National Center for Research on Rural Education (R^2Ed)

R^2Ed 2014-9

Coaching Science Inquiry: Validating a Strengths-Based Approach to Coaching[1]

Gina M. Kunz, Andrew S. White, Michelle Howell Smith, and Gwen Nugent

September, 2014

[1]Development of this working paper was completed at the National Center for Research on Rural Education (R^2Ed), funded by a grant from the U.S. Department of Education's Institute of Educational Sciences (R305C090022). The paper was submitted originally by the authors to the American Educational Researcher's Association annual meeting. The statements made herein are those of the developers and are not meant to represent opinions or policies of the funding agency.

University of Nebraska Lincoln

R²Ed working papers are available online at r2ed.unl.edu/resources_workingpapers.shtml

Recommended citation:

Kunz, G.M., White, A.S., Howell Smith, M., & Nugent, G. (2014). Coaching Science Inquiry: Validating a strengths-based approach to coaching. (R²Ed Working Paper No. 2014-9). Retrieved from the National Center for Research on Rural Education: r2ed.unl.edu

Objectives

As coaching becomes more prominent as a source of support of teachers' professional development, the need to differentiate effective coaching from ineffective coaching becomes more apparent. Obara (2010) reported that although coaching for teachers can lead to improved student achievement, the literature needs to address the coach's job description, coach preparation, and conditions needed for an effective coaching program. In their article describing instructional coaching, Denton and Hasbrouck (2009) highlighted the inconsistent definitions among various coaching models, which lead to considerable difficulty drawing conclusions from the literature.

Some authors have begun to specify the roles and responsibilities of coaches. Roelofs, Raemaekers, and Veenman (1991) posited that the process of coaching includes five major functions: provision of companionship, giving of technical feedback, analysis of application, adaptation to the students, personal facilitation. They also found that teachers tended to view training as "more practical" when coaching was included. Campbell and Malkus (2011) adopted Desimone's (2009) framework for teachers' professional development for whole-school coaching by including the following core features: content focus, active learning, coherence, duration, and collective participation. Their study utilized highly trained full-time mathematics coaches who participated in advanced coursework and training in pedagogy, content, and coaching. However, Campbell and Malkus did not expand considerably on this framework, as their study sought to identify the effects of coaching on student achievement, rather than the framework itself. In Cornett and Knight's (2009) chapter summarizing current research in coaching, they synthesized components of the coaching model into "Seven Principles of Partnership": equality, choice, voice, dialogue, reflection, praxis, and reciprocity. However, these principles are restricted to the "partnership" aspect of coaching, and their definitions are somewhat broad and vague.

The *purpose of this study* is to expand on components that have previously been identified in the literature as relevant to coaching in order to identify those "active ingredients" which lead to successful coaching. That is to say, what are the unique components of coaching that constitute what is hypothesized as responsible for targeted teacher and student outcomes? (Sheridan, Rispoli, & Holmes, 2014). The presentation aims to synthesize current coaching literature, as well as to demonstrate how the body of literature led to the development of the initial theoretical "active ingredients" of coaching within the context of science education. The presentation then will detail results of the validation and refinement of these active ingredients through qualitative analysis of focus group data from rural science teachers participating in instructional coaching.

Theoretical Framework

Hanft, Rush, and Shelden (2004) defined coaching as "an interactive, nonlinear approach to supporting another person in his or her attempts to refine knowledge and skills." (Hanft, Rush, Sheldon p. 26). They placed the coaching process into five stages: 1. Initiation/Joint Planning, 2. Observation, 3. Action/Practice, 4. Reflection, and 5. Feedback. As they noted in their definition, this is not necessarily completed in a linear fashion as the coach and coachee

maneuver through the coaching process. Although this study is seeking to identify a new theoretical framework for coaching, it is grounded through researchers in the existing literature, as they have collectively begun to conceptualize and define those "active ingredients," which this study sought to compile.

Methods

Research Question

This study sought to answer two questions. First, what does the existing literature identify as the "active ingredients" of instructional coaching? Second, does participant feedback from an instructional coaching study provide support for the framework derived from these active ingredients?

Design

This study sought to develop and validate a theoretical framework of effective instructional coaching through two phases. The development phase was comprised of a review of the instructional coaching literature and the validation phase consisted of analysis of qualitative data collected from participants in an instructional coaching study.

Data Source/Measures

The literature review was conducted using the EBSCO Academic Search Premier software for the terms "coaching" "instruction" and "teachers." Articles examining coaching in other contexts, such as athletics or "life coaching," were excluded from the review. Articles which examined the coaching of teachers and provided or implied those components that led to coaching success were included in the literature review. There were 53 articles identified that met criteria; they were reviewed for those components attributed by authors as important to successful coaching. Overall, 182 of these active ingredients were identified among those selected articles, with many of them overlapping. This information was compiled and organized to form the initial list of coaching active ingredients (Table 1).

Validation of the initial list of coaching active ingredients resulted from a study examining the efficacy of a professional development in guided science inquiry on middle and high school science teacher and student outcomes. A total of 47 rural teachers throughout the Midwest participated in the intervention study. The professional development included two intervention components: an eight-day summer institute (implemented across two consecutive weeks) and follow-up distance-delivered coaching (approximately two sessions per week for six-eight weeks).

Following completion of the study, 16 teachers participated in focus groups to provide feedback regarding their experiences. Focus groups followed a semi-structured protocol of twelve questions designed to promote open discussion regarding the impact of the summer professional

development institute the year before, the impact of coaching throughout the year, the impact on their students, and their views of the sustainability of their acquired skills. Focus groups were digitally recorded and transcribed verbatim. Qualitative analysis was conducted using the MAXQDA software (MAXQDA, Version 10). Analysis of teacher responses used a modified grounded theory approach (Charmaz, 2006). The initial phase involved labeling all of the teachers' comments with descriptive codes, and was followed by a selective phase that integrated the data into the initial list of active ingredients, resulting in a refined list of active ingredients (Table 2).

Results

Data from the literature review were compiled and organized into the initial list of coaching active ingredients. These ingredients were organized into one of three domains: Coach Skills, Coach-Coachee Relationship, and the Teacher's Skills (Table1). The qualitative data revealed that the three domains did not completely represent the relationships among all of the active ingredients. As an example, some ingredients placed under Coach-Coachee Relationship were more accurately components of the coaching *process*, rather than relational factors. The refined list of active ingredients (Table 2) represents a more comprehensive representation of those active ingredients. Based on this refined list of active ingredients, the researchers developed the theoretical model depicting the relationships of the active ingredients for a goal-directed, strengths-based, shared approach to a coaching partnership (Figure 1).

This model demonstrates that successful outcomes of coaching are contingent on the coach and teacher both initially possessing the requisite characteristics. For coaches, this means possessing command of the content area, having classroom experience, being proficient with technology, possessing flexible schedules, viewing their coaching role as a partnership, and possessing strong interpersonal skills. Teachers must enter the coaching partnership with, at minimum, basic content knowledge on the coached area and a willingness to engage in the process.

Coaches and teachers must also engage in their coaching partnership using an approach we labeled the "Strengths-Based Shared Approach to a Coaching Partnership." This approach relies on emphasizing positive feedback, which is used to generate mutual respect, reciprocal trust, and rapport between coach and teacher.

Coaches and teachers then must engage in the coaching process, adapted from Hanft, Rush, and Shelden (2004). In addition to Hanft, Rush, and Shelden's (2004) five stages, this study identified a sixth stage of the coaching process, which is reflective discussion where the coach guides the teacher in discussion to reflect on the process and strategies. This is not to be confused with the "Reflection" stage also included in the coaching process, where coaches' teachers are expected to engage in self-reflection independent of each other, generally in preparation for coaching sessions. As noted above, the coaching process is not necessarily linear; however, the six identified stages of the coaching process must all be included in successful coaching. In this model, "successful" coaching is defined as coaching which leads to positive teacher outcomes, positive student outcomes, and possesses sustainability.

Significance

This model provides a theoretical framework from which future coaching research can build upon, with the identification of those key components which are necessary for successful coaching. While neither the literature review on active ingredients of coaching nor the qualitative data described in this article provides experimental evidence for the active ingredients of coaching, together they support a theoretical framework. Future experimental studies should systematically examine the active ingredients identified through this process, including their unique contributions and relative strengths. As well, the focus groups examined were derived from a project conducted in rural settings for science teachers receiving coaching on teaching with guided inquiry. As a result, it is worth noting some of the identified active ingredients (e.g., proficiency with technology, flexible schedules) may not carry as much significance in other coaching settings and may warrant further examination.

References

Campbell, P. F., & Malkus, N. N. (2011). The impact of elementary mathematics coaches on student achievement. *The Elementary School Journal, 111*(3). 430-454.

Charmaz, K. (2006). Constructing grounded theory: A practical guide through qualitative analysis. Thousand Oaks, CA: Sage.

Cornett, J. & Knight, J. (2009). Research on coaching. In J. Knight (Ed.), *Coaching: Approaches and Perspectives* (pp. 192-216). California: Corwin.

Denton, C. A., & Hasbrouck, J. (2009). A description of instructional coaching and its relationship to consultation. *Journal of Educational and Psychological Consultation, 19,* 150-175.

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181-199.

Hanft, B.E., Rush, D. D.& Shelden, M.L. (2004). Coaching families and colleagues in early childhood. Baltimore, MD: Paul H. Brookes Publishing Company.

MAXQDA (Version 10) [Computer software]. Berlin, Germany: VERBI.

Obara, S. (2010). Mathematics coaching: A new kind of professional development. *Teacher Development, 14*(2), 241-251.

Roelofs, E., Raemaekers, J., & Veenman, S. (1991). Improving instructional and classroom management skills: Effects of a staff development programme and coaching. *School Effectiveness and School Improvement: An International Journal of Research, Policy and Practice, 2*(3), 192-212.

Sheridan, S. M., Rispoli, K., & Holmes, S. (2014). Treatment integrity in conjoint behavioral consultation: Active ingredients and potential pathways of influence. In L. Sanetti & T. Kratochwill (Eds.), Treatment integrity: A foundation for evidence-based practice in applied psychology (pp. 255-278). Washington, DC: American Psychological Association.

Table 1.
Initial List of Active Ingredients of Instructional Coaching

Coach:
Coaching Process Skills:
Reviews the classroom video
Identifies video clips
Functions in the role of facilitator
Command of content area
Position is unrelated to employment
Proficiency with technology
Relational Skills:
Looks for positive student outcomes
Views him/herself as a partner with the teacher
Engages in post-coaching session reflection

Teacher:
Identifies a student outcome
Implements the practices and strategies identified
Reviews classroom video and engages in self-reflection
At least a basic / fundamental level of content knowledge
Views the coaching process as valuable

Coach-Teacher Interaction:
Coaching Process Skills (during the coaching session)
Model the Inquiry Process
Co-develop the Coach-Teacher Observation Form
Coach provides specific feedback
Coach and teacher use common "language"
The coach facilitates the teacher's ability to identify strategies that were effective in resulting in the desired student outcome in class.
Mutual investment in time
Shared accountability
Relational Skills
Rapport
Teacher's trust
Mutual respect between coach and teacher
Devoted sufficient time to preparation
Acknowledgement
Support

Table 2.
Refined List of Active Ingredients of Instructional Coaching

Requisite Coach Characteristics
Command of Content Area
Classroom Experience
Proficient with technology
Flexible Schedule
Views Coaching Role as a Partnership
Strong Interpersonal Skills

Requisite Teacher Characteristics
Basic Content Knowledge
Willing to Engage in Process

Strengths-Based Shared Approach to a Coaching Partnership
Emphasizes Positive Feedback
Mutual Respect
Reciprocal Trust
Rapport

Requisite Stages of the Goal-Directed Coaching Process
Joint Planning
Action/Practice
Observation
Reflection
Feedback
Reflective Discussion

Program Outcomes
Teacher Outcomes
Student Outcome
Sustainability

Figure 1. Theoretical Model of the Active Ingredients for a Goal-directed, Strengths-based, Shared Approach to a Coaching Partnership