

Reflection-in-action: Promoting Metacognitive Development of Pre-service Teachers

Aaron J. Giorgi
Amanda M. Bowling
Caryn M. Filson
Tracy Kitchel
The Ohio State University

2120 Fyffe Road
200 Ag Admin
Columbus, OH 43210
(641-292-6909)
Giorgi.6@osu.edu

Reflection-in-action: Promoting Metacognitive Development of Pre-service Teachers

Introduction/Need

Agriscience teacher education programs should be intentionally and judiciously planned to meet the needs of the teaching profession (Darling-Hammond & Bransford, 2005; Barrick & Garton, 2010). Programs should engage pre-service teachers in developing pedagogical skillsets that (a) overcome inaccurate preconceptions, (b) increase efficient self-reflective practices, and (c) empower management of the “problem of complexity” (Hammerness, Darling-Hammond, & Bransford, 2005). Literature suggests that a “metacognitive approach to instruction” (p. 366) that empowers pre-service teachers to take control of their development and manage the novelty of the teaching environment supports this type development (Hammerness, Darling-Hammond, & Bransford, 2005).

Pre-service teachers are frequently asked to participate in *reflection-on-action* (Schon, 1983) as a retrospective process to assess their own teaching decisions and development. Kennedy (1999) describes the intersection of internal reflection and subsequently making quality teaching choices as a problem of enactment. Imparting wisdom alone cannot overcome the problem of enactment, rather quality experiences with support for reflection offer a better solution (also called “case-based,” see Williams, 1992; Hammerness, Darling-Hammond, & Bransford, 2005). The following innovative idea explores the use of a think aloud protocol to strategically support pre-service teachers’ growth *during* observation to support in situ reflection, and pedagogical decision-making to overcome the problems of complexity and enactment.

Methods

To move beyond imparting wisdom and encourage metacognitive thinking, pre-service agriculture teachers participated in a *reflection-in-action* activity during a senior-level teaching methods course. Students were scheduled in advance to attend the activity, with the understanding they would observe a peer teaching from an observation room with one-way mirror allowing view of the entire classroom. They would also be asked to reflect on their observations. Pre-service teachers individually observed a 25-minute peer taught laboratory-based lesson; during the observation of the lesson, the student verbally reflected with an Agriscience Education faculty member. The faculty member utilized a think aloud protocol (Van Someren, Barnard, & Sandberg, 1994) to facilitate the reflection process. Throughout the *reflection-in-action* activity, the faculty member utilized open ended and prompting questions to guide the reflection process and to assess the pre-service teachers’ metacognitive processes, understanding of the teaching-learning process, and their evaluation of effective teaching methods. Programmatic collaboration was required for the planning, implementation, and evaluation of the *reflection-in-action* strategy to enhance teaching and learning. Through programmatic evaluations and analysis of reflection transcripts, several themes emerged.

Results and Implications

The emergent themes seen from student responses demonstrate the potential for using think aloud protocol during a *reflection-in-action* activity as an innovative teaching tool. Overall, the themes that emerged represent an ability to better understand pre-service teacher metacognitive processes and reflection. Additionally, faculty can gain insight into how students tackle the complex nature of teaching, and their perceptions on enacting quality pedagogical strategies.

Problem of Complexity

Literature describes the teaching environment as a multifaceted system that requires moment by moment flexibility (Hammerness, Darling-Hammond, & Bransford, 2005). Using an innovative *reflection-in-action* activity allows faculty the ability to gain individual level understanding of how their pre-service teachers perceive the classroom teaching environment. Additional insight from the responses demonstrated that pre-service teachers varied in their espousal of quality teaching theories or pedagogical choices when verbally reflecting.

Responses also demonstrated the power of *reflection-in-action* for pre-service teachers growth as they could verbally discuss the complexity in a low-stakes, safe learning environment. Pre-service teachers gained a new understanding of the complexity of teaching without being an active participant in laboratory lessons.

Problem of Enactment

Enactment is the process when teachers leverage *thinking like a teacher* into quality effective teaching choices (Kennedy, 1999). The utilization of an innovative *reflection-in-action* activity supported pre-service teacher's ability to verbally process teaching situations and describe potential amendments to instruction to increase potential effectiveness. The analysis showed polarization of pre-service teacher confidence levels when asked to reflect on teacher decisions witnessed. Pre-service teachers were either confident and quick to offer suggestions and amendments about what they were viewing, or were unsure and lacked confidence about making evaluative statements that might lead to possible teaching improvements.

Future Programmatic Implications

Roberts and Kitchel (2010) describe the value of building a coherent scope and sequence for teacher education programs. Responses from the innovative *reflection-in-action* activity demonstrated varying levels for pre-service teachers relating materials taught throughout the program to the in situ experience they were reflecting on. The teacher education program can use this information to assess the level of coherence of their pre-service teachers and make plans to better articulate theory and practice across the scope of their courses.

Future Plans/Advice to Others

Based on the results, agriscience education faculty plan to continue utilizing *reflection-in-action* to advance the development of pre-service teachers. Next year, plans include utilizing the activity in both junior and senior level methods courses. It has also been proposed to have an agriscience faculty member complete the *reflection-in-action* activity with small groups of students to demonstrate how to evaluate micro-teaching lessons. From instructor and student feedback, changes to the *reflection-in-action* process will include: written guidelines for students to review before the activity and the development of a more conversational reflection protocol between the student and faculty member. While not all classrooms are equipped with an attached observation room, the *reflection-in-action* can easily be replicated in other teacher preparation programs. Instructors can utilize video conferencing technologies to project the micro-teaching to a secondary location. Additionally, the laboratory lesson could be video recorded and viewed by the pre-service teacher and faculty member at a later time.

Costs/Resources Needed

The resources utilized included: an observation room to view the micro-teaching lesson without intruding on the lesson, video conferencing to provide audio of the classroom into the observation room, and a laptop for audio. No costs were incurred during the activity.

References

- Barrick, R. K., & Garton, B. L. (2010) Frameworks for agriculture teacher preparation. In Torres, R. M., Kitchel, T., Ball, A. L. (Editors). *Preparing and advancing teachers in agricultural education* (pp. 30-41). Columbus, OH: Curriculum Materials Services.
- Darling-Hammond, L., Bransford, J. (Editors). (2005). *Preparing teachers for a changing world; What teachers should learn and be able to do*. San Francisco: Jossey Bass.
- Hammerness, K., Darling-Hammond, L., Bransford, J. (Editors). (2005). How teachers learn and develop. In L. Darling-Hammond, & J. Bransford (Eds.). *Preparing teachers for a changing world; What teachers should learn and be able to do*. San Francisco: Jossey Bass.
- Kennedy, M. (1999). The role of preservice teacher education. In L. Darling-Hammond and G. Sykes (Eds.). *Teaching as the learning professions: Handbook of policy and practices* (pp. 54-85). San Francisco: Jossey Bass.
- Roberts, T. G., & Kitchel, T. (2010). Designing professional knowledge curriculum and instruction. In Torres, R. M., Kitchel, T., Ball, A. L. (Editors). *Preparing and advancing teachers in agricultural education* (pp.100-111). Columbus, OH: Curriculum Materials Services.
- Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.
- Van Someren, M. W., Barnard, Y. F., & Sandberg, J. A. C. (1994). *The think aloud method: A practical guide to modelling cognitive processes*. London: Academic Press.
- Williams, S. M. (1992). Putting case-based instruction into context: Examples from legal and medical education. *The Journal of the Learning Sciences*, 2(4), 367-427.