Science Education Summer Research: What Type of Teacher Are You?

~Rachel VanOeffelen, Paula Kuiper, and Herb Fynewever~

Our goal with this project, ultimately, is to help teachers be more effective – to improve learning in the classroom. What we’ve noticed is that there are a lot of good teachers out there, but they are good for different reasons. We hope to make teachers aware that no matter what teaching style they are comfortable with, there are ways for them to implement good teaching practices into their classroom.

Our research focuses on the use of formative assessment in the classroom. The goal of formative assessment is to monitor student learning – to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning. Our qualitative analysis is based off of 18 professor interviews, several classroom observations, and three student interviews per professor. The observations, professor interviews, and student interviews were gathered over a three year time period. The interviews have been transcribed and we are now in the process of using that information to code areas of formative assessment in the transcripts. In other words, whenever we read through a transcript and see an instance of formative assessment, we title it with a label that describes what is happening (classroom measurement, instructor barrier, student barrier, etc.). These codes were developed from scratch by reading the transcripts, so all of our results are coming right out of our data. 12 of the 18 professors were coded the past three summers and this year we worked on finishing up the remaining 6!

Through our analysis we are trying to develop a model which will help teachers become better users of formative assessment and other good techniques. We became intrigued by the idea of ideal types, first proposed by German Sociologist, Max Weber. Weber felt that any class of things could be distilled down into a few “types” or “blueprints”. A good example of this in people would be the Briggs-Meyer personality test. We started to wonder if maybe we could come up with a similar typing system for teachers. This would be useful for teachers because by identifying with a type, they would be more aware of what they could learn from their own type.

Before we can reach our goal, we must re-analyze our data. Professor Yonker is helping us use a statistical program called SPSS that groups codes that tend to occur together. We think what we have done so far is useful, but are hesitant to limit the possible types to our four quadrants (coach, advisor, governor, shepherd) because the method used to come up with them was somewhat subjective. We want to use a more objective approach to either confirm what we have developed or shape the possible types that have not yet been considered. This statistical approach allows our data to take a more objective path… where the types come out of the codes themselves rather than out of our own intuition.

Our final goal is to develop a survey to help teachers figure out which ideal type (or types) they identify with. Survey building is a social science and has a lot to do with Psychology (an area outside of our research practice). We are excited to learn how to compose a survey, but will have to take our time to make sure that we construct valid/fair questions. In the meantime, even though factor analysis is not complete, we have developed a pilot study based on codes that tended to occur together. The results of our survey should be able to be entered into factor analysis, where question #2 may appear to directly relate to question #9. In other words, our pilot study should be able to predict someone’s survey results based on the answer they gave to a previous question. Our research is starting to piece together and we are very excited for what is to come in the future.

I have gained so much from completing research on this project the past 10 weeks. I have not only learned a great deal about teaching styles, classroom management, formative assessment, and survey building… I have also learned how to present research to a group of people, how to work on a more personal, one-on-one basis with a great professor, and how to write a paper for a professional scientific research journal. The paper we wrote at the beginning of the summer was actually submitted for review! Many accomplishments have been made this summer, but the paper is at the top of my list. This summer research job has been a blessing and I thank God every day for giving me this opportunity. Hopefully I will be able to come back next year to continue my work in this enriching atmosphere!