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A Student Teacher's View: Learning and Mentoring

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Abstract

The paper presents the case of one student teacher who engaged in semi-structured interviews and submitted reflective journal entries addressing pupil learning and collaboration with two cooperating teachers in science classrooms. The author conducted content analysis to discern themes from the research data. A new teacher induction model highlighting teacher support domain beliefs and phases of teacher development was used to interpret the emergent themes and to generate corresponding recommendations for cooperating teachers based on the student teacher's views of pupil learning and mentoring.

Introduction

The goal of this qualitative study is to describe and examine the reflections of a student teacher regarding successful science instruction and interactions with cooperating teachers. The research questions are: a) What are the student teacher's beliefs regarding impact on pupil learning? b) What are the student teacher's views on being mentored by cooperating teachers? and c) How can an induction model for new teachers be applied for mentoring student teachers? These questions frame the analysis of emergent themes found in the "Findings & Recommendations" section of the paper. Specific responses for each of the three questions are presented in the "Summary" section.

The paper is intended for cooperating teachers and teacher educators who supervise student teachers and collaborate with cooperating teachers to maximize student teacher effectiveness. Cooperating teachers who serve as mentors are primary agents in the education of student teachers (Anderson, 2007; Hoffman et al., 2015; Larkin, 2013). Teacher educators who work with cooperating teachers and student teachers may find this article helpful as they negotiate their supervisory roles and their evolving conceptions of teaching and learning (Williams, 2014). Additionally, student teachers may find this paper useful in facilitating their reflections on teaching and on their collaborations with cooperating teachers.

Student teacher beliefs regarding their impact on pupil learning and the mentorship of cooperating teachers are promising areas for educational research (Clift & Brady, 2005; Palmer, 1998; Tobin, Tippins, & Gallard, 1994; Zeichner, 2005). Creating a positive impact on pupil learning is a desired outcome of science teacher preparation programs according to the National Science Education Standards (NRC, 1996) and the Council for the Accreditation of Educator Preparation [CAEP]. The nature of the cooperating teacher--student teacher dyad as constructed from the perspectives of student teachers has the

potential of advancing understanding of student teacher identity development (Izadinia, 2015; Weasmer & Woods, 2003).

Methodology & Methods

The study employs content analysis to construct meaning from the research text (Miles & Huberman, 1994). As Priest, Roberts, and Woods (2002) point out: "content analysis facilitates the production of core constructs from textual data through a systematic method of reduction and analysis" (p. 36). For this study, one science teacher candidate engaged in semi-structured interviews and reflective journal writing as well as the creation of teacher work samples during student teaching. The interview text, classroom observations, and student teacher documents served to triangulate results (Bogdan & Biklen, 1992).

A student teacher volunteered to take part in the study. The student teacher's actual name was not used to maintain confidentiality. The student teacher, Julie, was enrolled in a graduate-level initial science teacher certification program in upstate New York. Julie engaged in four hour-long audio recorded, semi-structured interviews during a student teaching semester. The semi-structured interview method provided an opportunity for a "personal, interactive, method of data collection" (Crano & Brewer, 2002, p. 223). An interview guide was used to structure the interview conversations yet allow time and opportunities for Julie to speak openly with an understanding that interviews would have no bearing on her grades or standing in the teacher education program. Julie reviewed a draft of this paper and confirmed that her views were represented accurately.

Along with conducting audio-recorded interviews, the author served as Julie's supervisor and conducted four classroom observations of her student teaching. He also served as Julie's seminar instructor, science methods course instructor, and academic advisor. These roles (supervisor, instructor, advisor) facilitated open and ongoing communication (Tuettemann, 2003). It also downplayed the power differential between the author and Julie since the study was seen as an educational inquiry rather than a performance evaluation.

The research text was coded according to impact on pupil learning and interactions with cooperating teachers. Themes were derived within each category through a constant comparative method to identify patterns in the data (Bogdan & Biklen, 1992). Themes were substantiated from direct quotes taken from the interview transcripts (Yerrick, Parke, & Nugent, 1997) and from the written journal entries. Next, themes were aligned with logistical, instructional, conceptual, psychological, or philosophical support domain beliefs for new teachers as proposed by Luft, Bang, and Roehrig (2007). These support domain beliefs can be summarized: logistical—identifying resources and school procedures, instructional—implementing pedagogy and classroom management, conceptual—understanding science content, psychological—accommodating emotional and empathetic traits, and philosophical—applying research-based best practices and underlying methodologies. Luft et al. suggested that mentors of beginning teachers analyze these teaching domains to identify new teacher needs from which to offer support and assistance. This study applies these support domains to identify Julie's beliefs related to her student teaching in middle and high school science classrooms.

New teacher development phase is interpreted from teacher support domain beliefs. Building on the work of Hall and Hord (2001), Luft et al. (2007) proposed that new teachers progress through a series of teacher efficacy phases situated on their conceptual focus beginning with teacher-centered as they address their own immediate needs. After acquiring initial content and management competency and familiarity with the educational milieu, teachers progress to an instruction-centered phase as they concentrate less on themselves and more on planning and enacting lessons. Learner-centered is the most advanced phase of new teacher development as pupil learning

serves as the referent for curriculum, instruction, and assessment decision-making. Teacher development phase and associated support domain beliefs will serve as the basis of analysis and evolving recommendations from this study.

Findings & Recommendations

Findings are situated on student teacher views regarding Category 1: Impact on grade 7-12 pupil learning and Category 2: Student teacher – cooperating teacher interactions. Specific themes are constructed in each category. Interpretations following each theme describe the support domain beliefs and the phase of student teacher development (Luft et al., 2007). Recommendations for cooperating teachers are targeted to help student teachers advance from lower to higher levels of teacher phase development. Findings & Recommendations are sequenced in the following pattern: Category: Theme: Support Domain Belief: Phase of Teacher Development: Recommendations for Mentoring Student Teachers.

Tables found below summarize findings for each category. Table 1 addresses Impact on grade 7-12 pupil learning, and Table 2 deals with Student teacher – cooperating teacher interactions. Category 1: Impact on grade 7-12 pupil learning

Table 1. Impact on grade 7-12 pupil learning

Theme	Support Domain Belief (w/brief summary)	Phase of Teacher Development
Assessments	Instructional (Collaborating with cooperating teacher enhanced assessment practices.)	Leamer-centered
Pacing	Instructional (Concerned with managing pupils.)	Instruction-centered
Classroom Management	Conceptual (Lack of content knowledge resulted in an emphasis on classroom management.)	Teacher-centered

Theme: Assessments

Julie spoke extensively on how she used assessments to measure not only student learning but also her own teaching. She viewed teaching and learning as a dialectic whole with one informing the other. Julie compared pupil test scores with prior test results to see if she could identify a pattern to predict whether students were learning to their potential. Additionally, Julie taught test-taking strategies to the high school pupils to help them identify their own knowledge gaps and become better test takers. In her words:

I found some of the Living Environment students who were struggling, we [cooperating teacher and I] worked with the questions we were asking and once we started working on some of these strategies, we gave some of these students tools to monitor themselves during the testing process to be able to eliminate some answers that they knew right off the bat which helped them be more successful in the long run. (interview transcript, 3/22/06)

Support Domain Belief: Instructional In this passage, Julie collaborates with her cooperating teacher to achieve desired pupil learning outcomes. She believes collaborating with her cooperating teacher enhances her instruction of test-taking skills.

Phase of Teacher Development: Learner-centered Julie's view of assessment as an indicator of her own teaching effectiveness is a learner-centered perspective. The

assessment instrument is used not only to evaluate and report pupil learning but also to measure the effectiveness of the instructional events preceding the assessment. Julie examines her own efficacy in light of pupil learning outcomes and encourages pupils to self-monitor their own responses on assessments further illustrating a learner-centeredness (Donovan & Bransford, 2005).

Recommendations for Mentoring Student Teachers Encourage student teachers to refine their lesson planning and instruction based on formative and summative assessment results. Plan, instruct, and assess according to the needs of pupils promotes a learner-centered phase of teacher development. Ask student teachers how they could invite more active participation on the part of pupils in setting instructional learning goals and constructing assessment instruments. Asking pupils to take a more active role in constructing assessments can build relevance and meaning for pupils who share in the instruction and assessment decision-making processes within the classroom (Davies, 2007).

Theme: Pacing

When discussing her instructional pace in the classroom, Julie stated:

Today I had a couple of paper activities with DNA protein synthesis where they [pupils] did do some sequences where they transcribed. Yesterday we did some DNA replication. Those types of activities move a lot faster than when I am transitioning when they would be taking some notes and using some video clips or having an activity... . So the pace is really heavily reliant on the types of activities that I am doing and also knowing which students are going to be hard to draw back based on the activities. (interview transcript, 3/8/06)

Support Domain Belief: Instructional Julie is concerned with managing learners based on the nature of the activity.

Phase of Teacher Development: Instruction-centered The passage reveals Julie's instruction-centered perspective since she focuses on both the instructional event and the abilities of some pupils to stay on-task through the transition. Her language does include an awareness and receptivity to students; however, her emphasis is more on management and less on learning outcomes of pupils.

Recommendations for Mentoring Student Teachers Ask student teachers if there are ways to introduce differentiated instruction and differentiated assessment so individual pupil learning may be addressed without over-relying on whole-class direct instruction and subsequent management concerns that may evolve from a one-size-fits-all teaching style.

Theme: Classroom Management

Classroom management was a concern for Julie in the high school earth science classroom based on her lack of familiarity with the subject. She was teaching out-of-field in the earth science classroom since she had not completed college coursework in this field. Inadequate content preparation can inhibit effective instruction since the conceptual understanding of the science content and processes are lacking and may result in insufficient pedagogical content knowledge (Shulman, 1986).

Support Domain Belief: Conceptual Julie's lack of content preparation in earth science had a profound effect upon her ability to effectively manage the classroom learning environment.

Phase of Teacher Development: Teacher-centered Julie sought lesson activities, assessments, labs, and earth science instructional resources to stay ahead of pupils in her planning and instruction due to her lack of preparation in this science field.

Recommendations for Mentoring Student Teachers Provide conceptual support for student teachers to increase their understanding of the science content since effective conceptual understanding underpins effective classroom management (Chiappetta & Koballa, 2006). In the context of the student teaching semester, it may not be practical for teacher candidates to take additional college science courses; however, learning how to apply science content materials addressing upcoming instructional objectives could be appropriate and helpful (Larkin, 2013). If possible, engage in co-planning, teaching, and assessment with the student teacher. During co-planning, focus on content and contextual knowledge strengths rather than perceived weaknesses of the student teacher. For example, the cooperating teacher with an in-depth understanding of the science content and the contextual knowledge of the classroom could supplement the student teacher's knowledge of applicable and innovative instructional strategies gained from teacher education coursework. Category 2: Student teacher – cooperating teacher interactions

Table 2. Student teacher – cooperating teacher interactions

Theme	Support Domain Belief w/brief summary	Phase of Teacher Development
Planning and Preparation	a. Logistical b. Instructional (Seeks support in both the logistical and instructional domains.)	a. Teacher-centered b. Teacher-centered
Cooperating teacher	Psychological (Ability to traverse the gendered classroom landscape.)	Leamer-centered

Theme - Planning and Preparation

Julie referred to her cooperating teacher's notebook that contained daily lesson agenda items for the two courses she taught at the high school. Although she used some of the assessments that her cooperating teacher provided, she relied upon her own lesson ideas to teach Regent's Living Environment (biology) and Regent's Earth Science. She noted, "I've taken a lot of free reign on how I've presented the material but as far as scope and sequence, I've kind of stuck to his plan" (interview transcript, 3/8/06). Julie looked to the cooperating teacher for guidance on the long-term planning; however, her cooperating teacher had given her freedom to try out her own science lessons. Julie wanted to develop an independent style of teaching based on her own lesson plans and assessments while following the suggested curriculum scope and sequence provided by her cooperating teacher.

Support Domain Belief: Logistical, Instructional Julie seeks support in both the logistical and instructional domains for identifying curricular resources and instructional methods. This support is for her subject discipline background, biology, as well as her out-of-field area: earth science.

Phase of Teacher Development: Teacher-centered Julie focuses on identifying lessons and assessments for her science classes. She explains that her cooperating teacher is a logistical resource for curriculum. In this example, the cooperating teacher assists Julie in finding resources revealing a teacher-centered perspective. Julie is also in a teacher-centered phase for the instructional domain as she focuses on identifying lessons and "presenting the material."

Recommendations for Mentoring Student Teachers Offer student teachers logistical and instructional support and explain how the resources and lesson ideas will advance pupil learning.

Theme - Cooperating Teacher

Julie felt satisfied in the quality and quantity of feedback from her cooperating teachers. She believed it was important for cooperating teachers to share their perceptions of her teaching without trying to prescribe one right way of doing things. Feedback from her cooperating teacher prompted her to reflect on her teaching. Julie perceived a possible gender gap in how she related to pupils as compared to a male cooperating teacher. When asked about the issue of being too sensitive to the apparent needs and actions of pupils, Julie replied:

I have kind of a mothering instinct for all those kids. There are some things that we [the cooperating teacher and I] see eye-to-eye and some things that we definitely do not agree on and have distinct differences of opinions about. I have just tried to keep them under wraps when I am student teaching. Part of it, I think, is really a gender difference. There are some things that just don't really bother me. From his perspective, it's lay down the law—you have to be like this. (interview transcript, 3/8/06)

Support Domain Belief: Psychological Julie reveals her ability to traverse the gendered classroom landscape since she has a cooperating teacher who exhibits a kind of assertiveness that is different from her more receptive interactive style. Julie's alternative way to manage the learning environment is contrasted with her male cooperating teacher who was much more directive and "traditionally" masculine in his vocal and physical assertiveness in the classroom. Julie believes that her personality based more on listening and empathetic receptivity to pupils could achieve pupil cooperation that ultimately creates positive learning environments with less coercion. In this case, Julie senses classroom power as a joint construction whereby pupils assigned her authority based on their willingness to cooperate.

Phase of Development: Learner-centered Julie uses the metaphor of mother to describe her own role in the classroom. This metaphor expresses care and nurturance in interactions with pupils in the classroom. The use of metaphors among prospective teachers can play a valuable role in identifying beliefs regarding teaching and learning (Lakoff & Johnson, 1980; Saban, Kocbeker, & Saban, 2006).

Recommendations for Mentoring Student Teachers Maintain an open perspective on how student teachers interpret their efficacy in the classroom by focusing on how student teachers interact with pupils to foster learning. Be aware of your own gendered identity as it pertains to your own perceptions of teaching and learning in the classroom context. For example, maintaining an awareness of care-related tensions that may impact student teachers, like Julie, can help mentor teachers address professional identity characteristics (Pillen, Den Brock, & Beijaard, 2013). Additionally, identify student teacher metaphors for their roles as teachers and the roles of pupils as learners and use these metaphors to assist student teachers in making their own beliefs tacit. Metaphors used in this way can serve as a master-switch to facilitate science teacher reflection and change (Tobin & Tippins, 1996).

Summary

What are the student teacher's beliefs regarding impact on pupil learning?

In assessment, pacing, and classroom management, Julie held instructional and conceptual support domain beliefs. She progressed beyond the teacher-centered phase of development in the areas of assessment and pacing; however, Julie was teacher-centered when discussing classroom management. This teacher-centeredness revealed her inward

focus aimed at promoting learning through compliant pupil behaviors. Julie defined lesson pace as an element of instruction that revealed an instruction-centeredness. Assessment was viewed as learner-centered with pupil outcomes serving to measure her own instructional effectiveness. Phases of teacher development for Julie developed unevenly as illustrated in this study with a 1:1:1 ratio of teacher, instruction, and learner-centeredness.

What are the student teacher's views on being mentored by cooperating teachers?

Julie held logistical, instructional, and psychological support domain views while reflecting on her interactions with cooperating teachers. She was teacher-centered when she sought mentor support for her lesson planning and preparation especially when teaching out of her science field. Julie held learner-centered views as she contrasted her communication style with the style of one of her male mentor teachers. This alternative perspective revealed Julie's inclination to build positive relationships with pupils based on her desire to care for and nurture pupils as they engaged in science. Due to her subordinate role as a student teacher, Julie did not feel empowered to confront the cooperating teacher with her perspective regarding how best to interact with pupils; however, Julie felt free to employ her own interactive style and her own lessons while being observed by the cooperating teacher. Julie did not address philosophical support domain beliefs in either impact on pupil learning or interactions with cooperating teachers. This domain deals with research-based best practices that are often oriented on the theory end of the theory-practice continuum. Minimizing philosophical issues suggests that much of her attention regarding her own teaching practice emphasized the "how" of teaching rather than the "why" of pupil learning. This result was consistent with a long-standing concern among some teacher educators that an emphasis on practice and a de-emphasis on theory may result in teacher candidates who may be less prepared to reflexively adapt to the complex and changing classroom environment (Dewey, 1904/1991).

How can an induction model for new teachers be applied for mentoring student teachers?

The teacher induction model applied in this study may enable cooperating teachers and student teachers to foster reflection into effective practice premised on support domain beliefs and phases of teacher development. These inquiries are based on planned as well as enacted instructional events as student teachers and cooperating teachers discuss effective practice premised on mentors' knowledge of pupil learning styles in the context of the science classroom as well as student teachers' interactional style in the science classroom. Applying the induction model began with listening to Julie's reflections of her classroom actions and her reasoning for her actions. The findings and recommendations for mentoring student teachers may support student teacher transitions to learner-centeredness.

Conclusion

The application of the induction model based on this single case is a promising tool for understanding a student teacher's development into effective teaching. It remains for cooperating teachers and teacher educators to promote student teachers' reflection on practice so that pupil learning serves as the primary referent for all aspects of planning, instruction, and assessment.

Endnotes

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