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Not All Doctoral Journeys Are Paved with Gold

Derek E. Fialkiewicz
Corbett School District, derwood13@hotmail.com

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Abstract

This article is a reflection on the journey through the process of my doctoral studies. Published dissertations or research articles are very neat and tidy with no mention of any adversity or struggle. Hence why many doctoral students feel stressed, anxiety, or like quitting when obstacles or roadblocks are encountered. My doctoral program took much longer than anticipated, and my resulting dissertation veered far from my original proposal. What began as a mixed-methods study with a possible 1,400 surveys and 20 interview participants was morphed into a qualitative case study with one participant. There were many contributing factors, most uncontrollable and unforeseen and some unprecedented. In the end, I overcame the obstacles and persevered successfully completing my dissertation and doctoral program, but the struggles were worth documenting for others. Hopefully, current doctoral students and researchers can use this article as an anecdote when facing resistance along their pathway.

Introduction

Murphy's Law states that if anything can go wrong, it will. The expedition leading to my dissertation was an illustration of Murphy's Law. I imagine we all have the best of intentions when writing our dissertation proposals to design and implement the perfect study that will positively affect our field of study. Along the road I also imagine we all encounter bumps and potholes, but our final publications are written to demonstrate a flawless study, a so-called tidy package. When examining the scholarly literature, I found few if any pieces that catalogued and

Derek E. Fialkiewicz is superintendent of the Corbett School District, Corbett, Oregon. Email address: derek@fialkiewicz.com

documented the frustrations, tears shed, sleepless nights, and overwhelming stress as the struggles were overcome. The exercise of demonstrating and documenting the results of one's empirical work often sacrifices providing the more raw and personal insights about the process that, ironically, could assist emerging scholars in understanding that despite the tidy appearance of the package, the work is fraught with complexities. As doctoral candidates face adversity during the dissertation process, it is easy to feel as though you are doing something wrong or not worthy of completing the dissertation.

This article is part of my dissertation. While completing a multi-article approach, it became clear that my proposed study faced a myriad of challenges and complexities. Instead of presenting the tidy package, I used this article to peel back the layers of the clean and sterile process of reporting research to reveal and explore the realities that I, like so many others, experienced. The experience narrated in this article is intended to inform any reader of the struggles, stress, potholes, frustrations, and mistakes that are common to the process, but often not articulated formally. This article serves as an anecdote for those engaged in and struggling toward an appropriate account of their work, but do not see models in the literature for navigating what they experience.

In the culmination of my journey towards a doctoral degree in mathematics education, I concentrated my dissertation on the perceptions and understandings of formative feedback in mathematics of students enrolled in grade 8 Pre-Algebra of a large comprehensive school district with urban and suburban communities. As a former high school mathematics teacher, my passion lies in improving student learning in mathematics. At an early age children learn mathematics is difficult, boring, abstract, and negative. Children develop a fear of mathematics before allowing themselves the opportunity to acquire a love for it. Matute (1995) noted many Americans develop a sense of learned helplessness with regards to mathematics; they believe they have no control over their mathematical ability.

The early stages of this research study were focused on using Electronic Student Response Systems (ESRS) to provide immediate feedback to students in mathematics classes. These technologies offer students immediate feedback allowing them to become self-regulated learners by being active participants in the learning process (Moratelli & DeJarnette, 2014). Teachers can quickly and easily gather and store student achievement data without having to grade and enter them manually. These data can be instantly accessed, analyzed, and compared with relevant prior data to find student learning trends. Students appreciate the immediate feedback from the ESRS and find them helpful in learning content (Milner-Bolotin et al., 2010). Teachers and students feel the instant feedback of ESRS yields greater student participation and mental engagement (Wash, 2012).

As I became immersed in the research around ESRS and feedback, I realized the timing, frequency, and quality of formative feedback outweighed the medium of the feedback. Students crave feedback statements focused on ways to make im-

provements, and the opportunity to apply that feedback to increase performance (Pollack, 2007). The quality of feedback given to learners has a significant impact on the quality of learning (Black & Wiliam, 1998).

I served as a principal of a magnet middle school with a focus on STEM and project-based learning prior to my current role of a district superintendent. My passion for improving student learning in mathematics remains but with a new emphasis on student self-efficacy and building life-long learners, hence, the concentration on middle school students' perceptions of their experiences of formative assessment feedback provided by teachers in mathematics.

During my career of over 25 years in education, I have seen many variations of secondary gradebooks and grading policies. They all had one thing in common—a certain percentage of each student's final grade was based on a combination of summative and formative grades. The summative grades included tests, quizzes, and projects. The formative grades included homework, classwork, review material, and compliance assignments (forms signed by guardians). Formative assessment grades ranged from 10% to 50% of the student's final grade depending on the teacher, class, or school. Students tend to focus solely on the numeric grade on an assignment, rather than the feedback provided (Irons, 2008). Grades cause added stress on students by increasing the competition for obtaining higher marks and turn learning into an extrinsically motivated process.

During my time as a middle school principal, I established a fair and equitable grading system that fostered a student's intrinsic motivation to learn. As I studied research on the topic, it became clear that a formative assessment system based on feedback with no numeric or letter grade attached was the most effective way for students to learn (Butler, 1988; Nyquist, 2003; 2017). As a student-centered educator, I became obsessed with how middle school students perceived a formative assessment system focused only on feedback with no grades attached. Studies that focused on the perception of middle school students enrolled in a large comprehensive school district with urban and suburban communities with respect to formative feedback were scarcely existent.

I spent over a year designing a mixed methods study to include a comparison of survey and interview data. The survey focused on student perceptions of feedback in mathematics and student attitudes toward mathematics and would potentially be completed by over 1,000 students. The students who completed the survey would be narrowed to 20 interview participants. These aspirations appeared attainable within a reasonable timeline, until the COVID-19 global pandemic moved schools into a fully online structure and altered the instructional pedagogy. Additionally, the methods of disseminating and attaining information were transformed from face-to-face to completely online. The complexity of navigating the numerous rounds of revisions through the university and school district IRB processes inhibited my ability to move the project forward in a timely manner. Several outside forces worked in concert and affected this

study shifting from an ideal methodological composition to a study based on negotiated compromise.

Problem Statement

Mental health of students has recently become an important and publicized public health issue. Though studies have focused on the mental well-being of students in grades K–12 and undergraduates, the research on the mental health of postgraduate students is lacking. A gap exists in the research with regards to the level of emotional and academic stress experienced by doctoral students and this was my interest.

Anticipated Methodology

The initial purpose of this study was to investigate the perceptions and understandings with respect to formative feedback of grade 8 Pre-Algebra students in a large comprehensive school district with urban and suburban communities. Wiliam (2018) proposed that the most effective formative feedback can be determined when the perceptions of the recipients of the feedback are taken into consideration.

Given the research question "What are the perceptions and understandings of students enrolled in Grade 8 Pre-Algebra of a large comprehensive school district with urban and suburban communities with respect to formative feedback?" the intent of this study was to initially identify four middle schools in a large comprehensive school district with urban and suburban communities. Two dichotomous sets of two comparable schools each would be generated to obtain a heterogenous cross-section of the population of the large comprehensive school district.

Two of the schools, School Y and School Z, had been deemed *have not met the state's standard for performance* and the other two schools, School A and School B, had been deemed *superior*, based on the designation framework for schools in that state. The proficiency rates on the state's summative assessment in math and reading are amongst the highest in the state at Schools A and B, whereas the proficiency rates at schools Y and Z in math and reading are amongst the lowest. The percentage of students attending Schools A and B who were designated as English Language Learners (ELL), Black, Hispanic, qualified for Free and Reduced Lunch (FRL), or Special Education were under the state average, based on 2019 demographic data; the percentage of students attending Schools Y and Z who were designated as ELL, Black, Hispanic, FRL, or Special Education exceeded the state average.

Three Pre-Algebra teachers at each of the four schools were asked to email an explanation of the study, a link to a short online demographic survey, and a consent form to each of the parents/guardians of their approximately 1,400 Pre-Algebra students. Questions included in the demographic survey asked the

student's age, gender, ethnicity, email address, highest education level of each parent/guardian, number of minor children in the household, and household income level. The rationale behind and duration of the research, the data gathering and analysis processes, any potential risks or advantages to the student, confidentiality practices, and the fact that the student involvement was entirely voluntary and could be concluded at any time were fully explained in the consent letter.

None of the students were contacted until the parent/guardian consent forms were received. I then emailed a survey measuring perceptions of mathematics and formative feedback to each of the students whose parents/guardians consented to their participation in the study. Based on a combination of the demographics and perceptions surveys, a 20-student demographic representative sample of the school district, including 10 students from each of two of the schools (either A or B and either Y or Z), were selected to participate in the interview process.

The student survey contained two sections—student perception of feedback in mathematics and student attitudes toward mathematics. The first section was comprised of eleven questions utilized by Van der Kleij (2019), which he modified from Havnes et al. (2012). Van der Kleij included both math and English Language Arts students when conducting the survey; I focused only on mathematics. The response choices included 4 = True, 3 = Nearly true, 2 = True only to some extent, 1 = Untrue. The second section included 15 questions from the Attitudes Towards Mathematics Inventory (ATMI) initially developed by Tapia (1996); Tapia initially designed 40 questions, which Lim and Chapman (2013) condensed after analysis of the performance of the items in a comprehensive study presented redundancy in the outcomes of certain items. The ATMI items were divided into four classifications of enjoyment, motivation, self-confidence, and value. After several iterations, Lim and Chapman (2013) suggested utilizing five items each from self-confidence, value, and enjoyment in the short ATMI. The short ATMI questions were used as the basis for an empirical journal article.

The primary qualitative data source resulted from a series of semi structured interviews (Bernard & Ryan, 2010); Bernard and Ryan (2010) recommended using semi structured interviews with minors. An interview guide was the basis for a set of similar questions asked of each participant. The participants were allowed to communicate their accounts through their responses. The initial interviews lasted for about 30 minutes including general questions regarding the students' background and comprehension of assessments and feedback. The questions included:

What is your family structure?
What are your past experiences in school?
What are your past experiences in mathematics?
What are your hobbies?
What are your current experiences in school?
What are your current experiences in mathematics?
How would you define formative feedback?

What are your current experiences with formative feedback?
What are your past experiences with formative feedback?

When the initial interviews concluded, the interviews were summarized and indexed in a spreadsheet. The second, more focused set of semi structured interview questions provided a deeper comprehension of the students' perceptions of formative feedback utilizing the indexed summaries from the initial interview as a basis. Some of the second interview questions included: "Describe an experience in math class where formative feedback made you feel happy" and "Describe an experience in math class where formative feedback made you feel upset or sad."

The recordings of the second set of interviews were summarized and indexed minute by minute like the first set. The summaries of both interviews were sent to the respective participants allowing them an opportunity to review and modify the summaries, if needed. A third clarifying interview would be scheduled if a participant requested a substantial modification to the summaries.

Roadblocks

Rocky Beginning

This long and winding road began in August 2009 when I enrolled in my first doctoral class. I was working full-time as a high school administrator with two young boys ages eight and six at home. Completion of my Ph.D. in mathematics education was anticipated to occur by May 2015. As a single father with a full-time job that required at least 60 hours per week, I struggled to successfully complete more than one class per semester. One year into my program, I was forced to take a leave of absence for a year to focus on a court battle to retain custody of my children, which left me one year behind schedule. Completing multiple summer courses allowed me to conclude my required coursework in May 2016. I was ready for my Qualifying Examination.

Living in a popular tourist city had some benefits, one of which is a plethora of cheap hotel rooms. When a large assignment or paper was due, I made it a practice throughout my doctoral program to take a day or two off from work, reserve a hotel room, and lock myself away while I completed the assignment. The strict, tight timeframe for completing the Qualification Exam questions lent itself to a few days of isolation in a local hotel. After submitting my responses a few days early, I was ready to defend. My topic was student perception of the use of Electronic Student Response Systems (ESRS) to provide immediate feedback to students in mathematics classes. The committee approved my Qualifying Exam without any edits, moving me forward into the proposal phase in June 2016.

During a qualitative analysis class, I completed a small phenomenological study interviewing two students at my school regarding their perceptions of ESRS use in their math class. ESRS (clickers) were just becoming popular in my school district and many principals were considering investing considerable funds into

multiple classroom sets of clickers. A teacher at my school was quite proficient with the use of clickers in his mathematics classroom and was a resource for novice ESRS teachers. I quickly had a draft proposal ready to share with my committee chairs for feedback. I proposed a phenomenological study focused on student perception of ESRS in mathematics class with the population based in my teachers' classes. Data from multiple interviews of various students would be compared with classroom observation data. These findings would help inform principals and districts whether they should invest money in ESRS for their mathematics classrooms.

During my first proposal meeting with both of my committee chairs, they provided positive feedback on ways I could rework the introduction to improve its ability to grab the reader's attention. A few other small tweaks were discussed to improve the flow and readability. As the next meeting approached a few weeks later, I was confident that my proposal was ready for defense and that I would be interviewing students soon. Everything came to a screeching halt when one of my committee chairs announced he was struggling accepting phenomenology as a viable methodology. He questioned student interviews as a valid data source because children will tell you anything they think you want to hear. He also questioned perception as scholarly enough for a dissertation. One argument was if someone perceives the moon to be made of cheese, does that mean it really is? And who cares? I left that meeting completely defeated, knowing my passion lay with student perception of ESRS use in mathematics, but my committee chair made it clear he was not going to support that study as a dissertation.

The next three and a half years were spent figuratively trying to fit a square peg into a round hole. I continued attempting to convince my chair of the validity, viability, and worthiness of phenomenology as a dissertation methodology. He continually attempted to find additional data sources like teacher perception, assessment scores, and surveys to offset the student interview data. Spans of multiple months passed without looking at the proposal. The frustration caused me to force it out of my conscious thought, though it weighed on my subconscious. Every few months I considered an adaptation to my proposal, amended my document, met with my chairs, only to ultimately face the same result.

The university placed me on probation in the Fall of 2019 with a required proposal defense by May 2020 and dissertation defense by May 2021. The pressure had exponentially increased. A compromise had been struck among my chairs and me regarding the methodology of the study. I was ready to move forward toward a defense. The study vaguely resembled my original proposal, but I was one step closer to defending. Over the years, clickers had lost their luster and other online forms of ESRS had come into prominence. I realized the mode of feedback was much less important than the quality of the feedback. Therefore, the focus of the study shifted to formative feedback, not necessarily using ESRS.

Change of Committee Chair

In February 2020 I received an email from my primary committee chair stating he was taking a leave of absence and would no longer be able to chair my committee given the tight timelines to which I needed to adhere. The university required my committee chair be a member of the Mathematics Education Department. My secondary chair was no longer technically in the Mathematics Education Department, and the other two members of the department had full caseloads and could not take another doctoral student; I was flabbergasted. Over ten years of work and thousands of dollars would be wasted because one person was taking a leave of absence. There were only three options available: (1) walk away without a degree, (2) find a new chair in the Teaching and Learning Department, switch from a Ph.D. to an Ed.D. and complete the program, or (3) take one more course and finish with an Ed.S. Though not ideal, Option 2 was the least offensive option to me. The Graduate Director of the Teaching and Learning Department agreed to be my committee chair and to assist me through the process of transferring from a Ph.D. to an Ed.D. He also facilitated the development of a new committee. By May 2020 I was officially an Ed.D. student, and by June 2020, I had defended my proposal and advanced to doctoral candidacy.

IRB

The next few months were spent preparing the methodology for the IRB process. I did not anticipate the level of detail the IRB committee required when children were involved in a study. I applied to the school district IRB only to learn that university IRB approval was necessary prior to applying for school district IRB approval. For weeks I answered each of the university IRB questions, completed each of the forms, and created ancillary documents including parent letters, student letters, online consent and assent forms, online demographic surveys, online student perception surveys, etc. A month after submitting, the university IRB returned a list of 26 sections requiring edits. Working with my committee, we amended the initial proposal and addressed the 26 sections. Hours were spent determining the actual meaning behind some of the edit requests, including a robust explanation of how the data from the demographic surveys would be stored and secured, informing all potential participants that the interviews would be recorded, and the reading level of the student forms.

Weeks later a new document arrived from the university IRB requesting 22 more edits be made to the application. Many questions revolved around the idea that I was potentially surveying up to 1,400 students, but only interviewing 20 of them. They did not understand what would happen with the survey data. They also still questioned the security of a Google drive in the Cloud. Again, hours were spent updating the application form with the information we thought they were requesting.

Over a month passed before a third document from the university IRB arrived, requesting 19 more edits to the application. They still questioned the security of a Google drive in the Cloud. They also requested a script for the interviews, even though by design semi structured interviews do not have a script since the interviewer adapts based on the participants' responses. Additionally, I sought to access student data such as email address, math grades, ethnicity, and gender from the school district Student Information Services. The university IRB pushed back extensively so I included that information in the parent demographic survey instead.

After nearly four months, the university IRB application was approved and the school district IRB application could be submitted. This process was more streamlined, possibly due to the extensive revision process completed for the university IRB approval. After only one set of revisions, the school district IRB application was approved within two weeks of the initial application.

COVID-19 Pandemic

These struggles paled in comparison to the worldwide crisis caused by the COVID-19 pandemic at this time. The Las Vegas Strip was closed for nearly three months, the first extended closure in the Strip's history. Entire cities were quarantined for months with only essential businesses such as grocery stores, delivery food, and health care facilities allowed to remain open. Teachers conducted classes remotely from home using virtual meeting platforms. Throughout the 2020-21 school year, many school districts remained in a virtual learning environment and students and teachers remained at home. In the participating school district, all meetings were restricted to a virtual platform and information was disseminated only through email or video.

These inconveniences paled in comparison to the suffering, loss of life, loss of jobs, and added stress caused by the COVID-19 pandemic. When families were worried about a sick loved one, putting food on the table, ensuring their children were participating in classes, childcare, paying rent, they were not spending time and energy on an email from one of their child's teachers regarding a dissertation study. Nearly a year later, many of the families in the participating school district have not recovered fully and have many of the same worries.

Actual Methodology

The roadblocks mentioned caused a significant number of pivots during this process. Each pivot brought added stress and frustration followed by a new hope. Ultimately, the methodology submitted in my original proposal was amended to the methodology explained in Table 1.

The beginning phases of the anticipated methodology progressed smoothly. Four middle schools with the appropriate demographics and designations were identified and their principals agreed to allow the study to occur with their staff

and students. A description of the study was emailed to the Pre-Algebra teachers at each school requesting their participation in forwarding the parent consent email to the parents of their Pre-Algebra students. After four follow-up emails, nine of the 12 teachers responded confirming their participation in the study and acknowledging that they would forward my email to the parents of their Pre-Algebra students. Since student and parent identifying and contact information cannot be provided to the researcher by the institution, I needed to trust that the teachers sent my email to the parents; this also prevented me from sending reminders to the parents. Two weeks later, eight out of a possible 1000 parents responded offering consent for their child to participate in the study.

The parental consent form included a request for the student's email address that allowed me to directly contact the students of the parents who responded. A description of the study, link to an assent form, and link to the surveys were included in the email to the eight students. After two weeks, three students responded, and two of the three completed the online surveys and assented to participate in the study.

Initial interviews were scheduled with the two participants. Each interview lasted about 30 minutes and focused on gaining background information about the participants. Questions regarding the participants' definition and thoughts of formative feedback and scheduling of the second interviews concluded the initial interviews. One of the participants did not show for the second interview; multiple attempts through email to reschedule went unanswered. Therefore, after beginning with the possibility of close to 1,400 participants, only one student complet-

Table 1
Comparison of Anticipated and Actual Methodologies Anticipated Methodology

Anticipated Methodology	*Actual Methodology*	*Roadblock*
Four Middle Schools	Two Middle Schools	Only received parent responses from two middle schools
Twelve Pre-Algebra teachers would forward my email to all parents of their Pre-Algebra students.	Nine Pre-Algebra teachers responded confirming they would forward my email to all of the parents of their Pre-Algebra students.	I did not meet with the Pre-Algebra teachers in person or virtually to explain the why behind and the benefits of the study.
Use student survey and demographic data to select 20 student interview participants.	One student participated in the interviews.	Only one of the two students who assented participated in both interviews.
The third journal article would focus on quantitative survey data.	The third journal article was a reflection of my doctoral journey.	Only two students completed the survey.

ed each of the components of the study. A robust mixed-methods study including up to 1,400 surveys and 20 interviews transformed into a case study exploring one student's perceptions of formative feedback in mathematics.

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