Analysis of

What Did They Take Away?: Examining Newly Qualified U.S. Teachers’ Visions of Learning and Teaching Science in K-8 Classrooms

BFP2 Task 2

Charles T. Rich

24 September, 2017

A Written Project Presented to the Faculty of the Teachers College of Western Governors University
Introduction

For this analysis I chose Deborah Roberts-Harris’ study entitled *What Did They Take Away?: Examining Newly Qualified U.S. Teachers’ Visions of Learning and Teaching Science in K-8 Classrooms. Teaching & Learning Inquiry.*

This study investigated newly qualified K-8 teachers’ visions of science learning and teaching after they had completed preparation in a science teaching methods course. Professor Roberts-Harris wanted to answer two questions with her research: How did pre-service teachers envision themselves as teachers of science as they were about to begin teaching? And how did the visions they expressed align with recommendations for science teaching and learning articulated in U.S. science education reform documents, specifically the four strands of science proficiency articulated by the U.S. National Research Council (2007)? These strands are: 1: Know, use, and interpret scientific explanations of the natural world, 2: Generate and evaluate scientific evidence and explanations, 3: Understand the nature and development of scientific knowledge, and 4: Participate productively in scientific practices and discourse.

Essentially she wanted to know if these teachers truly got what she wanted them to out of her class.

Methodology or Theoretical Framework

For this study professor Roberts-Harris chose a case study approach as her theoretical framework in which she “documented participants’ assignments, weekly reflections, and multimedia portfolio finals” (Roberts Harris, 2014, pg. 95) during the course and conducted interviews after course completion. Her research method was decidedly qualitative in nature as it is based on the participants reflections on their visions and expectations of teaching science.
Appropriateness of Methodology

The methodology used and the resulting data appear to be highly specialized and applicable only in the context of the students who took her course on methods of teaching science and likely are not transferable to other population of teachers. Professor Roberts-Harris says as much in her data interpretation saying, “I believe I achieved transferability in this study according to Guba’s (1981) description.” (pg. 96) Since the professor didn’t go into specifics on this it is hard to say whether or not she achieved this, though she argues against it by saying:

The goal was not to construct statements of “truth” that could be generalized to larger populations; rather, I collected and analyzed extensive data to develop detailed descriptions that allowed comparison of my particular context in the methods course to other methods courses I teach. (pg. 96)

The method used did serve her purpose of testing whether her students’ ideas about teaching science were in line with what she hoped they took away from the course. Whether the same conclusions would be valid for similar study would depend on the context being the same or similar and whether the author was seeking validation of their own students beliefs and not empirical and quantifiable results.

This is not to say her methods were inappropriate, but rather that they were appropriate for her needs and may not be as appropriate for others, especially those who might need to justify their teaching method or results.

Methods of Data Collection

Data collection consisted of documenting participants’ assignments, weekly reflections, and multi-media portfolio finals and interviews of of seven course participants about six moths after the completion of the course, but before they had begun teaching in a classroom. In her
Professor Roberts-Harris collated interviewees answers to her questions, which she does not state in her paper, and correlated these answers to the four strands of science proficiency articulated by the U.S. National Research Council.

The professor stated that she “utilized several qualitative methods in interpreting the data”. (pg. 96) She really goes on to define only one in saying “First, I identified common themes in the responses of the pre-service teachers based on the interviews” (pg. 96) which we can easily identify as a thematic analysis. Another technique we can surmise is that Interim analysis as she collected portfolios, assignments, and other information from her student throughout the class and mentions including this data in coding of the data. She really only details the interview questions and how the answers to the questions show evidence of the application of the four strands mentioned elsewhere. She didn’t, however provide tables or other representations of the coding or themes in this paper. She summarized her results noting that she felt the collection of the other data from the journals and such would help her in teaching this same class in the future.

**Appropriateness of Data Collection Methods**

In professor Roberts-Harris’ words,”Looking at data in relation to the strands of scientific proficiency, as they were evident in interviews about this methods course, has made me think more deeply about my role as a teacher educator and decisions I make as a facilitator of learning.” (pg. 102) The data collection methods in this case were appropriate for her study.

It would have been difficult to quantify students attitudes toward teaching and equally difficulty to gauge whether their opinions aligned with the recommendations for science teaching
and learning especially since they had probably not fully formulated these since they had not yet taught in the classroom. All she could do is collect ideas and analyze them as a qualitative study of her students’ opinions. As the professor noted, “To show a causal relationship between the influences of the reform-based science teaching methods course and what the participants brought to the course and their visions afterwards was not possible.” (pg. 103)

**Quality of Data Collection Methods**

Professor Roberts-Harris ends her paper with the paragraph:

Future research must also explore the area of pre-service and newly qualified teacher visions, the sources of these visions and ways in which or if they change over time. A longitudinal study of K-8 pre-service teacher visions of teaching before and during their educational preparation, what those visions are as they leave the program, and how their visions are enacted or changed during the induction years of teaching would provide valuable information to the field.

Indeed a study of the type she prescribes would ensure more trustworthy data others could reference in their own teaching. Her study was just a bit too small and not of sufficient length. She did mention her efforts to provide trustworthiness in her study by seeking participant feedback and member checking, and through triangulation of assignments and interview results.

I don’t know of a better way to question the validity of the study better than she did in saying, “Another researcher could view differently from my interpretations of ways the strands of science proficiency were related or not related to the data.” (pg. 103)

**Results**
One of the stated results of this study was that “some changes in beliefs and attitudes were evident.” (pg. 103) It sounded as if some of those changes occurred in the author of the study herself.

Specifically she noted that Some participants intentionally incorporated and implemented reform-based strategies in field placements in K-8 classrooms during the methods course and student teaching and the strands of scientific proficiency were evident in activities, assignments and participants’ interviews in varying degrees.

As to whether her research questions were answered sufficiently:

*How did pre-service teachers envision themselves as teachers of science as they were about to begin teaching?* She noted only that their answers reflected an understanding of reform-based teaching that were modeled in the course and a willingness by some of the students to apply this knowledge. Some provided examples of what they felt went well in their classroom observations. The professor didn’t present us with a thematic analysis of these, though so we can’t completely sure she received the answer she was seeking to this question.

*How did the visions they expressed align with recommendations for science teaching and learning articulated in U.S. science education reform documents, specifically the four strands of science proficiency articulated by the U.S. National Research Council (2007)?* She cited examples from the interviews of how her students saw the strands addressed in their own classroom observations or applied the strands themselves. She also observed how her students applied the strands and said “The strands of scientific proficiency were evident in activities, assignments and participants’ interviews in varying degrees.” (pg. 101)

This paper serves as a good example of how one can use such a study and the resulting data to provide affirmation and a sense of accomplishment. How often do we wonder what our
students really took away from our classroom? Professor Roberts-Harris doesn’t need to guess what her students learned or hope they will take these lessons into their classrooms. She knows what they think because she had the chance to ask them.
References

