



eNVision: A collaborative redesign partnership

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ABSTRACT

The Professional Development School (PDS) partnership creates a unique environment in which the elementary education experiences for pre-service teachers (PSTs) can be enhanced through specialized approaches to traditional practicum courses taken during an education licensure program. However, over time, as both parties settle into their predetermined roles, these experiences may become stagnant and less impactful as school needs change, but the courses do not. The PDS partnership between a Midwest university and local school district provides the opportunity for distinctive platforms through innovative teaching approaches for both university and elementary faculty, as well as, for elementary education PSTs. Working specifically with a local elementary school, the authors collaboratively sought to develop a mutually beneficial approach that would purposefully place PSTs within the school while increasing consistency in the placement. The intent was to allow classroom teachers to better utilize the PSTs during their field experience hours, in addition to providing PSTs with more hands-on, minds-on learning opportunities. The decision to turn the courses into an extended learning immersive experience was determined early on in the planning process, along with the associated courses. This partnership began in Fall 2019 as a nine-hour block that included courses in instructional and behavioral engagement, literacy practices, and elementary science methods. Throughout the semester, feedback was periodically collected from participating faculty and PSTs in an effort to keep the immersive courses meeting the needs of the PSTs. Additional information was collected from diverse elementary student data within the PDS and from the principal.

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EXPERIENCES THROUGH A PROFESSIONAL DEVELOPMENT SCHOOL PARTNERSHIP

Teacher education programs at the undergraduate level differ among universities and colleges, but all are challenged with effectively aligning pedagogy with practice. Learning how to teach is often complemented through authentic teaching experiences in which pre-service teachers (PSTs) are able to apply and demonstrate their knowledge. As such, undergraduate programs typically provide field placements that allow students to work in P-12 classrooms or after-school programs over a period of time. However, providing a reliable and quality field experience is often heavily influenced by the P-12 schools and/or experiential setting in which the PSTs are placed. Partnering with a Professional Development School (PDS) can help ensure the continuity desired in these experiences. PDS sites have been the focus of several research studies, which primarily examine the benefits of specific PDS-University partnerships (Castle et al., 2006; Darling-Hammond, 2010; MacPhee & Belcher, 2019; Maheady et al., 2018; Sumowski & Peters, 2019). Creating this type of partnership takes time and a collective understanding of the needs of both the school and university requirements for the PSTs.

In this paper, we discuss the insights from the implementation of a collaborative redesign of three university courses, as a result of an experiential, immersive experience for PSTs created in conjunction with a PDS. Additionally, we offer information on the creation and implementation of the program titled eNvision and share preliminary data that demonstrates the positive impact of this experience for partnership members. The first author focused on literacy, instructional practice, and behavior management through a student-centered and responsive approach. The second author focused on teaching science using culturally responsive teaching (Gay, 2010), inquiry, and the Biological Science Curriculum Study (BSCS) 5E Learning Model (Bybee et al., 2006). The rationale was to contribute to the growing body of literature concerning program design and implementation by discussing the benefits of a university-school collaboration in establishing a multi-course, immersive program.

PROFESSIONAL DEVELOPMENT SCHOOLS

The creation of PDS sites resulted from a collaborative education reform initiative conducted by the Holmes Group (1986), a group consisting of education deans from 14 universities, noted at the time as “the leading research institutions in their respective states and regions” (Murray, 1986, p. 28). Over the course of three

years, the deans discussed the low quality of teacher preparation programs and offered goals and solutions to universities and schools, resulting in the publication of *Tomorrow's Teachers: A Report of the Holmes Group* (1986). Of the five recommended goals contained in this report, the fourth goal spoke directly to the relationship between universities and P-12 schools:

If university faculty are to become more expert educators of teachers, they must make better use of expert teachers in the education of other teachers, and their rationale on teaching. In addition, schools must become places where both teachers and university faculty can systematically inquire into practice and improve it. (p. 4)

Acknowledging that change is needed, however, is different than generating change. To create such a system required a dramatic shift in how universities and local schools interacted while also forcing universities to reconsider curricula, course requirements, and program delivery.

In 1990, the Holmes Group published *Tomorrow's Schools: Principles for the Design of the Professional Development School* and offered the first guidelines in creating PDS sites. Recognizing that the differing culture of schools would influence the specifics of each relationship, guidelines in the report relied on several assumptions of what the university-school partnership could yield while simultaneously acknowledging potential incompatibilities and misconceptions (Zimpher, 1990). “Some of the ideas that were tried in PDS may not work, and hence should not be the basis for reform of schools more generally” (Holmes Group, 1990, p. 5). The report called for PDS sites to restructure their schools in ways that would support teaching and learning while also maintaining fluidity in how those needs are met. These approaches included the teaching of both children and adults, addressing diversity, equity, social justice, and instituting a reflective mindset. The ultimate purpose, regardless of structure and community culture, remained steadfast: “1) upgrading the education of PSTs; 2) providing professional development for experienced teachers, and 3) conducting field-based research” (Dolly & Oda, 1997, p. 178).

PROFESSIONAL DEVELOPMENT SCHOOLS AND PRE-SERVICE TEACHERS

Teaching must be experienced, and PSTs must have access to environments that foster growth, allow practice, and “demonstrate the content and pedagogical knowledge and skills that promote learning for all students” (Council for the Accreditation of Educator Preparation, 2020). Engaging with PDS sites personalizes

and enhances the experience by honoring the mutual understanding and shared vision for teaching and learning. In some university programs, candidates spend more time in the classroom at a PDS site than they would at a non-PDS site. As a result, they experience a higher level of collaboration, reflect more on their practice, and have the opportunity to immerse more fully in the school culture (Castle et al., 2006; Darling-Hammond, 2010; Decker et al., 2018).

Our university has a long-standing history of PDS with several schools that are actively working with our PSTs through various methods courses and student teaching. The majority of the university methods courses involve field placements at one of the PDS sites in the district, so the PSTs are often able to experience both the continuity between schools as well as their uniqueness. In 2018, the district became a Professional Development District (PDD), providing an opportunity for our university to work within a local school system in which educational values and practices are aligned with school improvement plans and the district's mission. The creation of the PDD solidified common goals and included the placement of a PDS liaison in each school. While each school in the PDD has its own culture and challenges, there is a reciprocal agreement on how the university liaisons and PSTs interact within each school, documented through a Memorandum of Understanding.

The PDS liaison is a designated university faculty member who serves as the primary clinical representative; they are assigned with the responsibilities of creating, developing, maintaining, and ensuring continuous improvement of the partnership. Every liaison operates in conjunction with their school partner to co-select high-quality clinical educators to mentor PSTs in field experiences. Evaluation of the partnership is conducted yearly to ensure efficiency and consistency by assessing PDS liaison support and engagement, considering PST learning experiences, and reviewing school and district needs.

In this collaboration, the primary ethnicity of the student populace is White (57.8%), although the school has a growing diverse ethnic population (Indiana Department of Education, 2020). English learners live in households speaking one of six different primary languages and comprise 6.2% of the P-5 school. The majority of students are considered economically disadvantaged (65.3%), with 2.8% living in foster care and 16.6% living with a disability. Of those students, African American students rank highest for chronic absenteeism (12.5%), followed closely by multiracial students (9.3%). These statistics are how we define underserved, diverse students.

The PSTs that served in this collaboration were 14 White female undergraduates at a predominately White institution. The PSTs were exposed to some culturally responsive teaching prior to this experience but were

immersed in this pedagogy for the entire science methods course through the readings, interactions, and activities implemented by the African American faculty member. The PDS site has an enrollment just under 300 students, with over 330 years of faculty experience among the 23 educators. Ninety-six percent of the faculty self-identify as White and 4% identify as Asian (Indiana Department of Education, 2020). Seven White female licensed elementary teachers assigned to the PDS site served as mentor teachers. Additional collaborators included the PDS school's principal, a White female; seven classrooms with 25 underserved diverse students in grades K-4; the chair of the sponsoring university department, a White female; and two university professors, one White female and one African American female, both of whom are veteran public-school teachers.

LEARNING EXPERIENCES

Learning experiences differ greatly among education courses, with field practicums increasing in length of time as PSTs progress through our programs. Three three-credit field-based courses are the focus of this article; the first author taught two of the courses, and the second author taught one course. The courses taught by the first author were conducted at the PDS site and focused on classroom management, organization, and instruction in the elementary classroom, in addition to instruction in reading and language arts in the elementary classroom. Program requirements for these courses list a minimum of ten hours for the practicum experience, but the time spent in PDS classrooms averages closer to 27 hours over the course of the semester.

The second author taught the elementary science methods course on campus after the PSTs completed their hours at the PDS two days per week for 16-weeks. When the PSTs were teaching science in the PDS for nine consecutive days, the PSTs did not have to report to campus for the science methods class. Program requirements for this course also includes a 10-hour practicum. The blocked courses experience the highest enrollment in the Fall semester, while the science course maintains steady numbers each semester.

METHODOLOGY: CREATION OF ENVISION

The idea for eNvision, a university-school collaboration using immersive learning pedagogy, was created from the PDS's desire to have PSTs on-site more consistently and for longer periods of time to avoid lesson disruption in the classrooms. The PSTs were placed in grade level co-teaching teams, with two PSTs per group that were assigned to one veteran teacher and 25 underserved

diverse students in each classroom. There were seven classrooms involved in the collaboration: one kindergarten, one second-grade and one fourth-grade classroom, and two first- and third-grade classrooms.

For eNVision, initial brainstorming between the PDS liaison (first author) and the school's principal focused on lessening the disruption and increasing PSTs exposure to happenings within the school. These communications were initially facilitated through emails and face-to-face meetings with the university faculty and school principal. Once the PDS mentor teachers were identified, additional emails and face-to-face meetings continued throughout the collaboration for all stakeholders. The idea of adapting the blocked elementary education courses into a longer field placement was first presented to the university department chair, who noted that increasing course time without increasing credit hours would not be appealing to students. In order to interest more students, the blocked courses were teamed with a required science methods course that also included a practicum. A potential schedule was shared with all PDS faculty for discussion and feedback at their last faculty meeting of the academic year. This discussion resulted in a finalized immersive approach that would: 1) Increase PSTs time in the classroom; 2) encourage PSTs to engage in service hours in the school, outside of their scheduled class time; and 3) require PSTs to organize a Literacy Science Night for PDS site families. At this time, several PDS faculty members volunteered to serve as mentor teachers to the PSTs.

The idea behind eNVision was simple: an integrated field experience in which all teaching would take place during the school day and PSTs could demonstrate their combined knowledge in instructional and behavior engagement, literacy, and science. Additionally, mentor teachers would not only benefit from the increased time PSTs were present in the classroom, but also from the consistency of the five-day field experience.

IMPLEMENTATION OF ENVISION

Unlike traditional courses, the intent of eNVision was to immerse the PSTs into the classroom as soon as possible, rather than wait the four to ten weeks typically observed by courses with a practicum. This decision was based on the desire to maximize the 16-week semester, especially with the university start date occurring approximately four weeks after the P-12 school year. However, the logistics of the start to a collegiate semester required one full week on campus prior to entering the school full-time so that the required paperwork could be submitted and approved. The first author frontloaded specific content necessary for a successful integration into the PDS classroom, while also providing time for the PSTs to build community with one another.

The second author's science methods course followed the traditional schedule of meeting on campus twice a week for 11 weeks. During the 11 weeks, the PSTs participated in a community-building activity with a community partner facilitator; read culturally responsive research to identify biases when working with underserved diverse students; and participated and/or created inquiry-based lesson plans and activities using the BSCS 5E learning model (Bybee et al., 2006) with the integration of culturally responsive teaching. The biases these students possessed were identified at the beginning of the semester after reading, reflecting, and creating a question to pose to the class on the culturally responsive reading. Therefore, the second author, an African American professor, focused on teaching science using culturally responsive teaching (Gay, 2010) and inquiry. Any challenges regarding the use of culturally responsive teaching could be addressed in the daily reflective journals after each teaching day if concerns arose.

During the second week, the PSTs began meeting for their field experience and course instruction (of the blocked courses only) at the PDS site. The field experience was limited to one hour each day during this week to allow for increased seminar time. For the field experience, PSTs rotated through the physical education, art, and music classrooms to conduct observations and see firsthand how instructional and behavioral management is established and utilized in those settings. PSTs attended the seminar for the blocked courses in the school library before transitioning back to campus to attend the science methods class. At this time, seminars remained focused on building foundational knowledge in instructional and behavioral engagement, literacy, and science. PSTs were also introduced to a semester-long project in instruction, organization, and literacy in which they would track their reflections and growth on a weekly basis.

During week three, the PSTs joined their assigned classrooms, with field exposure increasing from one hour each day to three hours each day. Mentor teachers utilized this time to create small instructional groups for the PSTs to teach, while also assigning other organizational tasks to the PSTs. As the weeks progressed, teaching opportunities for the PSTs increased to assist mentor teachers with learning groups and to fulfill requirements for all three courses.

Throughout the semester, the PSTs completed several teaching assignments targeting literacy and science skills. Through these assignments, PSTs were expected to demonstrate effective engagement strategies to enhance instruction and minimize behavior issues (Himmele & Himmele, 2017); depth of knowledge in the assigned content area; and responsiveness to students' needs and interests. PSTs completed teacher observations, looking specifically at strategies used for instruction and behavior management. Each PST also

designed and taught literacy lessons in the form of interactive read-alouds and guided-reading, in addition to impromptu teaching opportunities offered by their mentor teachers.

TRAINING FUTURE SCIENTISTS

The Training Future Scientist (TFS) Program is the pedagogy used by the second author to teach the science methods course. Over 11 weeks, this program embedded: a) Identifying attributes of culturally responsive teaching; b) inquiry-based teaching using the BSCS 5E Learning Model lesson plan (Bybee, et al., 2006) development and implementation; and c) co-teaching to their peers before and/or during the PSTs teaching science practicum in the PDS collaboration. The culturally responsive teaching modeled the attributes of Geneva Gay's (2010) "caring in action" approach to multicultural teaching. This course is designed to ensure these PSTs are prepared for the challenges that arise when working with underserved diverse students. Culturally responsive caring as a part of the education process focuses on "caring for" instead of just "caring about" when teaching diverse underserved groups. "Caring about" demonstrates feelings of concern for one's own state of being, while "caring for" involves active engagement in producing a positive impact on others (Garza et al., 2014). The second author modeled culturally responsive teaching and caring with the students over the 11 weeks to ensure the PSTs could transfer this pedagogy in the 16-week intense immersion at the PDS.

The second strategy introduced and mastered by the PSTs was teaching inquiry using the BSCS 5E Learning Model (Bybee et al., 2006) (see **Table 1**). The PSTs participated in activities in the classroom using this model to ensure that the transfer of knowledge and skills would be effective throughout the entire practicum experience.

The final pedagogy implemented with these PSTs was Colette Murphy's (2016) co-teaching model, which

involves co-planning, co-practice and co-reflection. The use of the co-teaching model supported and improved the relationship between PST teaching teams and the PSTs with their in-service teacher. PSTs collaborated with their co-teacher and a licensed mentor teacher with reciprocal benefit.

For the nine consecutive days of the science practicum, each PST teaching team implemented formative and summative assessments to students daily and performed hands-on, minds-on science inquiry lessons using a science notebook that followed the BSCS 5E Learning Model (Bybee et al., 2006). Each grade level was required to integrate literature and writing into the science lesson plans.

STAKEHOLDER BENEFITS AND INSIGHTS

The value of any partnership lies in the benefits of the collaboration for all stakeholders. The creation of PDS sites is not a quick, temporary, or fixed standard of teaching and learning (Holmes Group, 1990). Relationships are built from the ground up and require a shared responsibility to achieve the goals and objectives for all partnership members. Reciprocity among PST candidates, participating mentor teachers and their students, and university faculty was demonstrated through several modalities. Collaboration between PSTs and their mentor teachers was observed daily, and students benefited from the co-teaching approach to teaching content. Mentor teachers were exposed to different teaching practices and were able to observe and analyze PST teaching with their assigned students. The first author was on-site daily, which prompted continuous discussion with stakeholders and provided oversight of the program. The second author frequented the school to observe PST teaching and progress, talked to mentor teachers, and planned collaboratively with all stakeholders to create science teaching schedules during the practicum hours. Both authors communicated with each stakeholder via

PHASES	SUMMARY
Engagement	The teacher accesses the students' prior knowledge for the established learning objectives and allows the students to engage in a new concept through the use of short activities that promote curiosity.
Exploration	The teacher provides the students with a common base of activities within which current concepts and/or misconceptions, as well as process skills, are identified.
Explanation	The teacher focuses the students' attention on specific issues noted in the Engagement and Exploration phases that can be corrected and/or lead the students to deeper understanding.
Elaboration	The teacher challenges the students' understanding of the new concepts and provides the students with new experiences to participate in.
Evaluation	The teacher provides an opportunity for the students to access their understanding and abilities, which allows the teacher to evaluate student progress toward achieving the learning objectives.

Table 1 Biological Science Curriculum Study 5E Learning Model.

email as needed; scheduled face-to-face meetings with select stakeholders and/or PSTs; and communicated and/or evaluated the PSTs documentation via Canvas, an evaluation platform furnished by the university to receive the documentation of assignments and reflections from the PSTs.

DATA COLLECTION

Data were collected through various methods during the semester. For the blocked courses, evaluation was focused on instructional and behavior engagement and literacy teaching; PSTs classroom observations; planned and taught content lessons; analyzed video recordings of their own teaching; weekly reflections to track their ideas and beliefs; and completion of an anonymous block course evaluation at the end of the semester. In the science methods course, the PSTs created and implemented one lesson plan following the BSCS 5E Learning Model (Bybee et al., 2006); reflected on culturally responsive teaching; mastered pedagogy to become an inquiry teacher; completed daily peer and self-evaluation during the nine-day teaching practicum; and created a daily reflection after each science teaching day. Each science lesson plan contained pre/post assessments, and a science notebook which contained formative/summative assessments, as well as hands-on, minds-on activities, that documented the students' daily science understanding and learning. The daily reflective journal was evaluated by both authors to ensure that any concerns were addressed before the PSTs returned for the next teaching day. The second author revised an anonymous exit survey, which she typically implemented within her traditional science methods course, to include feedback from the PSTs to address specific attributes that each university professor provided for the PSTs. The results from this survey were additional data to better inform revisions to this collaboration.

To measure the potential impact of eNvision, standardized scores from the Northwest Evaluation Association (NWEA) assessment provided quantitative data for comparison between program participants and non-participants. Fall testing was completed at the beginning of the program's implementation, while winter testing was completed after the program ended.

Comparative analysis between the fall and winter NWEA scores showed higher growth in Mathematics, Reading, and Language among classrooms who participated in the eNvision program than among that of non-participants. The quantitative data are foundational and do not assume causation; however, it is encouraging to identify the positive gains that correlate with PST placements.

RESULTS: PST CANDIDATES

Research has shown that PSTs benefit from teaching in a PDS site (Castle et al., 2006; Darling-Hammond, 2010; Decker et al., 2018; Sumowski & Peters, 2019). Within eNvision, PSTs engaged in 210 hours in the classroom, which is a substantial increase from the traditional practicum experience at our university (see **Table 2**). This opportunity afforded PSTs the chance to not only experience more in the PSTs current seminars, but to also expand on the knowledge gained in earlier courses. Their ability to collaborate on a regular basis with their mentor teachers informed and encouraged culturally responsive teaching practices, as PSTs were able to build relationships with the students in their classrooms (Milner IV et al., 2017; Shalaby, 2018; Teaching Works, 2020). These relationships were further enhanced through the organization of and participation in school events, including a PST-led "Literacy and Science Night."

Reflections during the semester indicated transformative growth and perceptions from the PSTs which were supported by the quantitative data collected from the science pre/post assessments and standardized assessment increase (see **Table 3**). When asked to reflect on the entirety of this collaborative experience, PSTs provided positive feedback in their anonymous evaluations at the end of the semester, with one identifying the experience as "an amazing experience and opportunity for us all." Another student shared that the experience "pushe[d] us to our potential and buil[t] our confidence," an assertion which was affirmed by a second student who stated that she felt "so much more prepared because of this class." Several informal conversations and observations throughout the semester allowed both instructors to witness firsthand the successes and challenges of each PST. The teaching teams were required to demonstrate culturally

	ENVISION IMMERSIVE EXPERIENCE	TRADITIONAL EXPERIENCE
Combined class time for Courses 1 and 2	54.5 hours	53 hours
Combined field time for Courses 1 and 2	210 hours	27 hours
Class time for Course 3	33 hours	33 hours
Field time for Course 3	Included in 210 hours	10 hours

Table 2 Comparison between the eNvision Immersive Experience and a Traditional Experience.

STUDENT	GRADE	WEEK	REFLECTIONS
A	K	1	"I was able to see how management can be used in a classroom and how it differs for all students."
		8	"This course has given me the opportunity to create a whole unit lesson plan and then implement it in a real classroom. This has helped me gain confidence in teaching and leading a class."
B	3	1	"Science is very underrated and needs to be recognized."
		8	"Teachers need to provide challenging projects to their students."
C	4	1	"Importance of having a strict system for students to learn and understand to apply in the classroom at all times"
		8	"The biggest thing I have learned is that a lot of great teachers have experienced much [sic] of the not-so-great things. Lesson plans may not go the way we want, motivation may be lacking, and everything else that allows us to grow. Today's lesson taught me that just by being careful with words and your tone can change a student's mindset like it did today."

Table 3 PSTs Beliefs Regarding Science Education.

responsive teaching for each day in which their lesson was implemented. The care that the second author provided for them was expected to be transferred into their teaching for each diverse student which the PSTs served. After each teaching experience, PSTs submitted a reflective journal entry that was evaluated by one of the professors, with specific feedback to address any pedagogical and/or behavioral concerns needed to teach their students on the next day.

One question from the exit survey asked what attributes each university professor contributed to the PSTs success in this program. Attributes assigned to the first author were her content knowledge on classroom management, flexibility, and willingness to model the pedagogy and activities before the PSTs had to implement them in the practicum. The second author exhibited the attributes of genuine care through love and support, building confidence in teaching, and demonstrating how to show equity in the classroom. The diversity in the university faculty reveals the different attributes that each professor provides for these PSTs.

PDS FACULTY PARTICIPANTS

Classrooms are busy spaces, with teachers often responsible for teaching and managing 25 or more students with limited assistance from the outside. PDS teachers hosting PSTs benefit from the additional and consistent academic support in their classrooms. The creation of this collaborative experience, implemented Monday through Friday, was largely based on this desire of the PDS mentor teachers. The dependability allowed mentor teachers to create learning experiences for their elementary students through a variety of groupings and modalities supported by the PSTs. Furthermore, it lessened the mentor teacher's organizational load, as PSTs assisted in creating bulletin boards; organized learning centers and activities; checked homework

folders; and completed other small but potentially time-consuming tasks.

The principal of the PSD site offered the following insight into eNvision and the benefit it provided to her school and PST candidates:

eNvision was a mutually beneficial collaboration in many different ways. Being in the classroom daily, the PST candidates were able to gain valuable, real-world experience as compared to isolated instances of teaching. Their extended involvement in the classroom created authentic experiences that better prepared them for student teaching. The importance of relationships and rapport with students was crucial and eNvision fostered the ability for the PST candidates to form meaningful relationships with our elementary students through daily interactions. Classroom teachers also gained new strategies from engaging with the PST candidates that often transferred into the supervising teacher's daily instruction.

UNIVERSITY FACULTY

Perhaps the greatest benefit of a PDS partnership for university faculty is the ability to get to know the school in which the field experiences take place. This allows university faculty to personalize their teaching to the specific desires and challenges of the PDS school and individual classrooms and affords the university faculty the opportunity to build relationships with the school's faculty and staff. In addition, the creation of eNvision resulted in a faculty collaboration that joined departments in two separate colleges of Teachers College and College of Sciences and Humanities, exemplifying the productivity of course integration in a PDS partnership.

The impact of eNVision also improved the collaborative skills of university faculty while enriching the field experience for all stakeholders, as illustrated by the first author:

Taking the time to intentionally create and implement an immersive experience specific to the needs of the host PDS has shown me that we all benefit in learning from each other. The principal, mentor teachers, PST candidates, my colleague, and I engaged in a transparent approach to teaching and learning in which targeted responsiveness prevailed. While still new and growing, eNVision demonstrates the mutual benefit of including all of those involved in the conversation of training PSTs.

The second author builds on the benefit of expanding the field experience, specific to the science methods course:

This experience helped me realize how exposing the PSTs to more time in the school with the students and teachers has an even greater impact on the PSTs ability to bond with the students than the traditional four-week experience I normally implement with my other PSTs in an after-school practicum. In the PDS program teaching, bonding, and growth occurred with most of these students.

STUDENTS

Preliminary standardized test data show an increase in scores among students in participating classrooms. The quantitative data from the student participants were from the standardized NWEA RIT Total Growth Scores, Winter 2020 and the formative and summative assessments during the science instruction. The NWEA RIT score represents the students' Zone of Proximal Development (Vygotsky, 1986). The NWEA results in mathematics (70/33) and reading (74/37) for the students who participated in the eNVision collaboration were more than twice the total NWEA score of non-participants at the PDS site. This increase supported university faculty expectations that the pedagogy implemented in this project was effective for the demographics of this PDS. The formative assessment for these students was an average of 77%, and the summative assessment average was 55% for the pretest and 81 % for the posttest.

CHALLENGES

Four challenges faced the implementation of the PDS partnership. The first challenge resided in the teaching

of pedagogical practice concerning instruction and behavior, as the information presented by university faculty is not always what is observed in elementary classrooms. In this course, PSTs are introduced to high-leverage practices, issues of equity, and restorative practices (Glasser, 2012; Jackson, 1968; Milner IV et al., 2018; Shalaby, 2017; Teaching Works, 2020). Several seminar hours at the beginning of the semester establish foundational knowledge which allows PSTs to synthesize pedagogy and practice, while also reflecting on and challenging their beliefs. When PSTs' beliefs do not mirror the instruction and behavioral practices in their assigned classrooms, it can be a struggle for the PSTs to participate wholly in the teaching of those students.

Literacy instruction presented as the second challenge. At this stage in their program, PSTs have expressed concern in their ability to effectively teach the five pillars of literacy—phonemic awareness, phonics, fluency, vocabulary, and comprehension—which is expected since this is often their first course explicitly dedicated to this content. PSTs struggle with terms and concepts, drawing only from their personal experiences with reading and writing instruction from their elementary days. As PSTs' knowledge of literacy instruction grows and is integrated with the teachings of its aforementioned partner course, PSTs begin to formulate their own philosophy on how literacy should be taught in the classroom. However, as with the first challenge, many of the PSTs observe and participate in prescribed curricula that has little room for creativity and individual thought.

The third challenge was culturally responsive teaching. The PSTs were assigned to read "Star Teachers of Children in Poverty" (Haberman, 1995). This reading discussed specific behaviors that traditional White female teachers deem a problem and exacerbate needlessly, especially when working with underserved diverse groups. The author reported that building strong personal relationships with children around learning tasks is more beneficial than relating to a child after a serious problem arises. Star teachers know that discipline is not separate from teaching; rather, they are supported and intertwined with one another.

The final challenge was how to teach science using inquiry, culturally responsive teaching, and the BSCS 5E Learning Model (Bybee et al., 2006) (see **Table 3**). This model is an effective tool to teach PSTs how to design a lesson plan using inquiry-based pedagogy, while mastering this pedagogy and being culturally responsive. Providing the PSTs access to practice inquiry teaching and learning during their science methods course was the foundation for the PSTs' teaching, learning, and implementation.

SUSTAINABILITY AND EXPANSION

The sustainability of a collaboration of this kind requires several considerations. Because the program was developed specifically to meet the needs of the PDS site, stakeholder feedback was actively sought throughout the semester and noted for future planning. Informal conversations occurred daily between the mentor teachers, principal, and the first author during the morning check-in, but some feedback was communicated through email. When on-site, the second author met with each mentor teacher to discuss PST performance and receive feedback on the science lessons. All feedback was evaluated in the context of potential changes to eNVision and determined to be either an immediate change or a future consideration. The authors continuously analyzed their teaching approaches and expectations against the feedback of the mentor teachers and principal in order to be responsive to stakeholder needs. As district policies adapt to enhance student learning, eNVision must follow this lead to remain relevant and beneficial to the PDS.

A second consideration focuses on student retention. With the current design, PSTs earn nine credit hours but commit to just under 300 hours of time dedicated to this experience and are also asked to transition between the field site and the university campus weekly. Teaching all seminars on-site at the PDS would minimize down time between classes and help support the integrated approach to teaching. Additionally, adding one or two more courses to build a full semester of credit hours (12–15 hours) would allow a more comprehensive integration of subjects and more flexibility with respect to time.

DISCUSSION

The school-university collaborative partnership through PDS sites provided authentic teaching experiences and extended time in the school for PSTs with the elementary students and mentor teachers. This partnership also provided the PSTs an opportunity to master effective teaching pedagogy with diverse underserved students before student teaching and in their future classrooms. Based on the feedback from all stakeholders, eNVision is definitely a program that should be implemented for future PSTs in other PDS in this PDD. Revisions to eNVision are being considered during COVID-19 since most practicum experiences are now virtual instead of the traditional model from this project. The PSTs that are enrolled in the authors' classes each semester can implement the two practicums since the first author is assigned to the PDS and conducts all field experiences

at the site. The second author would like these PSTs to implement the science lesson plans created with the same students in a consecutive five-day schedule similar to the nine-day schedule from this project.

IMPLICATIONS FOR PST PREP AND PDS SITES

Teacher preparation programs aim to produce stellar educators who can successfully manage and teach in a classroom by both readily adapting to school culture and understanding the responsiveness needed to be effective. However, every school is different, and teacher preparation programs must recognize the challenge of providing opportunities to their PSTs which immerse them in these differences. The standard practice of providing a “drop in” experience—two to three hours a week—is not sufficient time for PSTs to fully engage with students and understand their needs. Teacher preparation programs must move beyond the idea of exposure and embrace the immersive approach to learning.

These challenges are not solely the university's; PDS sites are repeatedly impaired by the district demands of prescribed curricula and mandated schedules. Too often, schools are more concerned with controlling content in the classroom than with supporting teachers to be innovators and leaders in teaching. Providing the eNVision approach to effectively prepare PSTs, in addition to increasing the amount of quality time the PSTs spend in the PDS classrooms, reveals the benefits for all stakeholders with encouraging qualitative and quantitative data.

IMPLICATIONS FOR UNIVERSITY-SCHOOL PARTNERSHIPS

The data from the eNVision program is preliminary, but the impact is promising. The attributes of the PDS collaboration suggest providing PSTs: a) Access to a block schedule of at least nine-hours; b) 210 contact hours in the school with a mentor teacher and classroom with students; c) permission to use culturally responsive teaching and inquiry-based instruction; and d) the supervision by devoted, veteran university professors that have the potential to impact future teachers and schools. The attributes to this collaboration align with research stating that PSTs benefit from teaching in a PDS site (Castle et al., 2006; Darling-Hammond, 2010; Decker et al., 2018; Sumowski & Peters, 2019). This preliminary data reveals similar results to what Dolly & Oda (1997) cited in their research because our ultimate goal was the following: 1) Upgrade the PST preparation; 2) build partnerships with mentor teachers and PSTs; and 3)

conduct field-based research experiences at PDS schools that will benefit all stakeholders, regardless of the structure and culture of the community.

CONCLUSION

The value of the school-university partnership rests in the mutually beneficial approach to teaching and learning using culturally responsive teaching and inquiry in the context of this program. The creation and implementation of an immersive learning program allowed PSTs to not only apply and extend content knowledge, but to also practice and hone instruction and behavior strategies (Decker et al., 2018). PSTs were able to see a growth in science understanding for most students based on the outcomes of the science pre/post assessments and daily Kahoot formative assessments. In addition, PST learning was elevated through frequent collaborations with mentor teachers. This attribute allowed the PSTs to revise their lesson and behavioral plans, which informed the PSTs' teaching for the next day. Finally, this experience enhanced the PSTs' teaching and belief in the benefit of using culturally responsive teaching and inquiry, as espoused by Gay's "caring in action."

The PSTs use of these effective pedagogies to teach underserved diverse students was revealed in their daily reflections and the outcomes of their students' formative and summative assessments. Providing the PSTs time to build relationships with the underserved diverse students for this 16-week collaboration allowed PSTs to see that discipline is not separate from teaching; rather, they are supported and/or intertwined with one another (Haberman et al., 1995). Using culturally responsive teaching and inquiry-based pedagogy to teach science in this science methods course and in this collaboration was an intentional effort to produce future teachers who ensure that the students they serve have access to a broad and varied curriculum. Finally, one goal of this collaboration is to expose these White female PSTs to the attributes of a "star teacher," which can help to dispel the myths that many of them have when teaching underserved diverse students.

COMPETING INTERESTS

The authors have no competing interests to declare.

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