VOICES FROM THE PROFESSION: WHAT BEGINNING TEACHERS AND THEIR MENTORS EXPRESS AS IMPORTANT TO IMPROVE INSTRUCTIONAL PRACTICE

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BACKGROUND

Meeting the Ongoing Need for a Statewide System to Support Teacher Retention

Indiana, similar to other states, is experiencing a shortage of beginning teachers across all academic areas that have university teaching degrees through state licensed programs. *A Coming Crisis in Teaching: Teacher Supply, Demand and Shortages in the U.S.* reports the following reasons for teacher shortages: reduction in teacher enrollments in pre-service programs, a desire to return to pre-recession class sizes, increasing student enrollment, and large numbers of teachers exiting the profession (Sutcher, Darling-Hammond, & Carver-Thomas, 2016). Dramatically, 40 states report a science teacher shortage and indicate that beginning teachers are 33% more likely to leave (attrition) than veteran teachers. Indiana has one of the

lowest teacher retention rates at 82%. If one excludes retiring teachers, then the retention rate is 91.5%. Alternately, Indiana possesses an 8.5% non-retirement attrition rate. Teachers cite a variety of reasons for leaving, but paramount is job security related to standardized testing, low pay, and dissatisfaction with physical conditions (class sizes, facilities, and resources) (Gray, Taie, & O'Rear, 2015). Beginning science teachers, in particular, lack practice in the profession leading to frustration and feelings of failure and subsequent attrition (Ingersoll, Merrill, & May, 2014). As the case with most states, if Indiana could reduce its non-retirement attrition rate by half, then it would possess a retention rate of 95.75%. Such a rate is similar to countries that are leaders in educational achievement such as Finland and Singapore.

Mentoring as a partial solution

Most of the solutions to this crisis have focused on bringing more teachers into the profession, but equally important are strategies to retain vulnerable, beginning teachers. One strategy is a mentoring program that provides new teachers with a) an experienced mentor that helps them reflect on their instructional practice and b) professional development that teaches them needed teaching and management skills. Beginning teachers with mentors showed significant gains in student achievement (notably in English/language arts and mathematics) and were 50% less likely to leave teaching at the start of their careers (Gray, Taie, & O'Rear, 2015). Although the Indiana Department of Education has a current framework for beginning teachers to follow (Indiana Mentor and Assessment Program), it is up to an individual district to assign the teacher a mentor and there are no specific tasks or support that a mentor has to provide. Also, there is no funding, resources, or professional development to support mentors and beginning teachers. A targeted approach is urgently needed to help teachers survive and thrive. Especially in light of a recent Indiana legislation passed to promote teacher recruitment and retention through an induction and mentoring system. Schools are now required to establish and maintain such systems in their efforts to promote career pathways in teaching (Indiana Code IC 20-20-42.2; IC 20-20-42.3; IC 20-20-43; IC 20-20-44)

Effective use of video in mentoring

The use of video to improve teacher practice is growing in popularity, effectiveness, and ease of implementation. Teachers report many positive aspects when recording their own lessons for feedback. Specifically, they actually record more lessons, they

feel observations are more “fair”, and the reflection process is more focused and helpful (Kane, Gehlbach, Greenberg, Quinn, & Thal, 2015; McFadden, Ellis, Anwar, & Roehrig, 2014). School districts often prefer video in place of in-person classroom visits, because mentor teachers, coaches, and observing administrators can watch recorded lessons at their convenience and don’t disrupt the classroom by their presence (yielding a more authentic lesson). Districts can save money (no substitutes needed to cover mentors’ rooms for observing mentees) and can identify mentors based on factors (e.g., provide knowledge and dispositions) other than proximity in the same building. Mentoring relationships established through such intentionality result in increased success and retention (Ingersoll & Strong, 2011).

To this end, the objective of this manuscript aims to share with readers two outcomes from mentees’ and mentors’ efforts through a state-wide project. One, what do mentees self-identify as areas for which they wish mentors to observe their teaching for feedback about instructional practice? Two, what do mentors recognize as areas of professional development for beginning teachers?

METHODS

To help address Indiana’s teacher retention challenges, the Indiana Science Technology Engineering and Mathematics (I-STEM) Resource Network and three university partners (University of Southern Indiana, Butler University, and Indiana University-Purdue University Fort Wayne) acquired funding through the STEM Teacher Retention and Recruitment fund for a grant application titled *Creating a STEM Community of Practice to Support STEM Teacher Retention in Indiana grant*. I-STEM has a successful history of collaborative partnerships with K-12 schools, businesses, non-profits, higher education, and government agencies. The basis of the grant was for mentee teachers to use mobile devices to capture video of lessons around targeted instructional practices about which they wished to improve. The mentee, who owned the video, privately shared it with a mentor for professional feedback using a secured, online platform, *Torsh Talent™*. Once shared, the mentor provided feedback about the strategies and lesson. Finally, the pair meet (either face-to-face, via video conference, phone call, or online text-based dialogue) to debrief the lesson. Figure 1 provides an overview of the process, known as an observation cycle.

Figure 1 Observation cycle process

The project identified 10 school districts, targeted because of preexisting partnerships (Table 1). In total, 59 mentors and 90 mentees were identified to complete the project. All attempts were made to pair mentees and mentors at the same grade level. When this was not possible mentors were paired with teachers in the same grade band (K-2, 3-5, and 6-8). These grade bands were chosen for three reasons. One, the curriculum is similar in the bands so that mentor teachers have the needed grade-level expertise to mentor beginning teachers. Two, the bands follow those typically used nationally. Three, they correlate to Indiana standards and assessments.

Table 1. Participating schools

Region	School	# mentees	# mentors
Northern	South Bend Community School Corp.	11	8
	School City of Mishawaka	8	5
Northeast	Garrett-Keyser-Butler	8	4
	East Noble	6	3
Central	MSD Washington Township	12	9
	MSD Decatur Township	7	4
	Avon Community Schools	7	4
	Richmond Community Schools	13	9
Southwest	Evansville Vanderburgh School Corp.	12	9
	Tell City Schools	6	4
Totals		90	59

Identifying mentors and mentees (spring 2016)

In spring 2016, mentors were recruited from each of the participating school districts based on specific criteria (school principal and district recommendation for outstanding teaching skills and classroom management; minimum of five years teaching experience in either middle school science, middle school mathematics, or elementary mathematics and science). Mentee teachers were identified by school district administrators. Mentees were required to be beginning teachers (0-3 years

of experience) and be elementary or middle school teachers of science. Mentees were paid a nominal stipend through the grant's funding and provided all needed resources for recording and uploading lessons. Mentors were also paid a stipend through the grant's funding dependent upon their level of participation.

Training mentors and mentees (summer 2016)

In summer 2016, professional development for mentees and mentors was orchestrated based on the *Making Science Mentors* (Zubrowski, Treon, & Pasquale, 2007) framework. This framework integrates inquiry-based teaching practices, science content, and traditional mentoring skills. Specifically, mentees attended a five-day workshop with experiences focused on using the *Torsh Talent™* platform, building conceptual understanding through the guided inquiry process, structuring lessons around essential questions, and making meaning from evidence. Mentors attended a three-day workshop with experiences focused on using the *Torsh Talent™* platform, observing and detecting the preceding science teaching practices, and incorporating targeted mentoring methods with mentees. Before the school year began each school system created time and space for each mentor mentor/mentee pair to meet. At this meeting participants established rapport through an introduction activity, developed goals for the project, and then developed a timeline to meet needed deadlines.

Project implementation (2016-2017 school year)

Mentees and mentors completed observation cycles, as shown in Figure 1, working on targeted instructional strategies. As an observation cycle was completed, mentors completed an online form to verify the effort called the *Record of Action*. It is an online, menu-driven form requiring mentors to input demographic information (mentor name, school, mentee name, mentee grade level), dates of observation and conferences, mentor's ongoing feedback about successes and challenges during the process, and a specific data entry to answer the question "What was the focus area for this observation?" The following nine focus areas were offered as options: assessment, content talk, management, notebook strategies, openings of lessons, other, questioning and answering strategies, student engagement during lessons, and transitions into and out of lesson. The topics were chosen based on best teaching practices of science and mathematics incorporated into the structure of the summer professional development workshop. Two options were available to the authors when crafting the *Record of Action*. One was to create a very exhaustive

list of choices and a second one was to include a limited menu *and* include “other.” The latter was chosen to make it simpler and to provide options outside the identified areas. The *Record of Action* form provided the means to collect and analyze data. Using this and other feedback, quarterly meetings were held with mentors and mentees to provide support, address problems, and gauge progress.

Gathering voices and refining the mentor role (summer 2017)

Mentors convened for a follow-up workshop where they reflected on the experience, shared lessons learned, received training on additional mentoring strategies, and provided specific feedback regarding the *Record of Action* data.

RESULTS

The first research question, “What do mentees self-identify as areas for which they wish mentors to observe their teaching for feedback about instructional practice?” was informed by data collected from the *Record of Action*. Table 2 shows the rank order of focus area requests by mentees toward their instructional practice observations. Figure 2 provides the visual representation of the data.

Table 2. Focus area observation requests by mentee teachers

Rank	K-2	3-5	6-8
1	Q & A (24)	Student engagement (24)	Q & A (35)
2	Student engagement (19)	Q & A (20)	Management (23)
3	Other (18)	Content talk (13)	Other (16)
4	Management (11)	Other (12)	Notebook strategies (10)
5	Content talk (9)	Management (11)	Student engagement (6)
6	Openings (9)	Transition (6)	Transition (6)
7	Assessment (5)	Assessment (5)	Content talk (3)
8	Notebook strategies (3)	Notebook strategies (5)	Openings (0)
9	Transition (1)	Openings (2)	Assessment (0)

Note: Percent in parentheses; rounding results in percentages not totaling 100%.

The top three K-2 selections (excluding other) in rank order included questioning and answering strategies (24%), student engagement (19%), and classroom management (11%). The top three 3-5 selections (excluding other) in rank order included student engagement (24%), questioning and answering strategies (20%), and content talk (13%). The top three 6-8 selections (excluding other) in rank order included questioning and answering strategies (35%), management (23%), and notebooks (10%). The foreseen “other” selection ranked among the highest options across all three grade bands. It was either the third or fourth most frequent selection. To explore the “other” option a debrief into observations was conducted in the second summer workshop (summer 2017). During the debrief, mentors were asked to elaborate about the “other” category and what specific strategies should be used to train beginning teachers around the most common observation cycles. This is further discussed in the Recommendation section of this paper.

Figure 2 represents a sorting of the observations requests by mentees. Observations about opening and transitions are mostly related to instructional flow

Figure 2. Selection of focus areas for observations by mentee teachers

that works to help or hinder the overall classroom management and engagement of students. When these four factors are grouped together they represent 40% of K-2, 42% of 3-5, and 35% of 6-8 mentees interest in observations (see Figure 3). Observations about classroom questioning and answering, content talk, notebooks, and assessment are all related to students listening, thinking, talking, writing, and responding in the learning environment. When these four factors are grouped together they represent 41% of K-2, 43% of 3-5, and 48% of 6-8 mentees interest in observations (see Figure 3).

Figure 3 represents the overall grouping of observations. The grade spans of K-2 and 3-5 are remarkably similar and balanced in their request for observation in both of these general areas. The 6-8 grade span observation request is more weighted on classroom questioning/talk/writing. These results seem to suggest novice teachers at the 6-8 level are in need of more help in how to effectively support students in thinking, listening, talking, and writing about classroom experiences.

Figure 3. Areas grouped for observations by mentee teachers

The *Record of Action* data was provided to mentors during the second summer (2017) workshop. Mentors reflected on how the data connected to their work with mentees and then were asked to make suggestions about the type of training that should be made available to beginning teachers. Responses from mentors were combined and synthesized into the recommendations listed in Table 3.

Table 3. Focus areas requested by beginning (mentees) teachers and training approaches suggested by experienced (mentors) teachers to meet them.

Most sought focus areas by beginning teachers	Training approaches suggested by experienced teachers
Recommendation 1. Question and answering strategies are the most sought after focus area by mentee teachers.	<ul style="list-style-type: none">• making distinctions between teacher and student led conversations• effective open-ended questioning strategies• using sentence frames in questioning and writing• examples of higher order questions focused on content• planning questions ahead of a lesson• allowing for wait time• limiting yes/no questions• guided-inquiry questioning techniques
Recommendation 2. Intermediate teachers express a desire to keep students engaged through content talk strategies.	<ul style="list-style-type: none">• facilitating productive talk in the science classroom• modeling content talk when students verbalize misconceptions• better understanding of the content and assessment boundaries around grade level content• teaching knowledge and skill to integrate real-world issues as introductions to content matter• increased depth of knowledge for essential vocabulary and schema relevance to anchor concepts

Recommendation 3. Student engagement strategies are heavily expressed as areas of need by elementary teachers.

- incorporating brief introductions with engaging scenarios
- interactive information assessments (entry and exit tickets)
- lesson summarization activities
- using formal and informal assessment strategies (notably content related games)
- using personally and culturally relevant content connections (e.g., stories) for lessons
- using talk move strategies to hold all learners accountable

Recommendation 4. Management strategies rank high among mentee teachers and even more so at the middle school level.

- managing material distribution through procedures and routines (assigning jobs, labeling supplies, and using supply stations)
- managing time during hands-on activities (starting quickly and incorporating planned openings)
- dealing with interruptions
- giving clear instructions
- effectively using transitions in lessons
- modeling clear expectations

Recommendation 5. The “*other*” focus areas for observations indicate a need for...

- literacy integration strategies
- specific strategies for working with students with special needs
- developing short, real-life stories connected to lessons

LIMITATIONS AND FUTURE DIRECTIONS

This work identifies the areas that beginning teachers feel they need to focus on in order to improve their instruction in science and mathematics. Additionally, it can help administrators, instructional coaches, curriculum supervisors, mentor teachers, professional development providers, and teacher preparers better understand the perceived challenges and needs in the K-8 classroom. With this information they can tailor their professional development and work with mentors and mentees to develop strategies in these areas.

The findings do have limitations in that teachers' perceptions for which aspect of their instructional practice needs improvement may not exactly match with the actual needs. Ongoing self-analysis of a teacher's video recorded lessons should be a necessary component of their development needs since perceptions of their own teaching will change over time. It is also possible that individual observation cycles were dependent on the lesson chosen to record versus a teacher's comprehensive curriculum. Future research might support and uncover nuances to such limitations. With the knowledge that beginning teachers have little experience at noticing and interpreting the elements of effective teaching in science and mathematics, we can use the video platform to share exemplary videos and use for asynchronous professional development. Our vision is that by helping beginning teachers establish better instructional practices we will increase teacher retention in Indiana.

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