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From the Editor

The *Excellence in Education Journal* is an open access, refereed, online journal that promotes and disseminates international scholarly writing about excellent practices in all aspects of education. Seven years ago, this journal was founded with the goal of sharing these practices to benefit the education of children and adults worldwide**.** We encourage teachers, professors, and other professionals worldwide to write about practices that promote the improvement of education. Submissions are double-blind, peer reviewed and are accepted year round with publication occurring twice annually.

In support of our mission, we provide assistance with writing and formatting in English to international writers who seek our assistance with preparing their manuscripts. There are no fees to submit or publish manuscripts so that cost will never be a barrier. Typeset and graphics are intentionally simple in order that the journal can be more easily accessed on a variety of devices worldwide to fulfill the mission of the journal.

I hope that the practices discussed in this journal will be helpful to you, our readers.

Ann C. Gaudino, Ed.D., Founder and Editor-in-Chief
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Coaching in Childhood Education: Using Lessons Learned to Develop Best Practice for Professional Development in a State System

James M. Ernest and Tracye Strichik

Abstract

Recent economic analyses point to large returns for investing in quality early childhood education programs and programs provided for children in poverty most often show the greatest benefits for children. This article describes the role of an innovative coaching approach to educator professional development in one of the poorest states in the United States of America with 55% of children from birth to age six living in poverty. The authors describe the benefits of a quality Pre-Kindergarten education and examples of system-wide innovations that have allowed the program to increase from serving 6% to 25% of all eligible four-year-olds, while increasing the percentage of children meeting or exceeding widely-held expectations by the end of the program. Examples of innovations are provided that can be used by other programs to advocate for increasing Pre-Kindergarten investment and the quality of programs for young children.

Keywords: Pre-Kindergarten; early childhood education.

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In the United States of America, Alabama has been known for many things (football, history of civil rights, etc.), but few people would associate Alabama with one of the best state funded pre-Kindergarten programs in the USA. *First Class* is Alabama's state funded voluntary Pre-Kindergarten for four-year-olds. In a state that ranks 50th in math for eighth-graders, people are looking for a variety of solutions to an ongoing problem and funding Pre-Kindergarten is at the top of the list. The governor has stated, "It is the most important thing we can do in education" (Cason, 2014) and the legislature has acted on its words in recent times by increasing money for *First Class* which has caused the number of four-year-olds participating in state funded Pre-Kindergarten to quadruple in the past four years. Although the challenges and successes are a case study from one state in the USA, the advocacy, policy approaches, and strategies for developing an increased capacity to meet the needs of young children can apply universally.

According to the National Institute for Early Education Research (NIEER), Alabama is one of very few states that met all benchmarks for quality in the 2016-2017 school year. IN fact, Alabama has met all benchmarks since 2005-2006. Increasing the number of four-year-olds served from 6% to 25% in the last four years has required a quadrupling of teachers, teacher assistants, program coordinators, etc., and corresponding shifts in how professional development occurs to ensure quality as the system develops. To meet these needs, a new system of coaching hasbeen developed for the state. This article will describe the new coaching model of professional development called the Alabama Reflective Coaching Plan (The ARC-P) and its symbiotic relationship with the state funded Pre-Kindergarten system in Alabama. We will do this by relating the ARC-P to (1) leadership (2) ambitious goal development, (3) developing group held principles, (4) local ability to solve complex issues, and (5) collaboration that have been identified as necessary for successful leadership and change (Hirsh, no date).

The Alabama Reflective Coaching Plan

Pre-Kindergarten education was mentioned by President Obama in his last two *State of the Union* addresses and rather than being a divisive issue, the push for state funded Pre-Kindergarten is relatively non-partisan. Although Pre-Kindergarten has been framed by some as a social program, *The Education Commission of the States* (2014) indicated that some of the largest increases in state appropriated money for Pre-Kindergarten have been in Republican dominated states. Much of the push has come from the business sector citing Nobel laureate economist James Heckman who found a seven to ten percent annual return on Pre-Kindergarten investment and the *Institute for a Competitive Workforce* estimating that a $1 investment in Pre-Kindergarten translates to a $2.50 to $17 savings over time (Pepper, 2013). Pre-Kindergarten is becoming a large investment in education and touted as a way to enhance later school success. At the same time, states face challenges with scaling up programs to provide more state funded Pre-Kindergarten while maintaining a high quality education that research indicates leads to better school and life outcomes, especially for children in poverty (Barnett, 2011).

Much of the rationale for the focus on our approach to coaching as the keystone for developing the ARC-P professional development system came from research by Dunst (2000) and previous experience by the first author with a systems change project in a neighboring state over a period of six years. Dunst's review of research within and across multiple disciplines found intervention programs typically focus on what can be considered traditional models of services: Programs fix problems, use experts as the change agents, focus on what hasn't been working (the deficit approach), develop a systems approach around the needs of the professional, and use a top-down hierarchy where the professionals determine change.

Table 1

Traditional to New Models in Coaching. Adapted from Dunst (2000).

Traditional Paradigm	New Paradigm
Treatment Models Focus on remediation of a disorder, problem, or its consequence	**Promotion Models** Focus on promoting competence and positive functioning
Expertise Models Depend on professional expertise to solve problems for People	**Capacity-Building Models** Provide opportunities for people to use existing abilities and develop new skills
Deficit-Based Models Focus on correcting a person's weaknesses or problems	**Strength-Based Models** Acknowledge the assets of people and help them use these assets to improve functioning
Service-Based Models Describe practices primarily in terms of professional services	**Resource-Based Models** Describe practices in terms of a wide variety of formal and informal supports within a community
Professionally-Centered Models View professionals (the consultants) as experts who determine the needs of a person from their own as opposed to the other person's perspectives	**Teacher-Centered Models** View professionals (the coaches) as agents of teachers/ coaches/ administrators, and responsive to desires and priorities

In contrast to a traditional paradigm, the development of the ARC-P was based on initial guiding principles for an empowerment approach. Coaches are seen as promoting competence with the teachers / administrators / other coaches with whom they work. The primary focus is on capacity building: using the assets of the person, the coach serves to enhance existing abilities and develop new skills. Coaches are to be a support to other teachers, administrators, and other coaches using formal and informal supports. Although there are many definitions of coaching, we have used Rush and Shelden's (2011) evidenced based definition that focuses on (a) identifying what we do as an adult learning strategy; (b) where the coach promotes the learner's ability to reflect on his or her actions as a means to determine the effectiveness of an action or practice; and (c) develops a plan for refinement and use of the action in immediate and future situations.

Leadership Matters

We initiated the ARC-P in the summer of 2013 into what Alabama calls their *First Class* Pre-Kindergarten program in what has been described as a paradoxical top-down and bottom-up approach at the same time (Knight, 2007). The initial conversations for the ARC-P model took place with a university consultant, the director of professional development for the *First Class* program, and most importantly, the state Secretary for the Department of Early Childhood Education. Buy-in at the top from the beginning and continued support has been critical to the development of the ARC-P. From the initial meeting, it was then important to systematize a professional development program that would best meet the needs of the state and create an internal leadership that would grow from the ground up within each of the five regions of the state.

Developing Group-Held Principles Are Key to Substantive Change

A nebulous version of coaching had been used for a couple of years before without systematic support for the coaches or a clearly defined role. Coaches were all things to all people, playing the role of support while at the same time reviewing the programs for adherence to policy and monitors of program requirements. In order to implement the new ARC-P coaching model, the state department organized a two-day retreat to introduce the ARC-P to the professional development (PD) staff. One of the first principles that we centered on was the role of coaching as distinct from program monitoring. For the 2013-2014 year, two jobs were created. The role of coach was to be distinct from program monitors so that nuances associated with coaching Pre-Kindergarten teachers didn't confound the evaluative/monitoring role of the program monitors. During the two days, PD staff were introduced to the new model, and the roles of each job were discussed and refined. The process of coaching was outlined (see Figure

1) as a way to begin the model and have a baseline systematic model from which later conversations could refine the ARC-P.

Figure 1:

Coaching Approach to Teacher Empowerment. Adapted from Rush and Sheldon (2011).

Knowing that one-shot PD workshops are minimally effective, the coaches, monitors, and the upper administration of the program met monthly until the new year to review the roles of the professionals, and create a cross-regional community through which personnel could share what was working well and discuss challenging situations. During this time, the second underlying principle that was negotiated with the PD staff and state level administration was a tiered service delivery model. In prior years, some coaches were not providing services in an equal (or equitable) way to the teachers. Complaints had resulted in an administrative decision to require coaches to visit programs once a month for a half day. Given that principles of best practice in teaching support differentiated instruction, discussions at all levels of the system centered on the value of providing different things for different people at different times. As many coaches were new to the system, there was a cautious (trust but verify) release of an obligation for coaches to meet every month for the same amount of time with the teachers toward a differentiated model of

support that was tiered. For example, whereas some "new" teachers maybe veterans from other programs, other new teachers had little to no experience working with Pre-Kindergarten students. Teachers and coaches were vocal that some beginning teachers would have liked almost daily help at the start of the new academic year while other teachers refining their practice needed time to settle in with their new children without having to also work with a (sometimes new) coach and program monitor.

An outcome was a tiered component to coaching and is an example of a group-held principle developed so that coaches could negotiate with returning teachers to the system. Formative data were collected and indicated that of the 420 teachers, 120 (29%) were in new classrooms, 51(12%) were classified as new teachers, 133 (32%) were classified as progressing, 104 (25%) were refining practice, and 12 (3%) were "other" (internally this could be described as burned-out, planning to retire and less motivated to conform to the state's *First Class* standards, etc.). Coaches at the start of the 2014-2015 school year individualized time, knowing that progressing or refining teachers of their practice were not likely to need the frequency, time, and intensity of support as a new teacher with a brand-new recently funded *First Class* classroom. Ongoing conversations about "trust" to the administration, the regional supervisors, and the coaches were necessary and will continue to be necessary for balancing professional independence with accountability.

Expertise Exists Within Most Schools to Solve Complex Problems

The second half of the 2013-2014 year was spent providing individual support to districts. Each month, the university consultant and the Director of Professional Development would meet with each of the regions to develop their internal capacity to develop and monitor their own Professional Development (PD). Said another way, a bottom-up approach with top-down support to develop a grass-roots PD system was a goal of ARC-P. In prior years, PD had

been provided at the state level: A two-day professional development conference was provided in the summer and state initiated topics of general interest (and need based on prior data) were provided for all teachers.

A shift to the new coaching model was to individualize support for the Pre-Kindergarten teachers based on needs that develop during the school year. During the monthly meetings with each of the regions, the coaches and monitors were coached to develop their own capacity to provide PD to their teachers with the following intentional benefits: (1) coaches were to see themselves and their teachers as having the expertise to help each other; (2) coaches were to feel empowered to make local decisions about how best to help their teachers; (3) coaches would develop their capacity and expertise to help their teachers in meaningful ways (where the teachers identified they would like support); (4) coaches would share strategies and PD opportunities with other coaches in their region; (5) the strengths of individual coaches and teachers as local experts would be realized and could be used as PD for others in the region; and (6) the region would develop the capacity and be empowered to provide its own PD within the district that has the potential for sustained and substantial growth.

Collaboration Among Educators is Key to Ensuring Great Teaching for Every Students

Coaches have been able to develop personalized approaches to meeting the needs of their students. This helped create an atmosphere where collaboration has led to teachers and coaches developing their confidence in their own abilities while helping others to develop their skills. As an example, the state implemented *Teaching Strategies GOLD*® as one of its assessments. Even though all teachers had been trained on the system as a large group, some teachers naturally had prior experience with *GOLD*®, other teachers learned the electronic and online data entry system quickly, and some teachers needed more help with figuring out the utility and functionality of the assessment. During the spring, coaches were coached during the regional monthly meetings to

develop grass-roots professional development for their teachers. Guiding principles were provided to the coaches (see Table 2) but the topics of professional development and how the professional development was provided was developed by the coaches.

Table 2:

Top 10 Tips for Coaches. Adapted from The National Center on Quality Teaching and Learning (2014) and Most Effective Adult Learning Methods Practices (Dunst & Trivette, 2011).

- ☑ Build the relationship: Relationship over control
- ☑ Share successes: Build on the positive, share with other coaches and teachers
- ☑ Map it out: Use an action plan as a roadmap for your coaching journey: The most effective teacher strategy has a teacher reflect on their practice and identify their own performance goal
- ☑ Provide supports: Have the teacher identify the supports they may need
- ☑ Be transparent: Highlight coaching as part of professional development right from the beginning
- ☑ Be prepared be responsive: Focus on having the teacher assess their strengths and weaknesses
- ☑ Anchor it: Use data to anchor your observations and feedback. Real life applications lead to success
- ☑ Be patient: Change takes time
- ☑ Find the right fit: Just like teaching, coaching isn't "cookie cutter"
- ☑ Connect with a community of coaches: Coaches should be learning too

An example of a collaborative outcome was coaches setting up small group professional development days so that local challenges could be addressed. One coach invited her teachers to her house for a pot-luck with an open forum for teachers to share some of their successes in their classrooms. Another coach provided an account of how she was asking one of her teachers if she could do an informal presentation to other teachers on how to use *GOLD*® to inform their teaching. Another couple of coaches decided to hold a regional math development day and opened "slots" to other teachers in other regions. These coaches have been asked by other region coordinators to provide the same opportunities in their districts. One coach noted:

> As a coach I enjoy feeling empowered with the ability to differentiate the support I provide teachers based on their individual needs as a professional. It allows me to work with teachers in a way that reflects with them on their present practices and set professional development goals. It also allows me to grow as a professional.

Ambitious and Measureable Goals Precede Effective Professional Learning

Alabama is only one of two states that maintained its 10 out of 10 rating from the National Institute of Early Education Research (NIEER) for the past 10 years. The *First Class* program has a history of meeting ambitious and measureable goals but the program only served roughly 6% of all eligible four year olds until the 2012-2013 year. The quadrupling of children served in the past four years has necessitated the development of the ARC-P as an evolving model designed to help ensure the maintenance or improvements in quality. Business leaders, educators, and the state's administration have a lofty goal of providing services for 60% of four-year-olds in the next eight years. To do this, the state has worked with the professional development staff to develop the Alabama First Class Framework (see Figure 2).

Figure 2

Alabama First Class Framework

The comprehensiveness of the *First Class* program has centered data at the heart of its model. Evaluations of the program over the years have been budgeted for and data-based results have leveraged the ability to successfully lobby the state's finance committee and legislature. Data has indicated that the children in past programs were able to increase measures related to later school success to a national average, outperform children that didn't receive a *First Class* education, and that differences in state test scores persisted through sixth grade.

A survey of more than 2,300 parents of children attending *First Class* noted they were either satisfied or very satisfied with the program (98.2%), teacher-child interactions (98.5%), parent-teacher interactions (98.0%), and classroom instruction (98.7%). Less than 1% believed that their child did not make any progress in social skills, independence, language, math, creativity, and enthusiasm while 83.6% believed their child to have made "significant" progress

in math, with more than 85% believed the children made significant progress in the other areas. Furthermore, in 2014-2015, data from Teaching Strategies *GOLD*® indicated a range of 14% to 16% *Below Growth Range* for social-emotional, physical, language, cognitive, literacy, and mathematics skills. By the end of the year, the range for the six skill areas was between 84% and 86% in the *Meeting or Above Growth Range*. Even though the program has expanded rapidly from 206 classrooms in 2012-2013 to 810 classes in 2016-2017, evaluations of the children's progress have shown continued improvements. For the six domains on *GOLD*® this past year, the percentage of children *Meeting or Above Growth Range* has increased from a low of 93% for math to 98% for literacy skills.

As the program expands and develops, there will have to be a continuing analysis and refinement of the ARC-P, but initial data indicate this coaching model as being a very successful component of scale-up within a system while maintaining the program's quality. As with any evaluation of a program, examples of specific successes help to contextualize what we know about a program. After the Governor of Alabama declared Wilcox County the poorest county in the nation in 2014, *First Class* Pre-Kindergarten programs were set up in the county so that every child had access to a state funded Pre-Kindergarten program. In 2016, when children were assessed as they entered pre-K, only 7% of children met or exceeded widely-held expectations for math, 48% for social emotional, 33% for physical and also language, 21% for cognitive, and 42% for literacy achievement. When assessed at the end of Pre-Kindergarten, the percentage of children meeting or exceeding widely-held expectations had increased to 99% for social-emotional, 93% for physical and language, 99% for cognition, 98% for literacy, and 97% for math. Although policy decisions often center on economic returns, cost/benefit ratios, or state-wide aggregate scores, knowing that close to 100% of all children from one of, if not the poorest,

counties in America can enter kindergarten ready to succeed is a powerful story that speaks to the value of a quality early childhood education.

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Investigation of the Interest-Based Method and Mathematical Word Problem Solving Skills Among Middle School Students with Learning Disabilities in Inclusive Classrooms

Ojoma Edeh Herr, Ann Gaudino, Nakeiha Primus Smith, Deborah Tamakloe

Abstract

This study examined the effects of two training methods (interest-based and traditional) used to improve math word problem performance of middle school students with and without learning disabilities, as measured by the Herr Scale of Mathematical Word Problem Solving Situations. Students were randomly assigned to one of the two treatment groups: the interest-based method or the traditional method. Significant treatment group main effects were found in math word problem performance of students with learning disabilities. Results indicated students with learning disabilities in the interest-based method had higher posttest scores compared to students with learning disabilities in the traditional method. In addition, the posttest scores of students with learning disabilities in the interest-based method were similar to the posttest scores of students without learning disabilities. However, there were no significant differences in the posttest scores of students without disabilities between the treatment groups. Curriculum implications were addressed.

Keywords: interest-based training, word problems, learning disabilities

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Considerable research suggests that students with disabilities solve word problems differently than students without disabilities (Smith, 1986; Edeh & Hickson, 2002; Fuchs, Fuchs & Prentice, 2004). Problem solving is the ability to generate a wide variety of potential strategies, the ability to evaluate probable consequences of each strategy, and the ability to plan a logical sequence for implementing useful strategies (Edeh & Hickson, 2002). Problem solving skills are important in mathematics when solving word problems. According to Rubio and Valle (2004), numerical exploration is useful in solving algebraic-arithmetic word problems and is important for a student's success in problem solving. Furthermore, Xin, Wiles and Lin (2008) suggest that successful problem solvers are able to identify the mathematical content in detail when presented with word problems, while those who struggle with solving word problems can only identify surface related information and not the mathematical content.

Mathematical Word Problems

Kong and Orosco (2016) conclude that students struggle with word problems for various reasons beyond procedural or calculation challenges. Further, Kong and Orosco outline the progress that has been made in helping students with math difficulties, a segment of the student population, which continues to face challenges. It is known that students with high incidence disabilities, such as a learning disability, struggle with solving word problems (Edeh & Hickson, 2002; Edeh, 2006; Sullivan & Bal, 2013). Several studies (Kavale & Forness, 1999; Mathur, Kavale, Quinn, Forness, & Ruther-ford, 1998 & Edeh, 2006) showcase how the traditional method has not consistently helped students with high-incidence disabilities. Therefore, alternative strategies are needed to help them in solving word problems and be successful in their math classes.

Garderen (2007) found that alternative strategies, such as the use of diagrams, have been successful in teaching students with learning disabilities at the middle school level in solving one

and two-step word problems. Furthermore, students were able to transfer this strategy as they attempted to solve math word problems. Fuchs, Compton, Fuchs, Hollenbeck, Craddock, and Hamlett (2008) found positive outcomes when students used schema-based practices to solve algebraic problems situations. Such an approach (providing alternative problem solving strategies) proved to be more effective than those modeled during basic algebraic instructional practices.

Learning Disabilities

Learning Disabilities (LD) are neurobiological disorders that affect the basic processes in understanding spoken or written language. Students with LD are characteristically poor problem solvers. According to Montage, Ender and Dietz (2011), students with LD typically lack knowledge of problem solving processes, especially those needed for representing problems. Students with LD, tend to abandon previously learned effective strategies and replace them with ineffective strategies. As a result, they do not generalize the effective strategies across domains. Students with LD tend to utilize poor cognitive strategies when attempting to solve mathematical problems and, therefore, need instruction in alternative strategies when solving math word problems. In order for this to be effective, teachers need to understand how to incorporate students' interests in their instruction to help "maximize learning and the retention of the information learned" (Edeh, 2006, p.166). In using an interest-based method, students are more apt to understand the strategy, internalize it, and use it across domains.

Theoretical Framework for the Present Study

Dewey's theoretical concepts (1938) of recognizing children's interests in the educational environment paved the way for the interest-based approach to teaching. Dewey (1938) asserted that students learn best when they are interested in the subject matter and that teachers should adjust instruction to support student interests. Using this framework, Edeh (2006) found

significant gain in students' posttest scores for self-generated independent problem solving skills of students who were taught using the interest-based method compared to students who were taught using the traditional method. The three-month follow-up of her study also showed that students in the interest-based method retained their gain. Here, an interest-based method offered an effective cognitive strategy purposed to hold the attention of students with LD and keep them engaged in the activities (Edeh, 2006).

We know that students with LD tend to utilize poor cognitive strategies when attempting to solve mathematical problems. In addition, we also know that students with LD tend to be poor problem solvers, as they tend to abandon previously learned effective strategies and replace them with ineffective strategies. As a result, they do not generalize the effective strategies across domains. Therefore, Edeh (2006) contended that the interest-based teaching method will help in maximizing the retention of the information learned.

Interest-Based Method and Students with LD

Montage, Ender and Dietz (2011) state that cognitive strategy instruction has been effective in improving problem solving performance of students with LD. The intent of using the interest-based method is to provide additional cognitive strategy instruction to students with LD that would help them to process the math word problems, facilitate learning, and improve their overall math performance. Math word problems, as traditionally presented in lessons, appear unrealistic and in isolation to students with LD. When these students perceive activities as unrealistic, they tend to give up trying. However, when these concepts are woven through interest-based activities, students tend to be more invested because of the relevancy of the activities to their experience (Edeh, 2006).

The interest-based method, as defined in Edeh (2006), is the training method that allows for a student's input. Through this method, teachers incorporate and infuse diverse students'

interests in their teaching to make learning relevant to all students. Interest-based materials are the teaching materials that are created using students' actual identified interests.

The current study was designed to examine the effects of two training methods (interest-based and traditional) in improving math word problem performance of seventh grade middle school students with and without learning disabilities. With the interest-based method, math word problems are re-written using students' interests. For example, the word problem, "Stuart bought a sweater on sale for 30% off the original price and another 25% off the discounted price. If the original price of the sweater was $30, what was the final price of the sweater?" was re-written using a student's interest as, "Your friend bought a video game on sale for 30% off the original price and another 25% off the discounted price. If the original price of the video game was $30, what was the final price of the video game?" As seen from the above example, "Stuart" was changed to "Your friend" and "sweater" to "video game" to account for student interest and engagement. The process of solving this word problem and its solution are the same. However, the wording for the interest-based is more relevant to the students with this interest. Table 1: *Sample of Herr Scale of Mathematical Word Problem Soliving Situations* shows samples of both traditional and interest-based math word problems.

Method

Participants

One public middle school with two seventh grade math classes consisting of 41 students (combined) in both classes participated in this study. Data was collected in both seventh grade classrooms. One classroom used the interest-based method and the second classroom used the traditional method. Parents/guardians of the students were notified and they provided informed consent. Identification of gender and ethnicity were not of salient importance to this study, and this information was not included.

Both classes were considered to be inclusive classrooms where at least 20% of the students in each classroom had an IEP. The participants were between the ages 12 and 13 years with one student who was age 14 at the time of this study (this student had repeated a grade prior to middle school). Both female teachers in the participating classrooms gave consent and participated in the study.

There were 21 participants in the interest-based treatment group, of which 5 participants were diagnosed with LD, and 20 participants in the traditional treatment group, of which 4 participants were diagnosed with LD. There were 9 students, total in both treatment groups, with LD.

Seventh grade was chosen as the focus of this study for several reasons. In this particular district, seventh grade is the first year of middle school (elementary school is through sixth grade). Typically, when students transition between levels (elementary to middle school or middle to high school), schools and teachers have little information about students beyond their transcript (and IEP if they have one). Teachers have few preconceived ideas about students because they often do not know them and often have little information about their academic accomplishment and their interests. Such was the case with the seventh grade classes selected for this study. The teachers entered this study with little knowledge of their students' interests. Therefore, the teachers engaged in this study were starting the interest-based method from the very beginning of initially investigating and learning about their students' interests which could then potentially be incorporated into the word problems. Likewise, the students in this study (both regular education and special education) had not experienced math instruction at the elementary level that was focused to their interests. This made for an optimal sampling of subjects who were all experiencing the interest-based method for the first time.

Seventh grade was also chosen because math instruction begins to become more complex

at this point, beyond basic arithmetic, with the introduction of algebraic concepts. In the experience of the authors, it is at this point that student interest is most likely to wane, achievement suffers as does mastery of objectives, and consequently student feelings toward math can become less favorable and they become less engaged. This is especially true for students with learning disabilities. Therefore, a new approach to engaging students and focusing their attention in more complex word problems is needed. The authors hypothesized that the interest-based method would meet the needs of students with learning disabilities, enable their engagement, and improve their performance given these unique circumstances.

Design

A 2 x 2 ANOVA for pretest scores was used to reveal any significant differences among the treatment groups. Analysis of covariance (ANCOVA) was used to compare the effects of training on the participants' problem performance. The ANCOVA included the posttest scores as the dependent variables and the pretest scores as covariates.

Materials

The materials for this study included participants' school records, IEPs for those with LD, Herr Scale of Mathematical Word Problem Solving Situations, the participating teachers' training materials, and interest-based materials created for participants.

Procedure

Interest-based materials were created for participants in the interest-based classroom using their actual identified interest(s) during the first meeting and after the pretest was completed. Every student, in the interest-based classroom was given a piece of paper with the instructions, "Write two or three favorite activities (things) you like to do for fun, either in school or outside of school." Each participant wrote what she or he liked to do for fun and these interests were grouped into three categories, sports, video games, and music, which represented

the items provided by the students. Afterward, the math word problems that the teacher collected from the textbook were re-written using at least one each student's identified interests as shown in Table 1.

Table 1

Sample Herr Scale of Mathematical Word Problem Solving Situations

Traditional mathematical word problems	Interest-based mathematical word problems
1. Stuart bought a sweater on sale for 30% off the original price and another 25% off the discounted price. If the original price of the sweater was $30, what was the final price of the sweater?	1. Your friend bought a video game on sale for 30% off the original price and another 25% off the discounted price. If the original price of the video game was $30, what was the final price of the video game?
2. In a school, 50% of the students are younger than 10, 1/20 are 10 years old and 1/10 are older than 10 but younger than 12, the remaining 70 students are 12 years or older. How many students are 10 years old?	2. In your elementary school, 50% of the students are younger than 10, 1/20 are 10 years old and 1/10 are older than 10 but younger than 12, the remaining 70 students are 12 years or older. How many students are 10 years old?
3. A car is traveling 75 kilometers per hour. How many meters does the car travel in one minute?	3. One of your parents is driving you and your friends to your track and field game. Your car is traveling at 75 kilometers per hour. How many meters does the car travel in one minute?

Training of the Examiners

One of the two teachers who participated in the study was trained, by the researcher, on how to re-write math word problems using students' interests. The examiner was instructed not to change her teaching style, but only to use students' interests for examples when teaching. The examiner participated in a mock teaching, using students' interests, as part of her training. The second teacher did not receive any training. Both teachers were instructed not to share their teaching materials during the four-week period when the interest-based materials were used for teaching.

Data Collection

Participants in both classes (interest-based and traditional methods) each received a total of four weeks of instruction on math word problems in their respective classrooms. The interest-based materials (re-wording of the math word problems using students' identified interests) were used in the teaching of the participants in the interest-based class, but not for the participants in the traditional class.

Before instruction began, the participants in both classes were pretested. Then, they completed four weeks instruction of a math word problems unit and took the posttest right after the instruction. Both the pretest and posttest questions were based on the content of the math word problems that students were required to learn. Though questions in both pre and post tests were identical, the order of questions were changed and questions for students in the interest-based class were re-worded using students' actual interests for the one class.

Results

Means and standard deviations (SDs) of participants' pretest and posttest scores by treatment groups are presented in Table 2*: Means and Standard Deviations (SDs) of Participants' Pretest and Posttest Scores by Treatment and Categories*. A 2 x 2 ANOVA for pretest scores failed to reveal any significant differences among the treatment groups.

Posttest scores for math word problem performances were analyzed using a 2 (treatment groups) x 2 (categories) ANCOVA. Treatment groups (interest-based vs. traditional) and categories (students with LD vs. students without LD) were the between-subject factors. Analysis of covariance was used to compare the effects of training on participants' math word problem performance. The analysis of covariance included the posttest scores as the dependent variables and the pretest scores as covariates.

Math Word Problem Solving Performance

The 2 (treatment groups) x 2 (categories) analysis of covariance (ANCOVA) on posttest scores yielded a significant treatment group main effects for math word problem performance $F(2, 67) = 59.135$, $p<.010$. Overall, the participants with LD in the interest-based group generated accurate responses on math word problem $F(2,65) = 29.374$, $p<.021$) on posttest compared to participants with LD in the traditional method group. However, there were no significant differences between participants without LD on posttest scores in either treatment groups. See Table 2 below.

Table 2

Means and Standard Deviations (SDs) of Participants' Pretest and Posttest Scores by Treatment and Categories

	Pretest				Posttest			
	With LD		Without LD		With LD		Without LD	
Treatment	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*
Interest-Based	9.25	1.39	24.85	3.01	46.45	4.24	48.63	2.21
Traditional	9.61	1.15	23.92	2.54	29.87	4.94	47.22	3.71

Note: There were 21 participants in the interest-based treatment group, of which 5 participants were diagnosed with LD and 20 participants in the traditional treatment group, of which 4 participants were diagnosed with LD. There were 9 students, total in both treatment groups with LD. Maximum score = 50.

Discussion

The main findings of the study are discussed in terms of training effects and curriculum implications.

Training Effects

Performance differences were evident in participants' math word problem performance as a result of teachers participating in the interest-based method training. The results of this study

indicated that students with LD who participated in the interest-based instruction performed significantly higher on the posttest than the students with LD in the traditional-based instruction. The performance of the participants in the interest-based group is in alignment with Garderen (2007) who found that alternative strategies have been successful in teaching students with learning disabilities at the middle school level in solving one and two-step word problems. Furthermore, the findings in this study support Dewey's theoretical concepts that when students' interests are utilized in instruction, students' performance improves (Dewey, 1938). In addition, the findings in this study also support the suggestion by Scribner and Cole (1981) of how appropriate usage of tools may structure how "someone handles cognitive opportunities" (p. 64). Progress has been made in utilizing different strategies to help students who learn differently; therefore, using the interest-based method provides another form of strategy for students with LD in processing the math word problems, facilitating learning, and improving their performance.

Students With and Without LD

Though there were no significant performance differences in pretest scores among students with LD in both treatment groups (Table 2), there were significant performance differences in posttest scores. In addition, there were no significant performance differences among students with LD and students without LD after the training, even though there were significant differences during the pretest performance (Table 2). The performance gap between students with and without LD during the pretest was minimized for those in the interest-based method, however, the performance gap still existed between students with and without LD in the traditional method after the posttest. Therefore, it is appropriate to suggest that some of the performance deficits of students with LD during the pretest and posttest for students in the traditional group may be as a result of their perception of the unrealistic (problems for which they have difficulties connecting) aspect of the traditional method. However, when students are

taught with relevant materials, the significant differences between students with and without LD seemed to diminish (Edeh, 2006).

Curriculum Implications

The results of the current study show the benefit of including the students' actual interests in the teaching process. The literature review for this study shows that the professionals agree that there is a great need for developing alternative teaching strategies for students with LD in order to help them learn to their maximum potential. As Dewey (1938) pointed out, "the traditional curriculum undoubtedly entailed rigid regimentation and a discipline that ignored the capacities and interests of child nature" (p.10). An interest-based method allows for students' input. This process allows for incorporation and infusion of diverse interests into the teaching materials and makes the information relevant.

An important curriculum implication is the potential of the interest-based method to minimize the performance gap between students with LD and students without LD. One of the purposes of education is to equip students with needed strategies to be successful in life. The performance gap between students with LD and those without is due, in part, to poor utilization of cognitive strategies in solving mathematical problems. However, educators can maximize their learning by incorporating students' actual interests in the teaching materials.

The distinguished teacher will provide opportunities for students to engage in writing their own word problems based on their unique interests. This type of practice aligns well with the Danielson (2013) *Framework for Teaching*, which is utilized in many states as a basis for teacher evaluation. The framework describes that, "The teacher's explanation of content is thorough and clear, developing conceptual understanding through clear scaffolding and connecting with students' interests" (p. 57) and, "the teacher seizes an opportunity to enhance learning, building on a spontaneous event or students' interests" (p. 79).

Students can also be encouraged to not just be receivers of information, but leaders of their own learning. Students could create their own word problems or problems for peers based on interest. Students could complete their own problems or exchange problems with peers. This, too, is supported by Danielson (2013) who describes distinguished practice where, "There is evidence of some student initiation of inquiry and student contributions to the exploration of important content; students may serve as resources for one another" (p. 69) and "Students formulate many questions, initiate topics, challenge one another's thinking, and make unsolicited contributions. Students themselves ensure that all voices are heard in the discussion" (p. 63). Interest-based method is not difficult to learn and teachers can be trained during one of the in-service trainings before the beginning of the school year.

Similarly, there are also implications for textbooks. Operating outside of the usual box of teaching requires a paradigm change. Therefore, in addition to providing word problems for students to complete, texts could provide opportunities for students to write their own word problems, or even write word problems for peers, based on interest. The text could set the parameters of the problem, what must be included, and then encourage the students to write word problems based on topics that interest them. This approach of the student creating and writing word problems is well supported in standards which call for students to be leaders of their own learning.

Limitations of this Study

The limitations of this study include a small sample size and frame. There were 41 students and 2 teachers representing 2 classrooms. It is possible that a larger sample size would have different findings. Additionally, the age of the students was limited to 12 and 13 years old. It is possible that students at a different age could respond differently to the interest-based method; they could potentially respond even more favorably or less favorably. Future studies

that have a larger sample size and wider range of ages hold promise in yielding results that are generalizable to a greater population.

Future studies could also focus on classrooms with an even greater special education population. The sample size in this study was at least 20% of the students had an IEP. Perhaps the results could be different in classrooms with a greater percentage of students with IEPS or significantly less IEPs. Additionally, this subject pool was quite homogenous in terms of race and socio-economic background. Future studies with more varied populations could focus to explore student response to the interest-based method disaggregated to student demographic patterns.

Conclusion

Students in this study with learning disabilities responded favorably to word problems with texts that aligned to their interest. Notably, their posttest performance showed measurable gains over their pretest performance and their posttest performance was comparable to students without learning disabilities. While further studies could investigate a larger population, this small study shows hope for the interest-based method of teaching math word problems to engage and improve the performance of students with learning disabilities.

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Examining Community-Based Mentoring Experiences for Pre-Service Teachers: Positive Outcomes and Challenges

Jiahui Wang and Kristen Apraiz

Abstract

Previous studies indicate that practicum experience is essential for pre-service teachers to develop understanding of effective teaching, professional identity, and culturally responsiveness. However, it is possible that first-year pre-service teachers are not ready to teach in a classroom with as many as 30 students which could present overwhelming issues in behavioral management problems, instructional design, and assessment. Instead, a one-to-one mentoring experience could be considered as a supplementary practicum experience for beginning pre-service teachers. The current study examines the implementation of a community-based mentoring experience for first-year pre-service teachers who were enrolled in a teacher education program at a state university in the southeastern United States. Data were collected through an internet-based survey administered to 54 pre-service teachers. The findings include the positive outcomes and challenges of the mentoring experience. Future directions of the mentoring experience to promote the professional development of pre-service teachers are also discussed.

Keywords: First-Year Pre-Service Teachers, community-based mentoring experience

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At the authors' university, elementary education pre-service teachers are enrolled in a teacher education program, which is five-year program with a dual emphasis in elementary education and special education leading toward a master's degree. Within the program, pre-service teachers are required to take content courses and pedagogy-related courses. In addition to fulfilling course requirements, they also engage in a field experience in elementary schools during each semester.

The community-based mentoring experience is a practicum requirement for first-semester pre-service teachers who are enrolled in the teacher education program. The partnership between the state university and the surrounding elementary schools is meaningful. In addition to providing several elementary schools and after-school centers with desired mentoring services, it also benefits the first-year pre-service teachers. Each pre-service teacher is paired with one or two students who attend the after-school program and with whom they will meet twice a week (i.e. two hours per week) for 12 weeks. Each pre-service teacher will conduct a 60-minute mentoring session consisting of 40-minute mathematics activities with the paired student(s) and 15-minute literature activities that he or she designs. At the end of each mentoring session, pre-service teachers are required to reflect on the mentoring experience. While engaging in the community-based mentoring experience, pre-service teachers are also enrolled in a methods course which focuses on content knowledge and pedagogy for teaching mathematics in an elementary classroom. Based on the knowledge and skills gathered from the course, pre-service teachers plan the math activities and book activities that they will implement with the student(s). Suggestions are provided by course instructors and site coordinators on the activities pre-service teachers plan to implement in each mentoring session.

Literature Review

Practicum, or field experience, has been shown to be an indispensable part of a teacher education program no matter what form of experience it undertakes (Smith & Lev-Ari, 2005). Studies have indicated pre-service teachers consistently perceived the practicum experience as an important stepping-stone to real teaching (e.g., Grudnoff, 2011) when beginning teachers will be faced with complexities and demands of a teaching job.

Previous research has examined practicum experience across the country (Clift & Brady, 2005) and noted that the practicum experience could influence the development of pre-service teachers' self-efficacy and professional identity. As Cooper and Olson (1996) noted, the beginning pre-service teachers' professional self was not yet substantive but could be constructed through field experience by interacting with real students. Similarly, Hong (2010) also found the practicum experience is instrumental in helping pre-service teachers develop their self-identity as a teacher.

Besides promoting self-identity as a teacher, practicum experience has also been found to positively influence pre-service teachers' professional development. It enables pre-service teachers to apply knowledge and skills that they have acquired in pedagogical courses and content-related courses into authentic settings. Darling-Hammond (2006) emphasized that the most impactful teacher education programs would require pre-service teachers to spend extensive time in the real classroom observing in-service teachers and immediately apply the effective teaching strategies with students. Moreover, the practicum experience would enable pre-service teachers to be more culturally responsive. Teaching in a culturally responsive way has long been one of the greatest challenges facing teacher education programs in the United States (Burant & Kirby, 2002; Zeichner, 1996). In order for per-service teachers to view cultural diversity more positively and be prepared to teach a culturally diverse group of students, it is

necessary that they have many opportunities to interact with individuals who share different backgrounds (Ladson-Billings, 1994). By interacting with students from various backgrounds in the practicum experience, pre-service teachers will also be able to learn how race, socioeconomic class, and gender could affect a youth's decision-making and development. This knowledge and experience in turn serve the student teacher well when he or she teaches a group of culturally diverse students.

Practicum experience was viewed as a key part of teacher preparation program, and Clift & Brady (2005) suggested exposing pre-service teachers to practicum experience early in a teacher education program. However, for first-year pre-service teachers, it is possible that teaching in the classroom with as many as 30 students could be intimidating. The experience of mentoring a smaller group of students could perhaps serve as a comfortable transition to teaching a classroom of students. Moreover, pre-service teachers could have a similar experience as they will have in a real classroom as they can be faced with similar issues as managing negative behavior, acquiring students' prior knowledge, designing instructional activities, and assessing students' knowledge. Finally, the mentoring experience can prepare the first-year pre-service teachers to be more culturally responsive to diversity and view it in a more positive way.

Little research has been done to examine the efficacy of a community-based mentoring experience for pre-service teachers. Therefore, the purpose of the study is to examine the community-based mentoring experience for first-year pre-service teachers by ocusing on the positive outcomes and challenges of the mentoring experience, with the goal of improving the experience for pre-service teachers. The study was designed to answer the following four questions:

- What positive outcomes has the community-based mentoring experience achieved?
- What challenges does the community-based mentoring experience face?

- What are some good practices in implementing the community-based mentoring experience?
- What future directions should the community-based mentoring experience consider to promote the professional development of pre-service teachers?

Methods

As part of an effort to examine and improve the community-based mentoring experience for pre-service teachers, an internet-based survey (see Appendix) was conducted at the end of each semester during its implementation for two semesters in order to elicit first-year pre-service teachers' perceptions of the experience. First-year pre-service teachers who participated in the community-based mentoring experience were selected for participation in the survey. A minimum of three attempts was made to contact each non-respondent. Overall, the response rate was 28/80 = 35% for the fall semester and 26/45 = 57.8% for the spring semester. The overall response rate for these two semesters was 54/125 = 43.2%.

The survey consisted of several statements. A five point Likert scale was used for participants to reflect their perceptions toward the statements. Strongly disagree, disagree, neither agree nor disagree, agree, strongly agree were used on the scale. Participants were encouraged to elaborate upon their choice from the Likert scale. In addition to the Likert scale questions, open-ended questions were asked allowing participants to input comments. Participants' responses were validated for consistency and completeness. The data analysis followed Creswell's (2013) guidelines for data analysis in qualitative research:

Step 1. Organize and prepare the data for analysis.

Step 2. Read or look at all the data.

Step 3. Start coding all of the data.

Step 4. Use the coding process to generate a description of the setting or people as

well as categories or themes for analysis.

Step 5. Advance how the description and themes will be represented in the qualitative narrative.

Step 6. A final step in data analysis involves making an interpretation in qualitative research of the findings or results. (p. 247)

Thematic analysis was used to search for repeated patterns or themes in responses to the open-ended questions. Survey findings are organized in the next section, along with some verbatim quotes from participants.

Results and Discussion

Overall Perceptions of Mentoring Experience

The community-based mentoring experience is a positive experience according to pre-service teachers' responses to several Likert scale questions. As seen in Table 1, 68.5% of respondents believed the coursework assignments are generally "do-able" in field placement.

Table 1

Frequency data for pre-service teachers' responses to the statement "On the whole, my coursework assignments are generally "do-able" in my field placement"

Response	%	N = 54
Strongly Disagree	3.7%	2
Disagree	5.6%	3
Neither Agree nor Disagree	22.2%	12
Agree	55.6%	30
Strongly Agree	12.9%	7

Table 2 illustrates that 66.6% of the respondents were getting the support and flexibility

from course instructors as they worked out problems of practice in the field.

Table 2

Frequency data for pre-service teachers' responses to the statement "I am getting the support and flexibility from my course instructors as I work out problems of practice in the field. Explain your response"

Response	%	N = 54
Strongly Disagree	5.6%	3
Disagree	7.4%	4
Neither Agree nor Disagree	20.4%	11
Agree	48.1%	26
Strongly Agree	18.5%	10

As seen in Table 3, 68.5% of the respondents believed site coordinators valued the work they were doing with students.

Table 3

Frequency data for pre-service teachers' responses to the statement "My site coordinators value the work we are doing with students"

Response	%	N = 54
Strongly Disagree	1.9%	1
Disagree	3.7%	2
Neither Agree nor Disagree	25.9%	14
Agree	44.4%	24
Strongly Agree	24.1%	13

As seen in Table 4, 68.5% of the respondents believed their site coordinators lend support when needed in the areas of managing behavior, preparing activities, or making sure the

pre-service teacher has a student with whom to work.

Table 4

Frequency data for pre-service teachers' responses to the statement "My site coordinators lend support when needed in the areas of managing behavior, preparing activities, or making sure I have a student to work with"

Response	%	N = 54
Strongly Disagree	5.6%	3
Disagree	1.9%	1
Neither Agree nor Disagree	24.0%	13
Agree	46.3%	25
Strongly Agree	22.2%	12

Positive Outcomes of Mentoring Experience

In response to the question "My greatest learning from this field experience is" in the survey, several positive outcomes have been reported by the pre-service teachers. To summarize, five positive outcomes were reported including: learning to plan activities and accommodating students' interests and needs; developing behavior management skills; learning to build a relationship with mentees; developing disposition and skills required in teaching; and developing passion and motivation for teaching. Many positive outcomes of the mentoring experience for first-year pre-service were demonstrated in their responses to the survey questions.

Pre-Service teachers learned to plan activities and accommodate mentees' interests and needs.

Many pre-service teachers believed their greatest learning from the mentoring experience

was to be able to create lessons and activities based on students' interests and needs. First-year pre-service teachers were paired with a mentee with whom they had not worked before. It is not an easy task for them to get an idea of the mentee's knowledge and design lessons and activities accordingly. One pre-service teacher came to the understanding of the experience:

> Tier 3 instruction, in the sense of one-on-one teaching, is hard. Not only do you have to establish a connection with a student, but you also have to accommodate activities for the specific needs of that student. You can have something planned that you think will go well to find out that the student doesn't find it interesting at all.

A few other pre-service teachers shared similar ideas including, "My greatest learning from this experience" is "how to create lessons that would be engaging so that my mentee would not refuse to do them"; "how to create engaging activities that relate to my mentee's funds of knowledge"; "trial and error with activities. What works with some students and what does not work with others"; "How to deal with a student who is very behind in school"; "I am learning how to teach certain math concepts"; "It also helps with understanding how students learn/the different ways that are helpful for them to learn material"; "drawing from their likes/experiences to create and select activities".

Pre-Service teachers developed behavior management skills.

At the beginning of each semester, many first-year pre-service teachers had struggles with behavior management. They found the mentees being easily distracted, sleepy, or even uncooperative. Pre-service teachers also talked to the course instructor and site coordinators to seek support in behavior management. As the semester went on, it was observed that the negative behavior occurred less frequently based on site visits and session notes. Many pre-service teachers believed their greatest learning from the experience was developing behavior management skills, which is seen in responses such as "my greatest learning from this

experience" is "how to problem solve quickly when the student is having a bad day or refusing to do work"; "how to work with students who are in bad situations"; "how to manage behavior thoroughly"; "learning how to manage difficult and uncooperative behavior"; and "I learned how to plan, and deal with a student when they aren't doing exactly what you want them to do". Not surprisingly, pre-service teachers still had concerns with behavior management with tough mentees even after a semester, but continued to seek improvement.

Pre-Service teachers learned to build a relationship with mentees.

All pre-service teachers were able to form a good relationship with their mentees, which could be seen from their session notes and site observations. A good relationship is essential for the teaching and learning process. Several pre-service teachers reported their biggest achievement from the mentoring experience was learning how to build a relationship with their mentees. Building a relationship with a student can take a long time. One pre-service teacher came to some understandings of building a relationship with a student:

> You won't always connect with students right away, or not all students are as open to adults. While all of my peers were connecting with their mentee, I was not. Then one day, my mentee told me that he liked me, he said he was happy that I always came to help him. That made me happy too.

Another pre-service teacher shared a similar idea:

> I have learned to build a relationship with an individual student through my field experience. It has not always been easy; my student has often grown frustrated with me as I try to teach her new mathematic skills that are challenging. Overall, I believe I have built a positive relationship with my student and now recognize the incredible value in having relationships with my students on an individual basis.

Pre-Service teachers developed dispositions and skills required in teaching.

The community-based mentoring experience also allowed the first-year pre-service teachers to cultivate dispositions and skills that are needed in the career of teaching. In response to the question "my greatest learning from this experience", one student wrote "communication skills and listening techniques." Other responses revealed students learned to be more patient, reactive, and always prepared their experience interacting with their mentees. Responses included, "Be flexible and keep trying"; "With children, you really never know what to expect, so it is important to be prepared for any given situation"; "Being patient and allowing students to make mistakes and then identify them and solve them on their own. I am very quick to jump in when something isn't right or if my mentee answered a question wrong. But I have learned that kids need to be able to work independently and figure out their mistakes"; "I have definitely been learning patience with my mentee and that not everything will go according to plan, but I still have to work through whatever is happening"; "How to think on the fly with my student. As things will not go according to plan all the time, and this is good practice for the randomness, a classroom can give".

Pre-Service teachers developed passion and motivation for teaching.

Finally, the community-based mentoring experience motivated the first-year pre-service teachers to be passionate about the career of teaching. One pre-service teacher reported, "My greatest learning from this field experience is realizing that teaching is something I really want to do."

Challenges of the Mentoring Experience

Although the community-based mentoring experience achieved the abovementioned positive outcomes, challenges do exist that need to be addressed. Some patterns emerged among responses to the question, "If you have the opportunity to change one thing, what would it be?"

There were four challenges associated with this experience: the connection between the methods course and field experience needs to be strengthened; lack of communication and consistency among all stakeholders; schedule and duration of the community-based mentoring experience; and alternate forms of mentoring experience.

The connection between the methods courses and field experience can be strengthened.

The methods courses are designed to offer pre-service teachers content knowledge and pedagogical expertise to increase the success in their practicum experience and future teaching career.

Among responses to the statement "My field experience gives me the opportunity to explore strategies and theories that I am learning in my coursework" (see Table 5), it was found that some pre-service teachers were able to apply what they have learned from methods courses with mentees. They claimed to have been able to use what they learned from child development and family and community involvement, educational practices/development,sample lesson and activity ideas, teaching strategies, strategies such as active listening and good communication skills and interpersonal strategies, as well as common mistakes that students make and the reason behind them, knowledge on how children act and the reasons as to why they act these ways.

However, pre-service teachers also claimed that many of the strategies that they had learned are classroom-based rather than one-on-one. They perceived a lack of discussion in strategies related to teaching an individual student. The pre-service teachers found it difficult to think of activities that the mentees would like to participate in and would enjoy doing. More instruction and guidance on one-on-one teaching theories and strategies may be helpful in the future.

In addition, strategies in methods course are very general. The strategies could be too

advanced to be applied especially when the mentees have problems with basic concepts. Admittedly, to accommodate all the grade levels and all content knowledge in a weekly methods course would be impossible. Therefore, pre-service teachers need to modify the activities and teaching strategies if necessary. Suggestions on how to modify these lessons and activities could be helpful.

Additionally, more instruction should be given to prepare pre-service teachers in addressing an array of emotional and behavioral issues that mentees could display. Although many pre-service teachers found what they learned in methods courses to be helpful, they also found it difficult to apply the strategies they have learned when the mentees simply did not want to participate no matter how engaging the approach. Pre-service teachers felt pressured to deal with behavioral issues especially at the beginning of the experience. More strategies for dealing with behavior problems can be shared in methods courses. More support could be provided by site coordinators as well.

Table 5

Frequency data for pre-service teachers' responses to the statement "My field experience gives me the opportunity to explore strategies and theories that I am learning in my coursework"

Response	%	N = 54
Strongly Disagree	0%	0
Disagree	16.7%	9
Neither Agree nor Disagree	14.8%	8
Agree	53.7%	29
Strongly Agree	14.8%	8

Communication and consistency among all stakeholders can be improved.

Another challenge is maintaining effective communications among all stakeholders who were involved in the community-based mentoring experience: pre-service teachers, site coordinators, and course instructors. Survey responses indicated that site coordinators and instructors were generally helpful. However, there was a lack of consistency among all parties, which made the experience disorganized and confusing for pre-service teachers. One pre-service teacher felt, "we were getting a lot of conflicting instructions about our practicum from our teachers, professors, and the site coordinators." For some pre-service teachers, practicum expectations were obscure and confusing. Therefore, there appears to be a need for increased communication among pre-service teachers, course instructors, and site coordinators. The practicum needs to be more organized and structured. It needs to be assured that the leadership of the practicum is aligned so that the practicum experience will be more organized and less stressful for pre-service teachers.

Schedule and duration of the mentoring experience can be adjusted.

Pre-service teachers' perceptions of the schedules and duration of the mentoring experience were also examined (see Table 6). Pre-service teachers who had work obligations thought it would be helpful to choose what times/locations the mentoring experience could occur. They expected more options regarding times to go for the mentoring experience. A few pre-service teachers indicated more time was needed to implement both the math activity and the literacy activity. Some indicated one hour was not enough, especially when mentees needed extra time to grasp a concept or had behavioral problems. The following responses elaborated on these points: "Sometimes one hour feels like it passes by slowly while other times it goes by too fast. It does give us a good amount of time to incorporate activities without feeling mentally burned out"; "On some days, I feel like I run out of time. On others, I feel like we finish early! I

think it all depends on the discussions my mentee, and I have based on the materials and activities I bring". It is also noteworthy that the issue of insufficient time could come from the lack of planning from the pre-service teachers. It might be hard to adjust the length of time and frequency of the mentoring experience, since it also needs to be based on the elementary school's plan. However, pre-service teachers can plan more thoroughly for the activities based on mentees' prior knowledge and interests.

Table 6

Frequency data for pre-service teachers' responses to the statement "I feel like one hour is enough to meet the expectations of both my site coordinator and my course instructors"

Response	%	N = 54
Strongly Disagree	1.9%	1
Disagree	18.5%	10
Neither Agree nor Disagree	27.8%	15
Agree	40.7%	22
Strongly Agree	11.1%	6

Alternate forms of mentoring experience can be considered.

Many pre-service teachers felt pressured to cover the expected amount of activities in a one-hour session. Since the duration of the experience cannot be easily changed, more flexibility could possibly be given to pre-service teachers. Instead of engaging the mentees in two mathematics activities and one reading activity for all sessions, pre-service teachers can have options to do other forms of activities with their mentees, for example, group activities.

Pre-service teachers also indicated the challenge to assess the mentees' prior knowledge. Pre-assessment was helpful in assessing some prior knowledge of the mentees. Some pre-service

teachers indicated their desire to learn what the mentees were learning in class and offer homework help to the mentees. In this way, pre-service teachers can have a better idea of what the mentee is learning in class. One pre-service teacher said:

> Knowing what the students are learning in the classroom to be able to incorporate those practices with the mentorship. I understand that the mentors are supposed to be their own guides in teaching the mentees and expanding the knowledge that is presented to each student, but knowing the content that they are learning in the classroom to help their regular teachers with understanding of concepts (which is what we are learning in our math classes) would be greatly beneficial for us and the teachers. This extra time with the students can be allocated in a way that we can help the mentee to develop a firm base understanding of the mathematics that they are learning in the classroom.

These practices can be very helpful in determining mentees' prior knowledge and they can be piloted in future mentoring experience. Classroom observation could also be helpful in facilitating pre-service teachers in developing behavior management skills and designing effective instructional activities.

Some Practices in Mentoring Experience

In the survey, the efficacy of some practices in the mentoring experience were also explored. Those practices include common hour training and the bus ride that happened before the mentoring experience.

Common hour training.

Common hour was offered to the pre-service teachers at the beginning of the semester to provide an overview of the courses and the practicum experience. As seen in Table 7, about half of the pre-service teachers found the common hour training helpful. One pre-service teacher responded, "I think that it was important for us to see the facility and have things explained to

us, such as where to sign in, where the supplies are located, and what the general procedures are." Other pre-service teachers have similar responses.

The other half of the pre-service teachers were not quite as satisfied with the common hour training and also offered suggestions for improving it. To summarize, the training can be more organized. A more thorough explanation can be provided on what was expected during the mentoring experience. Again, it was indicated that there was an inconsistency of information among site coordinators and university coordinators. More communication and structure can be established to overcome this issue in future.

Table 7

Frequency data for pre-service teachers' responses to the statement "The common hour practicum training was valuable to my experience as a mentor"

Response	%	N = 26
Strongly Disagree	0%	0
Disagree	38%	10
Neither Agree nor Disagree	15%	4
Agree	42%	11
Strongly Agree	4%	1

Bus ride.

In the second semester when the mentoring program was running, a bus ride was included to facilitate the pre-service teachers developing a better idea of the mentees' background. Pre-service teachers went on a bus ride before the first mentoring session. The bus ride was designed to give pre-service teachers an idea of where the mentees live and learn. For the bus ride question, out of 26 respondents, the majority of respondents (81%) would

recommend keeping the bus ride as a part of practicum training.

Respondents who were in favor of this practice believed that the bus ride, "was a crucial part in helping us know what to expect when we began mentoring as well as giving us an idea of where to go on the first day**"; "**was extremely helpful to have the bus ride and tour of the facility prior to our first session because it prepared us better and helped us get accustomed to the setting before the day we initially worked without mentees. It was beneficial because otherwise it would have felt like being thrown into an unfamiliar situation and we would have been even more lost then we already were"; "It really helped me understand where these children are coming from."

Other pre-service teachers offered suggestions on the duration and form of the ride. A few pre-service teachers felt the bus ride was rushed and disorganized. They did not have enough time to walk around the neighborhood and get acquainted with the school. They believe more time should be dedicated to the bus ride. If a pre-service teacher was running late, it would be stressful relying on a bus. It is suggested carpooling can be another option to offer pre-service teachers the same experience.

Limitations

Survey-based research has inherent limitations. For instance, pre-service teachers who responded to the survey might have certain characteristics to cause bias of the results. While efforts were made to elicit responses from participants, a higher response rate to the survey is preferred. Future research could use a wider variety of data collection methods to complement the findings from survey data. One other data collection method could be interviewing pre-service teachers, site coordinators, and other stakeholders of the teacher education program.

Conclusion and Future Work

Through this study, the researchers sought to provide information about the positive outcomes of a community-based mentoring project for first-year pre-service teachers. The study

also explored the challenges faced by the program as it prepares elementary education teachers. This study provided valuable information and also future directions for the implementation of community-based mentoring experiences for first-year pre-service teachers. The abovementioned findings indicated that first-year pre-service teachers have gained some positive outcomes from the community-based mentoring experience, while challenges do exist. Some good practices can be maintained such as the bus ride and common hour training. Actions can be taken to improve the communication among stakeholders and strengthen the connection between the methods courses and the practicum experience.

Appendix: Survey Questions

1. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: On the whole, my coursework assignments are generally "do-able" in my field placement.
2. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: I see a strong connection between what I am learning in my courses and what I am learning and doing in my field experience.
3. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: I am getting the support and flexibility from my course instructors as I work out problems of practice in the field. Explain your response.
4. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: My field experience gives me the opportunity to explore strategies and theories that I am learning in my coursework. Explain your response.
5. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: My site coordinators value the work we are doing with students.
6. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement: My site coordinators lend support when needed in the areas of managing behavior, preparing activities, or making sure I have a student to work with.
7. Explain your response.
8. On a scale of 1 to 5, with 1= strongly disagree, and 5= strongly agree, rank this statement. I feel like one hour is enough to meet the expectations of both my site coordinator and my course instructors.
9. A question you should have asked me on this survey is: _____
10. My greatest learning from this field experience is: _____

11. If you have the opportunity to change one thing what would it be:

_____

12. Any additional comments.

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