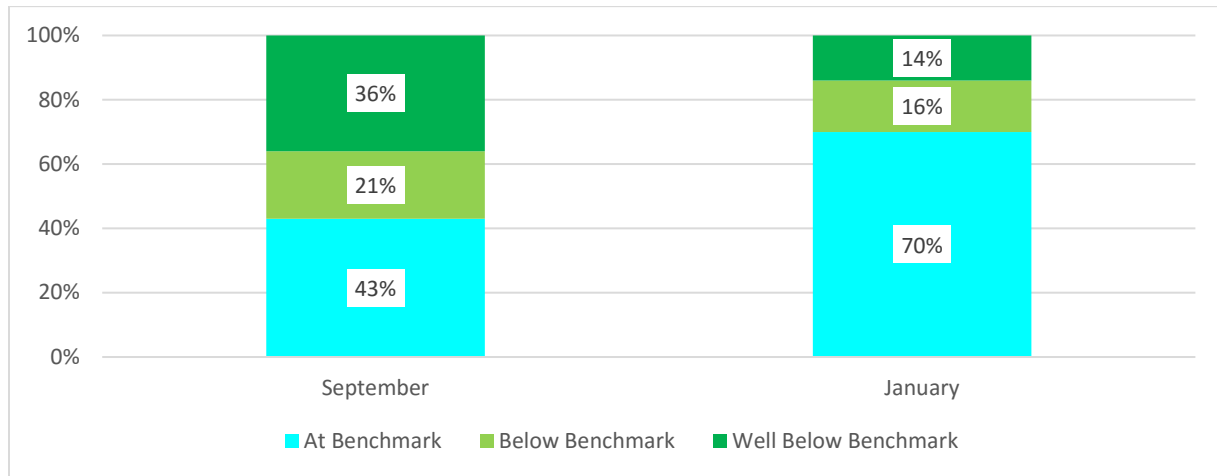
On the DIBELS test administered in September 2016, 48% of the kindergarten students were at benchmark, 22% were below benchmark, and 31% were well below benchmark. (See Figure 3.) Students' reading proficiency steadily increased through January, and by June 79% of the kindergarten students were at benchmark, 15% were below, and 6% were well below benchmark.

Figure 2. 2016-17 School Year - DIBELS scores September, January, and June



Lastly, on the DIBELS test administered in September 2017, 43% of the kindergarten students were at benchmark, 21% were below benchmark, and 36% were well below benchmark. (See Figure 4.) At the end of January 2018, 70% of the students were at benchmark, 16% were below, and 14% were well below benchmark.

Figure 3. 2017-18 School Year - DIBELS scores September and January



Reflecting on the steep schoolwide gains made in student learning, Ms. Chatters shared:

"I've kind of, over time, come to peace that I'm not just impacting my own class of, say, 25 students, I really have the privilege to impact teacher training, which really impacts building wide. So, definitely, being a part of these professional learning opportunities and bringing the information back to our school has been one piece of the ability to improve dramatically."

And there is evidence of these improvements in the data. Greywolf Elementary School received the School of Distinction Award and multiple Washington Achievement Awards in the areas of reading and math. In 2016, they won a National School Distinction Award, as well. Ms. Chatters reflected on how her involvement in professional learning from the ESD has transformed teacher practice and student achievement:

"I'm really proud of the fact that we've gone from the lowest-performing elementary school on the list to one of the top, and there's many pieces that have contributed to that, [like] my opportunity to participate in the Fellows [Program], which has helped me bring great information back to the teachers."

Professional Development Evaluation: Math 1

Ben Garcia teaches at Brewster Elementary School in Brewster, WA, approximately 65 miles north of Wenatchee. Brewster Elementary is a small, rural school surrounded by orchards. Brewster serves Pre-K through fifth-grade students divided among 36 teachers. Students come from the following racial back grounds: 6% White, 93% Latino, with the remaining students being two or more races, Asian and African American. Of these students, fewer than 94% use the Free or Reduced Lunch program. Most of the students are English Language Learners (ELL) and are children of parents from Mexico. Some of the students are migrants and have parents who work in the orchards or packing sheds. Mr. Garcia has been a math specialist for grades K through 5 for 7 years and works with struggling math students and special education students.

Implementation of Professional Learning

Mr. Garcia has been an active participant in professional learning offered by his ESD for over five years. Some of his most useful trainings learnings include the Common Core Standards, STEM Summit, Number Talks, and the Professional Learning Summer Institutes. He found the STEM Summit highly enjoyable and applicable because he strives to give his students a wider perspective of the application of mathematics for problem solving and everyday life.

Additionally, the Math Regional Coordinator's professional learning session on Number Talks built his capacity to incorporate mathematical discourse into daily instruction. Mr. Garcia shared that what he particularly values in Number Talks is that all students' responses are honored and recorded, not just the correct response. Mr. Garcia has practiced providing space for students to develop and express ideas and finds this direction *"very important to build struggling students' confidence in mathematics."*

He continued to explain that one of his goals is to structure his lessons to help guide students toward deeper math reasoning, starting with concepts and mathematical procedures and then moving on to applying their knowledge for problem solving. He encourages his students to talk about how they approached a problem and their reasoning. Most of his students are ELL so he uses pedagogical strategies that he learned at the ESD trainings to foster mathematics-related communication and language development. The summer institutes and workshops that the ESD held introduced him to using active problem-based learning and allowed him to safely practice with other teachers on how to use open-ended problems that have multiple solutions. Mr. Garcia explained that the open-ended problems require students to communicate with each other to arrive at a solution.



Ben Garcia, PreK through fifth-grade math teacher at Brewster Elementary in Brewster, WA

In the Summer Institutes, Mr. Garcia worked with other teachers from the North Central ESD region and commented that the different ideas presented for geometry and math modeling and the ensuing discussion were extremely useful. He shared, *“The group activities and collaboration was one of the most useful and productive aspects.”* One of their foci was how to incorporate place-based, locally relevant mathematics into their classroom. After the Summer Institute, he is now able to engage his students in culturally relevant problems that connect abstract mathematics (including geometry) to the world around them. He believes that using culturally relevant and place-based mathematics will *“provide access to [geometry and modeling] skills for all students in an effort to close the opportunity gap in mathematics.”*

Mr. Garcia appreciates how the Math Regional Coordinators structure the professional development opportunities to be interesting and active, rather than *“just sit and get.”* The rich, authentic mathematical problems and guidance allowed him to be immersed in mathematics content while simultaneously learning pedagogical strategies, including formative assessments.

Application of Knowledge and Skills Learned

“The changes I made in how the learning is structured in my classroom is directly inspired by the professional development I’ve received at the ESD,” Mr. Garcia shared. He said that one of the biggest changes he made in his practice was to emphasize and encourage group learning and hands-on activities. All his prior professional learning experiences have equipped him to design effective teacher-developed lessons that have *“improved student engagement and math learning and application.”*

He described two of the *“place-based, locally relevant math lessons”* that he designed for his students to teach number sense, algebraic thinking, and geometry. The first lesson, Stepping Up & Down Steps, uses the long, gently sloping steps outside of the school building. Students acted out algebraic thinking by jumping up and down the steps patterns. He said, *“My special education students loved it!”* He noted that, if a student jumped too many steps up or down, it was a fun and easy *“correction”* and no one feared *“getting it wrong.”*

The second math lesson, Building Bridges, brought local relevance into the math lessons by using the three bridges that surround their town. Mr. Garcia explained, *“I wanted to use something that they see every day. Every day, the bus goes over the bridges, and I got them to think about it.”* Children in his third- and fourth-grade math classes built bridges out of toothpicks and marshmallows, which provided an opportunity to talk about right and obtuse angles and applied mathematical modelling. His students worked in groups engaging in number talks and mathematical discourse, which *“was particularly helpful to my ELL students.”* The sharing of ideas and the group discussions also allowed individual students to *“pick-up skills or knowledge from group members that they did not have in a non-threatening way. Every kid wanted to participate. They didn’t hang back!”*

Mr. Garcia also implemented Gallery Walks for his students, which he found very helpful. He learned about Gallery Walks in a professional learning at the ESD. During the professional learning, teacher participants formed small groups and collaboratively worked on posters that

illustrated solutions to an active, open-ended math problem. Once the posters were completed, each small group displayed their poster on the wall to form a gallery of mathematical solutions. Each small group rotated around the gallery studying the various methods each group employed to solve the math problem. Mr. Garcia replicates this concept in his classroom and has his students examine the work of other groups and receive feedback. He used this strategy as a formative assessment and allowed students to re-address their solutions and make any changes they thought were necessary to their work.

Influence on Student Achievement

Using the formative assessment process, he honed from an ESD training, Mr. Garcia informally assessed students' understanding throughout the class period. He also used a standardized measure called the Measure of Academic Progress (MAP) by Northwest Education Association to track students' growth as he implemented his locally relevant lessons and problem-based learning. The MAP was administered in the Fall 2016 and Spring 2017 and provided growth data in varying strands, such as geometry and algebraic thinking. He explained his reaction when he first saw the increase in his students' MAP scores:

"I was impressed because my second graders...I have never seen this. They made 26-point gains but the average gain for one year is usually 16 points for second grade. I saw the same pattern for first graders. I asked myself, 'What did I do differently this year?' and I did five to six exercises this year using techniques I learned at the ESD."

He explained that the large increases in math achievement were also realized by his below-proficient students and his special education students. 1st grade students mean MAP score increased 19%, and 2nd grade mean MAP score increased 14% between Fall 2016 and Spring 2017. A two-tailed matched t-test revealed statistically significant differences between students' Fall 2016 and Spring 2017 scores, as shown in Table 1.

Table 4. Overall MAP Mathematics Score Fall 2016 and Spring 2017

Grade	Mean Fall '16 MAP Score**	Mean Spring '17 MAP Score	Standard Deviation	P-Value	N	Percent Increase in Mean MAP Score
1st	146.78	174.67	8.00	.000*	9	19%
2nd	189.88	215.82	9.74	.000*	17	14%

*significant at $p < .01$

Additionally, the MAP assessment scores for the geometry strand showed significant increases for the 13 students who participated in the locally relevant, active, problem-based lessons with geometry-oriented learning objectives, as shown Table 2. Out of 20 possible points, students went from a mean score of 2.54 to a mean score of 19.23. This difference was statistically significant ($p < .01$).

Table 2. Geometry Strand MAP Score Fall 2016 and Spring 2017

Grade	Mean Fall MAP Geometry Score	Mean Spring MAP Geometry Score	Standard Deviation	P-Value	N
2 nd	2.54	19.23 (out of 20 maximum)	1.70	.000*	13

**significant at $p < .01$*

Mr. Garcia enjoys applying what he has learned and emphasized the importance of receiving continued ideas and support from teacher colleague participants. He continues to implement his knowledge and skills. He reports heightened student engagement and interest when he uses locally and culturally relevant, problem-based learning. Now, many of his students simply ask, “Why don’t we do this every day?”

Professional Development Evaluation: Math 2

Joni Stevens is a K-8 teacher on special assignment (TOSA) as the district math specialist at Pullman School District located in Pullman, WA, which is served by ESD 101 in Spokane, WA. Pullman is a small rural town in Eastern Washington located 75 miles south of Spokane, WA. Washington State University and the University of Idaho are local employers, as well as Schweitzer Engineering. Farming is a major industry, including wheat and beans.

The Pullman School District has approximately 2,900 students. Students come from the following racial backgrounds: 69% White, 11% Latino, 7% two or more races, 10% Asian, 2% African American, with the remaining students identifying as American Indian and Hawaiian/Pacific Islander. Of these students, 30% use the Free or Reduced-Price Lunch program. There are approximately 60 classrooms in the district with 20 to 25 students in each classroom and 147 teachers to serve the students.

Ms. Stevens is active in professional learning offered by her ESD and has been in the Fellows' Network for a number of years. She has attended the Math Fellows Training, which included an emphasis on *Mathematical Mindsets* by Jo Boaler and the *Concerns-Based Adoption Model (CBAM): A Model for Change in Individuals*. She has used her acquired knowledge and has applied strategies through professional development, coaching, modeling, and discussions with teachers throughout the Pullman School District.

Professional Learning

As the Math Regional Coordinator at ESD 101, Debra Kowalkowski, led the professional training sessions during the math Fellows Convening. Ms. Kowalkowski facilitated, instructed, and coached Fellows through the book study on CBAM, as well as the book *Mathematical Mindsets*. Reading and dissecting each chapter in a collaborative manner allowed Ms. Stevens to visualize how to share what she was learning with the teachers throughout her school. She explained that, in each chapter, there are activities that relate specifically to the topics in the chapter. Ms. Stevens shared, *"So, for example, it might be rich tasks, and, in that portion of our Math Fellows meeting, we specifically dealt with that and came up with a protocol ... we developed protocols that we could take back, a kind of a summary, with the activities, the video clips, all embedded in them."* Ms. Stevens used the teaching resources and ideas from the meetings to share with teachers to enable students to see mathematics as an open growth opportunity and to see *"themselves as powerful agents in the learning process."*

Using what she had learned in CBAM and the protocol developed in the math convening, she gently worked with teachers to implement the overarching ideas introduced to shift teachers' thinking about students' mathematical abilities. The teachers valued her dedication to helping them learn how to increase students' mathematical understanding. One expressed, *"Joni, you are seriously the best! We are so fortunate to have you in this position!"* Participation in the OSPI/AESD Fellows' Network gave Ms. Stevens the skills and abilities needed to help teachers be comfortable making changes in their practice to successfully apply mathematical mindset principles.

Implementation of Professional Learning

Ms. Stevens showed her peers how to transform their classroom into places where students learn number facts and number sense through engaging activities that focus on understanding. This shift went away from unhelpful rote memorization and speed and seeing math as simply “calculating.” She collaboratively worked with the teachers to develop a shared understanding and clear vision about classroom activities needed for students to improve problem solving and reasoning. The activities, such as Number Talks, emphasized interpretation and meaning, rather than getting correct answers.

Interested in understanding the effect of her professional development on teachers’ practice and how to improve, Ms. Stevens inquired about her impact. She asked them how their practice has grown. Many teachers shared their perspective about how students’ mistakes had changed, which allowed them to build a framework that was not focused on grading, but rather on growing and developing. This repositioning of mistakes relieves pressure, creates an enjoyable atmosphere for students to practice math, and sparks new synaptic connections when they think about why something is wrong (Dweck, 2006). Teachers shared the following comments:

- *“I’ve grown in my ability to understand student thinking and processing.”*
- *“[I now] understand the mathematical landscape, which has helped me know where kids are at developmentally. [I have a] change in my mindset of teaching of math away from procedures and moving toward conceptual understanding.”*

Ms. Stevens also asked the teachers, once they applied what they learned, what differences they observed in their classroom around student learning. Overwhelmingly, teachers had observed greater student engagement, deeper mathematical thinking, and enthusiasm for learning math. Teachers shared the following comments.

- *“I’m loving the conversations my kids can have about math. I love the mental math kids are using.”*
- *“[I am] simply more comfortable and confident in effectively implementing math routines, which has resulted in greater engagement and participation in my math class – students are excited to share their thinking and working through multiple ways of solving an equation.”*
- *“I’ve learned better strategies to foster student conversations [and] I’ve seen great conversations in my classroom around numbers!”*

The message in the data was apparent: Teachers had shifted their mindset to believe that every students’ mathematical ability can grow and improve with effort and practice. Teachers mentioned their ability to see and correct mathematical misconceptions across diverse students, thus giving all students opportunities to achieve at high levels.

Influence on Student Achievement

Ms. Stevens assisted teachers in the school building to collect qualitative data from their students at the end of the school year. The students were asked to reflect back on their math expertise and their feelings about doing math at the beginning of the year. Next, the students were asked to compare those feelings about their math expertise and confidence in May 2018.

Over the course of the year, Ms. Stevens applied what she learned from her Regional Coordinator and the Fellow Convenings to successfully shift teachers' practice to a mathematical mindset culture. As a result, many students expressed more confidence in their ability to think mathematically. A sense of preparedness to tackle middle school math prevailed in their responses. Initially, students had low confidence in their mathematical ability, as well as low interest and motivation. The following quotes provide evidence that students, with the help from their teacher, later recognized that mistakes are opportunities to think about solutions and not an indicator of their math ability. Further, students enjoyed the activities and no longer dreaded and feared mathematics:

- *"I don't think that I explained my [math solutions] at the beginning of the year, but now I can explain my [math solutions]."*
- *"At the beginning of the year, I depended on other people to do the math because I thought I couldn't do it, but now I am doing my own math, and I know I can do math!"*
- *"I worked hard not to give up and made lots of mistakes that I learned from. I love math, but I am not perfect. I was involved with math talks and always stayed positive, so I could give positive answers. I had an amazing time at math!"*
- *"At the beginning of the year, I was worried that I won't do good, but I learned I was great! Now I am ready for sixth grade because I did lots more [math] strategies and know more math!"*
- *"At the beginning of the year, I was nervous about math, but I saw that you didn't care about my hand writing or how bad at math I was. You cared about how much I learned, and you got rid of a lot of my self-doubt. This year, you shared a lot of skills with me that I didn't know until now. I feel that I understand everything I need to survive middle school math."*
- *"I have learned so much about math. It is an amazing subject. I love the multiple ways you taught us (you did not go on auto-pilot) plus so many strategies!"*

Teachers, through the professional development provided by Ms. Stevens, were able to deliver math instruction that freed students from believing that they have low math ability. They expressed enjoyment in learning, practicing, and eventually mastering the standards at their grade level. Students left the class intrigued with mathematics. They were motivated and excited to enter their next year of school to learn what is next with math.

Professional Development Evaluation: Science

Stephanie Ball is a seventh and eighth-grade teacher at Cashmere Middle School in Cashmere, WA, which is served by ESD 171 in Wenatchee, WA. Cashmere Middle School is a small rural school located in central Washington 13 miles west of Wenatchee. Cashmere serves fifth-through eighth-grade students divided among 31 teachers. Students come from the following racial backgrounds: 55% White, 39% Latino, 4% two or more races, with remaining students identifying as African American and American Indian. Of these students, 47% use the Free or Reduced Lunch program.

Ms. Ball is active in professional learning at her ESD, has been involved in the Fellows' Network and Science Leadership Network. These opportunities have complemented her ongoing quest for knowledge about instructional strategies, student engagement and formative assessments. She found the Next Generation Science Standards (NGSS) training invaluable, as her school is transitioning from a traditional letter grade-centered approach to a standards-based learning (SBL) approach. SBL is a natural outgrowth of the regular use of formative assessment because the student feedback is focused on whether a student has mastered the knowledge in a standard, and thus emphasizes learning more than grading. SBL shifts the question from "how many points did I earn?" to "how has my understanding improved?" The NGSS sessions also helped Ms. Ball incorporate science and engineering practices into her lessons.

She shared how she learned in the Fellow Convenings, how to evaluate and develop teaching materials for inclusive science instruction. Inclusive science instruction builds on students' prior interest and identity and leverages their cultural knowledge to facilitate learning. The Science Regional Coordinator at the ESD facilitated professional learning designed to increase teachers' knowledge, skills and abilities to use inclusive science instruction through:

1. Approaching science learning as a cultural accomplishment
2. Relating youth discourse to science discourse
3. Building on students' prior interest & identity
4. Making diversity visible



Stephanie Ball, 7th–8th grade Science teacher at Cashmere Middle School in Cashmere, WA

5. Valuing multiple modes of expression for different learners¹

Over the years, Ms. Ball has used her ESD and the Fellows' Network to support continued refinement of her practice, which has led to improved science learning for her students.

Implementation of Professional Learning

Ms. Ball uses a systematic approach to apply her wealth of knowledge and pedagogical strategies, fueled, in part, by her learnings at NCESD and in the Fellows' Network. One example is the regular use of formative assessment in conjunction with a four-step approach taught in one of the NCESD professional learnings by author Paige Keeley. This approach helps guide students to re-evaluate their ideas about science phenomena and build a solid foundation of science understanding to excel academically and in everyday life.

Ms. Ball shared her methodology when she taught the unit, Space Systems Exploration². She explained, *"The learning objective of this unit was to develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons."* Her four steps and strategies are outlined below.

STRATEGY 1 was used before instruction as an "initial assessment probe, specifically designed to uncover the misconceptions that students brought with them to the classroom about the Earth-Sun-Moon system." Ms. Ball analyzed students' written responses to get an idea of the variety of incorrect understandings, plan scientific investigations to refute misconceptions, and prompt discussion during Strategy 2.

STRATEGY 2 was designed to break down each unique misconception and support each student to confront their own ideas. Confronting incorrect ideas causes cognitive dissonance and provides fertile ground to introduce an alternative idea. Ms. Ball created scientific investigations and classroom experiences that included making models using foam balls and flashlights to inform students' diagrams and responses.

STRATEGY 3 provided learning experiences to reconstruct and internalize new, correct knowledge. Ms. Ball developed *"learning experiences designed to reteach content through notes, drawing, and explaining positions of the Sun, Earth, and Moon."* She used a variety of methods for students to show what they know.

STRATEGY 4 reassessed learning after re-teaching to determine the extent to which students built a more accurate conceptual framework of the Earth-Sun-Moon system.

¹ Pratt, H. (2012). A National Science Teachers Association (NSTA) Readers Guide to a Framework for K-12 Science Education: Practices, Crosscutting concepts and core ideas, NSTA Press: Arlington, VA.

² Space Sciences Exploration addresses the standard, MS-ESS1-1 Earth's Place in the Universe. To learn more, please visit <http://www.nextgenscience.org/dci-arrangement/ms-ess1-earths-place-universe>

Influence on Student Achievement

Ms. Ball continually collects student evidence to assess the extent that her classroom instruction has increased students' science understanding. During the Space Systems Exploration unit, she gathered evidence to assess the extent that students developed a more accurate mental model of the Earth-Sun-Moon system. Evidence collected included students' lab sheets, notes, teacher observations, and formative assessments (pre, mid, post, re-assessment). To demonstrate the strategy step application, the work of one student and Ms. Ball's interpretation of the student's learning is offered in Figure 5 through Figure 7.

The student's work on the left in Figure 5 shows Strategy 1 and the student's pre-assessment of the lunar eclipse cycle. The pre-assessment shows that the student may or may not have a general idea about the position of the Earth-Sun-Moon system during a lunar eclipse cycle. *"She is indecisive and lacks detail, so she is probably guessing here,"* commented Ms. Ball.

The student's work on the right in Figure 1 shows Strategy 2 and the process of breaking down misconceptions. She shared, *"The student has gained perspective on the positions of the sun-earth-moon system during a lunar eclipse cycle but does not include light from the sun in the diagram. This shows lack of clarity and/or understanding that light is a critical component of the system."*

Figure 1. LEFT: Strategy 1 – Pre-assessment of lunar eclipse cycle shows student has little knowledge.

RIGHT: Strategy 2 – Breaking down misconceptions shows the student has gained perspectives on the positions of the Sun, Earth, and Moon system.

Lunar Eclipse A1

People have been fascinated by lunar (Moon) eclipses for ages. For a time, the full Moon seems to disappear as it changes color, darkens, and then reappears. Throughout time, people have had different ideas about what causes a lunar eclipse. Here are some of their ideas:

- A A nearby planet passes between the Earth and the Moon.
- B The Sun passes between the Earth and the Moon.
- C The Moon passes between the Sun and the Earth.
- D The Earth passes between the Sun and the Moon.
- E The clouds block out the Moon.
- F A nearby planet's shadow falls on the Moon.
- G The Moon's shadow falls on the Earth.
- H The Moon turns to the dark side and then back to the light side.

Circle the idea you think best explains what causes a lunar (Moon) eclipse. Explain your thinking about lunar eclipses.

We don't really know

167

A2

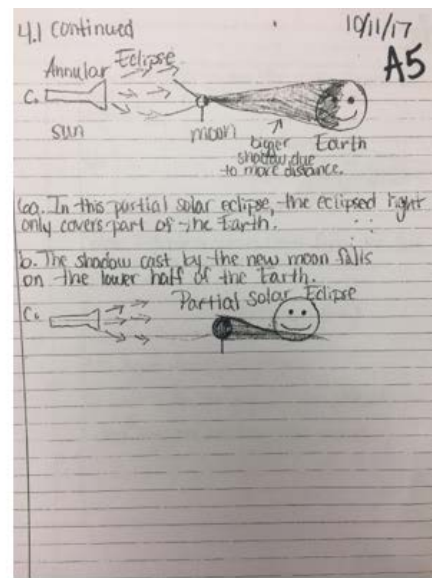
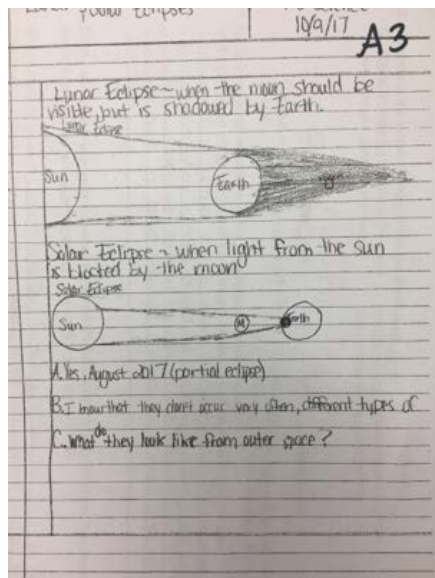
1. Last night, you walked outside and noticed the moon was full. Draw and label the positions of the sun, earth, and moon that make seeing a full moon possible. Use arrows to show light from the sun.

Retake Sun-Earth-Moon

Use the words closer or farther OR bigger or smaller to answer the following questions.

- The moon is closer to/from the earth than the sun.
- The moon is smaller than the earth.
- The earth is smaller than the sun.
- The sun is bigger than every other object in our solar system.
- Draw how the earth and moon move in space. Include labels and arrows to show direction. Use important vocabulary from your c-notes.

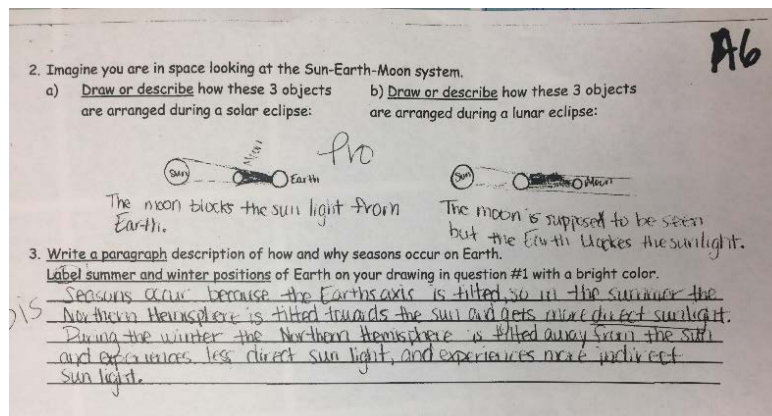
Figure 2. LEFT: Strategy 3 – A learning experience shows student's focus on Sun, Earth, and Moon positions. This also shows the Sun's light affects. RIGHT: Strategy 3 – A second learning experience used a demonstration with a flashlight. The student's notes are clear and neatly diagrammed.



The student's work in Figure 2 shows the third strategy, when deliberate learning experiences challenge science misconceptions and cause students to reconstruct their knowledge. "The student's notes show focus on Sun, Earth, and Moon positions, as well as on how light from the sun affects or is affected to create lunar eclipses. This practice was followed by a second activity using flashlights and Styrofoam balls to demonstrate each position. The notes are clear and neatly diagrammed," Ms. Ball reflected.

The reassessment of student knowledge, Figure 3, shows Strategy 4, which provided a final opportunity in the cycle to reevaluate growth in understanding. Ms. Ball examined the work

Figure 3. Strategy 4—The reassessment shows the student can now distinguish between solar and lunar eclipses and correctly position the sun, earth, and moon

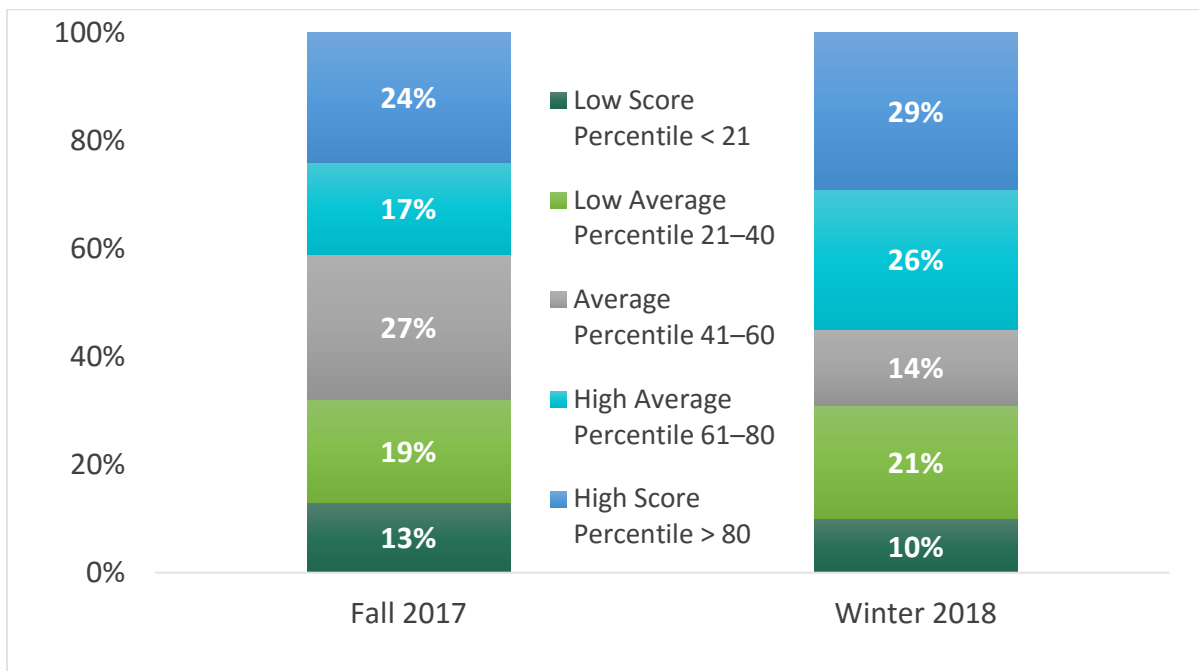


while reflecting, "The student can now distinguish between solar and lunar eclipses and

correctly position the sun, earth and moon in both situations. She used arrows to show light from the sun and its effect on the system.”

Taking a broader look at the classroom level, students’ fall and Spring Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) Science Earth and Space Strand scores appear in Figure 4. Classroom-level data also confirmed the positive influence of her participation in professional learning on students’ science achievement. In 2017, students completed two administrations (fall 2017 and winter 2018) of the NWEA MAP Science Assessment. On the Earth and Space Science Strand, students’ scores shifted upward. In the beginning of the year, 41% of the students were above the 60th percentile. By winter, all students had made gains in science achievement, with 30% more of the students scoring above the 60th percentile. Additionally, the mean Rasch Unit (RIT) score increased from 212 to 217. lists the students’ NWEA MAP Earth and Space Science Strand scores for fall 2017 and winter 2018.

Figure 4. NWEA MAP Earth and Space Science Strand Scores, Fall 2017 and Winter 2018



Appendix B. Works Cited

AESD. (2017, August). Washington State Fellows' Network.

<http://www.k12.wa.us/CurriculumInstruct/pubdocs/2017-18FellowsInfo.pdf>

Boaler, J. & Dweck, C. (2016). *Mathematical Mindsets: Unleashing Students' Potential Through Creative Math, Inspiring Messages and Innovative Teaching*. San Francisco: Jossey-Bass Books.

Dweck, C. (2008). *Mindset: The New Psychology of Success*. New York: Ballantine Books.

Fullan, M. (1999). *Change forces: The sequel*. London: Taylor & Francis/Falmer.

Fullan, M. (2001). *Leading in a culture of change*. San Francisco: Jossey-Bass.

Koellner, K., Jacobs, J, & Borko, H. (2010). Features for developing leadership skills and building teachers' capacity. *Mathematics Teacher Education and Development*, 13(1), pp. 115–136.