How REAL Teachers and Professors Learn: Threshold Crossing and Concepts in Professional Learning

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This paper describes preliminary findings from a study of teacher and professor learning. Using narrative inquiry, the author interviewed expert teachers and examined the process of teacher and professor learning. The study focused on how teachers learn as a form of self-study in informal action research. The study examined (1) the challenges requiring resolution during the early stages of a career, (2) experiences of struggle, (3) the principles and practices leading to expertise, and (4) the long lasting effects of teacher and professor learning on professional practice. Using threshold theory (Meyer & Land, 2003/2005) and a model of informal action research called REAL (Noonan, 2013), the author illustrates how the experiences of expert teachers during the early phases of their career result in permanent changes in practice and the development of a professional identity.

Introduction

Attempts to learn and master a profession often involve significant struggle. Try recalling an experience when you struggled to learn and felt temporarily unable to make progress, despite considerable effort applied to the task. The experience likely remains in memory because of the difficulty posed by the challenge and the moments of doubt surrounding the event. If you rose to the challenge and learned an important concept or procedure, you likely felt transformed by the experience. The breakthrough allowed you to make a

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significant advancement in a discipline or profession, and perhaps enhanced your identity and feelings of competence as a capable learner or increasingly knowledgeable professional. These critical, and often transformational episodes of learning represent substantial milestones, leading to greater expertise in a domain or profession.

If recalling an event brings back a painful memory, the source of unhappiness may be from the failure to learn and a temporary or permanent lost opportunity to progress in a field. Now, instead of transformation, the experience represents a setback, a turning point in a journey, and a potentially damaging experience on self-concept and future aspirations. Failed attempts may lead to disengagement from learning and result in a departure from a role and profession.

As a reflective practitioner, I recognize how early experiences affected my career as a K-12 teacher, administrator, and later, professor in higher education. A few years ago I decided to investigate how critical incidents and learning during the early stages of a career lead to greater expertise in the profession. I reviewed literature on teacher learning and expertise, developed a conceptual framework as background for my study of "expert teachers", developed a research question, received approval to conduct research from the University of St. Thomas Institutional Review Board, and interviewed expert teachers to learn how their early experience affected their professional growth and adoption of effective pedagogy. I share some of my findings and analysis in this paper to illustrate several important principles, including the experience of challenge and struggle during the early years of becoming a teacher/professor, the process of learning as teacher-directed informal action research, and the adoption of effective pedagogy to routinely experience success with learners in K-12 and higher education.

As background for this paper and my study, I first provide a brief description of a promising new theory on learning, called threshold crossings and concepts (Meyer & Land, 2003/2005). Threshold theory informed my study and guided the development of interview questions. After describing threshold theory, I then follow with a brief discussion of methodology. I share my findings and analysis regarding the experience of professional learning in the last section of my paper. The analysis illustrates how teacher and professor learning leads to expertise.

Threshold Crossings and Concepts

Meyer and Land (2003/2005) introduced the concept of "threshold crossings and concepts" in learning to bring attention to the challenges and struggle associated with acquiring certain types of knowledge needed to make continued progress in a discipline or field. A "threshold crossing" refers to a "stuck point" in learning, preventing continued progress (Ellsworth in Meyer & Land, 2005), often requiring multiple attempts to learn. Threshold concepts represent important concepts, principles, and procedures predictably inviting struggle and requiring mastery to progress in the discipline or domain. Acquisition of new knowledge allows learners to continue the journey.

When struggling with difficult concepts, learners enter a "liminal space", a place and period of uncertainty and transition (Turner in Meyer & Land, 2005). The liminal state occurs before the crossing and requires resolution either through successful mastery of knowledge allowing continued progress, or in some unfortunate cases, failure to learn, disengagement, and abandonment of goals; two words, threshold and crossing, offer a

glimpse of the experience. When learners experience a threshold crossing, they journey to a new place, moving through and past a previously locked door. The threshold represents the entry point to future learning.

Successful threshold crossings result in "new knowledge and subsequently a new status and identity within the community" (Meyer & Land, 2005, p. 376). Threshold crossings and concepts conceivably apply to learning at any age or stage. I decided to examine how threshold theory applied to professional learning and describe the methodology used to conduct my study next.

Research Question and Significance

I adopted the following question to conduct my study: How do early experiences in teacher/professor learning result in increased expertise? I added the following related questions to address three identified areas in my study: What "triggering events" and "nagging problems" in practice result in deep learning and substantial change in professional practice? How does learning progress? What principles and practices do expert teachers routinely use to ensure effective learning?

Understanding the experience of teacher learning during the early years may help mentors gain insight regarding the difficult emotions and typical challenges experienced, while attempting to master important concepts associated with effective teaching. Failure to learn also causes disappointment and an "exit" from the profession, a troubling and stable trend in K-12 education (Marlow, Inman, & Betancourt-Smith, 1997). Understanding how master teachers learn and use "expert pedagogy" may help others see the importance of encountering and mastering certain types of knowledge to foster student learning and teacher success. As I started my study, I looked forward to learning the answers to a few simple questions: What do the best teachers do? How did they learn? I set out to find the answers using qualitative research.

Methodology

I adopted narrative inquiry (Marshall & Rossman, 2011) in qualitative research to conduct my study with the goal of learning how personal experience and learning informs practice and fosters expertise. A discussion of my research strategy using narrative inquiry includes a description of the general purpose of inquiry, and strategies used in conducting collaborative interviews with expert teachers.

Narrative Inquiry

I adopted narrative inquiry as a primary data collection method in my qualitative study of teacher/professor learning (Marshall & Rossman, 2011). "The method assumes people construct their realities through narrating their stories" (p. 153). Narrative inquiry encourages a collaborative approach between participant and researcher, valuing individual participant experience through the selection and recall of stories.

The success of narrative inquiry depends on the relationship between participant and researcher.

> Narrative inquiry requires a great deal of openness and trust between participants and researcher: The inquiry should involve a mutual and sincere collaboration, a caring relationship akin to friendship that is established over time for full participation in the storytelling, retelling, and reliving of personal experience. It demands intense and active listening and giving the narrator full voice. Because it is collaboration, however, it permits both voices to be heard. (Marshall & Rossman, 2011, p. 153)

The collaboration also requires researcher knowledge (in this case) of effective pedagogy to identify pedagogies in use (detected during the course of the interview) for in-depth discussion and reflection. The interview format shifted between participant storytelling and analysis and mutual dialogue about the subject of research. This style of narrative inquiry helped me uncover assumptions informing practice as well as identify and describe the principles and practices adopted by expert teachers.

Participant Selection

I selected participants with notable accomplishment in teaching based on my personal knowledge and observations of candidate expertise, participant-reported ratings of meritorious performance based on externally administered student evaluations, and notable professional accomplishment based on regional or national awards for teaching and scholarship. I selectively recruited and interviewed candidates widely regarded for expertise in teaching in *my ongoing study of expert teachers*. The sample included three females and two males with 20 to 40 or more years of experience in K-12 and/or higher education. I also adopted the interview protocol and developed reflective exercises for students enrolled in supervision and professional development courses. I share the results of two expert teacher interviews and one story submitted by a candidate in a principal preparation program.

Interviews with Expert Teachers/Professors

After informing the participants of the voluntary nature of the study and obtaining consent (IRB approved), I conducted and recorded in depth interviews with participants ranging in length from 90 to 120 minutes. I followed McCracken's (1988) guidelines for the "long interview", initially discussing teaching background and experience to establish trust and familiarity with the research topic. Then I used some version of the following "prompt" to gain access to participant stories and facilitate a discussion of learning.

Phase One: Tell a Story

> Consider a time in your career when you experienced a powerful episode of learning in your role as a professional educator (teacher/professor), causing you to learn an important lesson and change your role as a teacher or your professional practice.

Briefly sketch the circumstances, nature of the challenge, the way you eventually resolved the difficulty, and the new learning you now claim as an important component of your professional practice. If someone or something helped (or hindered) you during this time, please describe his or her role and contribution or the process facilitating or hindering your development. Please keep the identities of individuals involved in your story confidential; you may change a name, use initials, or refer to individuals by role.

Additional Questions Based on Participant Response:

1. How did the experience challenge you to experiment, problem solve, or make changes in the way you usually accomplished your work?
2. Please describe your feelings during the early stages of the experience.
3. What did you do to solve the problem? Describe your actions, attempts and results.
4. How did this new learning cause you to change your thoughts and ways of accomplishing your professional work?

Phase Two: Debrief the Story

As a result of this experience, nominate and describe a theory, principle, guideline, rule, practice, or value you adopted as a result of this experience. For example, how did the learning cause (1) changes your ideas or attitudes about students and learning, and/or (2)result in an enduring change in practice (retreating to "old" ways now seems impossible)?

How did this experience foster growth based on increased mastery of concepts, more sophisticated use of strategies, feelings of confidence, and/or a new or greater understanding of your profession and role?

During the interview, I used a prompt to facilitate storytelling, and then followed the direction established by the participant in the selection of story and analysis. After story completion, I facilitated continued reflection of the story and its effects on professional practice by asking more specific questions regarding pedagogy. This included descriptions of underlying assumptions of student learning based on participant response. The "debriefing" conversation following storytelling took new turns as participants reflected more deeply on the experience and their learning in response to my more specific questions or reflections about the methods described.

When I detected a "favored" approach to teaching during the interview, such as experiential learning, I then engaged participants in reflecting on the aims and value of a particular approach. I asked about the assumptions regarding student learning and goals, the roles of teachers and students, the structure of the lesson, and management of resources. These questions and participant explanations, such as how they debriefed lessons in experiential learning, allowed me to see expertise in action. Participants shared knowledge about the reasons for selection of pedagogy and its application.

Reflecting back to participants on their personal pedagogy, I asked questions pertaining to a specific method to dig out the principles and practices associated with expert teaching. I avoided "leading" participants to a particular position or methodology by using participant language and examples to prompt more in depth discussion. This style of narrative inquiry helped me to unlock the knowledge and methods used by expert teachers/professors.

I also used additional strategies to elicit stories pertaining to the research questions, drawing on my personal knowledge of participant strengths and notable accomplishments. I listened carefully to participant stories, and then engaged participants in dialogue and reflection on the lessons learned. I learned about the "triggers" for new learning, participant attempts at inquiry and change, and the subsequent adoption of principles and practices associated with effective learning and teaching.

I reflected on the experience with participants, as a researcher-colleague capable of interpretation and collaboration on pedagogy. I relied on my ability to detect the pedagogy described by participants *as interviews progressed* without attaching labels or jargon. This style of narrative inquiry promoted a rich discussion of pedagogy, and helped uncover the strong connection between teaching/professor learning and expertise. I briefly describe coding methods and strategies for analysis next and follow with findings.

Coding and Analysis

I transcribed interviews and returned to my research questions to divide my study into three sections. I first noted the nature of the challenges encountered by expert teacher early in the career and developed categories to represent these experiences. I organized the "triggers" into the following categories: (1) difficult or unsatisfying encounters with students, (2) nagging problems in practice, and/or (3) accidental discoveries in teaching (Noonan, 2013).

I located and reflected on participant descriptions regarding their multiple attempts to resolve a difficult issue, including their initial attempts and results and adoption of a new "attitude or approach" to learning, (Evans as cited in Noonan, 2013). I checked for the enduring value of a practice by asking participants to describe how they used the principle or practice in their current practice.

I analyzed data using a model of informal action research I created to represent learning as a form of informal action research. The model, called REAL (an acronym describing phases of teacher learning; Noonan, 2013), shows the initial experience, struggle, and the permanent changes in professional identity and practice as a result of learning from experience.

I hoped to see and establish the relationship between "networks of understanding" (theories informing practice) and "chains of practice" (actions adopted by expert teachers; Kinchin, Baysan & Cabot in Noonan, 2013). The story exchange alerts listeners to how the experience changes assumptions and later actions adopted in professional practice. I used threshold theory (Meyer & Land, 2003/2005) to illustrate how a challenging and memorable learning event resulted in improvements and innovations to practice.

I kept track of what participants said regarding their experiments and reflections on how they refined an approach once adopted and routinely put it to use. I noted how the discovery of a particular approach led to specialization in a personal pedagogy (Noonan, 2013). Finally, I catalogued principles and practices associated with effective teaching, such as "active learning", "student engagement," and "relationships" as threshold concepts in teaching (Meyer & Land, 2003/2005).

Applying threshold theory to teacher and professor learning raises some interesting questions. For example, what threshold crossings/concepts required mastery and resulted in greater professional expertise (as a process, not an end point)? How did the mastery of certain experiences lead to a distinguishing approaches and notable accomplishment in teaching? What areas of "specialization" or expertise serve as hallmarks of a personal pedagogy? Look for answers to these questions and more in stories told expert teachers with experience in K-12 and higher education.

The data for the first two stories came from in depth interviews with two expert teachers with over 40 years of experience in K-12 and higher education. I then added a short story submitted by an expert teacher as his reflection on teacher learning in response to a class assignment. I obtained his permission to use the story for this article and selected it to illustrate how a creative assignment might inspire discussion of learning in professional preparation programs. All three stories illustrate threshold crossings and concepts in teacher and professor learning.

The success of qualitative research depends on the rich data and the narrative truth found within the description and subsequent analysis. The stories told by three expert teachers provide plenty of evidence of struggle, change, and increased expertise. I share their stories and analyze how teacher and professor learning led to greater expertise. I begin with the first story of T's experience in his role as a high school social studies teacher, and later service as a higher education professor.

T's Pedagogy: Teacher Roles, Effort, Student Engagement, and Relationships

T moved away from home and accepted his first teaching assignment in another state, moving to a city undergoing considerable strife and change. Racial tensions in the school and community entered T's classroom as he struggled for control and student attention during his first few years of teaching. T's knowledge of class management came from a retired colonel, who served as his supervising teacher and mentor. The colonel emphasized "control" and "consistency". T described the first direction he received from the colonel:

> The first thing he said to me when I came was, "Look, if you tell the kids anything, you do it. If you tell somebody you're going to throw them through that door, you better do it. And that's how he ran the ship…. So it was pretty easy to step into his classes and student teach, because there weren't really any particular problems…. If he said to do something, they did it because they knew what would happen if they didn't in terms of him. So, it was very different to go to a school where that wasn't the case at all.

T's solo flight as a new teacher in a struggling school proved a different story. He struggled to gain control and remembered wondering about the students' desire to learn, thinking, "What's wrong with these kids? They just don't want to learn." Feeling disappointed about the lack of student engagement, T felt drained and complained bitterly to his father about his students. His father's response surprised him.

> I went home one weekend… to the farm. My dad had an 8th grade education. I was just really complaining about [my students], saying, "Dad, these kids are terrible, and went on and on. He [my Dad] was very quiet and finally he just said, "T, look, the parents send you the best kids they've got. If they had better kids, they'd send you better kids. It's you job to teach them. Go figure it out.'
>
> You know, and that's kind of like a rude awakening, because you want sympathy and all you're getting is like, "Hey, you're the teacher…. It got me thinking, okay, what can I do. And so I'd say that's the first [lesson] I learned was that you've got to adjust to the situation, to figure it out and to understand the culture. Even though I had all these classes on culture concepts and this, that and other thing, it was academic, now it's real. And so I really started trying to put forth effort to figure out what were they interested in, how could I make a connection between civics… or whatever, how did that connect with them?

This single episode and reflection ultimately led to three significant changes in T's professional practice: T (1) changed his attitude regarding the role and responsibilities as a teacher, (2) applied effort to improve his teaching, recognizing a lackluster student response meant he needed to change his approach, and (3) used student interests and culture to make connections between student experience and the course content. T adopted an "issues approach" to teach subject matter, searching for the value and connection between the course content and student learning. A skilled collector of resources, T read widely to inform his practice. He collected articles, books, and stories to engage students in learning, using a discussion approach to teaching.

If a class does not go well, T takes responsibility. "I try to figure out, what went wrong? How did I screw up on this one?" He generally assumes the culprit involves the poor design of learning activities. He analyzes whether the activities offer enough interest, connection, or application, and then redoubles his effort to improve student participation and learning. T quits trying to improve things only after the class ends, taking responsibility for student learning up to the last minute. He avoids blaming students and instead changes strategies or activities to improve learning. His exerts considerable effort in his preparation and structuring of learning activities. He gauges his success by student response, including whether they participate in discussions and seem interested in continuing the conversation after the class ends. He never gives up on student learning.

A student "who gave him fits", taught T about relationships. T served as a junior varsity basketball coach and the difficult student held a position as a freshmen player on the team. T "started working him on that angle, about basketball. I had something to talk to him about, he could relate to, and then I could tie in the athletic stories about the coach

here and there." T's effort paid off. The student changed and supported T in his classroom, and things got better. T reflected on the importance of caring:

> The old saying, that people don't care what you know, until they know that you care...[,] that kind of became a real thing…. Students really need to know you care and want the best for them. And the trick was to get them to see maybe you did know a little more than they did about what was best for them at that time.

Eventually T's discovered his mission: "To create an environment where people can grow and develop and be the best they can be. I tried to follow that in terms of my family, and with my kids, my teaching, my administrative work - to try to create that kind of environment."

I asked T when he stops trying to improve things. His answer: "When I walk out of the last class, that's when I say, 'Okay, I've done my best.'" T's summarized his dominant philosophy of teaching in a few sentences: "Teaching isn't teaching, if students aren't learning. It's only if students are learning something that you're really teaching, so you've got to make that connection."

T accepted responsibility for student learning and applied considerable effort to achieve success. He emphasized preparation and effective use of resources and engaging students in learning by using the course content to make connections to contemporary issues and student experience. Emphasizing nurturing relationships, T earned the respect of his students by fostering good will in a caring community. He measured his success based on student interest and learning. T's early experience led to a lifelong specialization in his "personal pedagogy", a style of teaching representing a unique approach to student learning (Noonan, 2013).

I analyzed T's learning experience and developing expertise using a model of informal action research called "REAL" (an acronym representing a learning process; Noonan, 2013). I developed the model to represent a "typical" pattern in teacher learning as described in studies of experiential learning and action research. I tested its usefulness in interviews with teachers, identifying how movement through the process led to considerable change in knowledge and practice. I first introduce the model and then analyze T's experience next.

Becoming a REAL Teacher and Professor: Analyzing T's Story

Growth in professional knowledge and gains in expertise occur through continuous reflection and learning as part of action research, often conducted informally and routinely within "classroom" practice. Action research, "operationally defined as a professional research tool that empowers teachers in monitoring and analyzing personal practices with the intent of expanding their knowledge base and enhancing instructional prowess" (Schoen, 2007, p. 215), leads to changes in practice. To conduct action research, educators learn how to master "technical skills" in collecting data and analyzing "the contextual adaptations required to affect change" (p. 215).

In other words, teachers or professionals use their knowledge and experience to reflect on their actions and its effectiveness, ultimately making changes in practice. These encounters and struggle within an active practice to make change represent

encounters with threshold concepts (Meyer & Land 2003/2005) and serve as a primary source of professional learning. A graphic illustration of this process, represented by the REAL model, shows the progression of teaching learning leading to expertise. See Figure 1.

> Teacher learning occurs when teachers (1) **r**ead (assess and interpret) and **r**eflect on how students experience learning, (2) **e**xperiment using inquiry and action research, (3) **a**dopt new **a**pproaches and **a**ttitudes, and (4) **l**earn continuously to improve and innovate (making it **REAL**). REAL illustrates the *experiential* and *experimental* nature of teaching with the central focus on student learning and improvements to practice. (Noonan, 2013, p. 22)

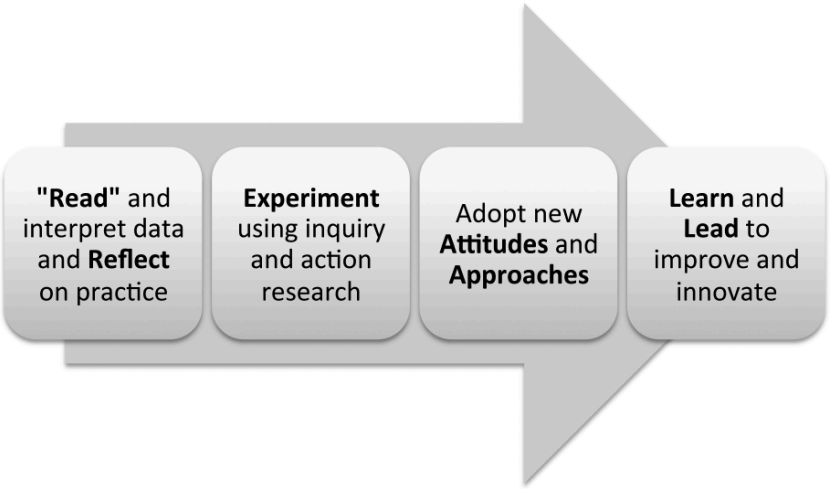

Figure 1. The REAL model of teacher learning (Noonan, 2013, p. 23)

Analyzing T's story using the REAL model shows how T resolved a nagging problem in practice involving his struggle for control and inability to engage students in learning. T initially blamed students for the trouble, until his father's remarks offered an alternative view of his circumstances. His new *reading* of the situation and *reflection* about the "nagging problem" in practice set the stage for new learning. Determined to effect change, T *experimented* with new methods by exploring how he might make connections with student experience; he adopted a contemporary issues approach to the curriculum.

Student interest increased, resulting in a changed *attitude* about his students (they became more capable learners) and his *approach* to teaching changed. Instead of lecturing, he invited students to discuss their experiences and relate them to the course content. He assigned a new value to the course content: to help students understand their experience, increase their critical thinking, and examine the challenging issues in contemporary society. He *learned* and improved his practice by adopting a more innovative approach. T became a REAL teacher.

Other experiences followed a familiar pattern. A difficult student challenged T's fragile hold over his classroom. Learning about his students and forming relationships with them resulted in a previously ignored source of support in his classroom: student good will. T gained student support by his sincere interest in them. The new "reading" and "reflection", his experiments, and changed attitudes and approaches fostered T's

learning and expertise. These principles and practices sustained T throughout his career. Known for his caring relationships with students and mastery of contemporary issues, T continued to refine his personal pedagogy, applying considerable amounts of effort and creativity to teaching for the next four decades.

The next story describes how two students taught D everything she needed to know about how to be an effective teacher.

Necessity is the Mother of Invention: Two Students and D's Creative Solutions

D, an elementary teacher, met a talented fourth grade student during her first year of teaching named Tess (a pseudonym). Recalling the student's capableness and her inexperience in teaching, D described Tess with fondness.

> She was very patient with a first year teacher…. There was hardly anything Tess did not know or couldn't accomplish quite quickly. So you would introduce something and then she immediately had it…. My curiosity about kids who learn differently and at different places and in different ways was really the result of having to try, as a first-year "newbie" teacher, to figure out what do you do with regards to Tess?

Reflecting on the experience, D expressed regret about her inability to fully challenge Tess, despite trying to "do what she could with limited knowledge" to keep Tess challenged. Recalling the challenges faced by first year teachers, D said she tried to learn the curriculum, make lesson plans, and also "think about Tess, and anyone else who was either more like her or kids who were struggling." D asked the other teachers in her grade level for ideas and found little interest and support. She realized she was "pretty much on her own" and applied creativity and effort to the task of engaging students in learning.

D adopted a unique approach to teaching, even during her first year of teaching. She developed learning stations and rotated students through centers to offer choice and project-based activities to enhance the curriculum.

> Social studies was my passion, so consequently, I taught social studies very different[ly] than the other three people in my grade level did because that was, number one, my passion – [I was] very project-oriented, lots of hands-on engagement…. I have really always believed it's not the curriculum, not the content, it's the way it's taught - it's the instructional strategies that teachers use with it.

D pioneered the use of learning stations in the intermediate elementary school grades, adapting a successful primary practice to meet the needs of fourth grade students. She believed in "active learning [and] active student engagement."

Recognizing she "had to figure out myself what worked for kids," D focused on collecting and organizing resources for student learning to support project-based learning. Outsider observers may not understand or appreciate the method and "mess" created by active student learning. "I taught project-based. My room to the outsider probably did

not look like it was organized. When you use project-based learning, you're always working with "STUFF", this does not go into a folder in your desk," D commented.

A custodian expressed discontent with the messiness of her method by cleaning the room and then moving all the desks to one side of the room every night. When D entered her classroom the next morning, she started the day rearranging furniture to facilitate small group learning. Frustrated, D finally paid a visit to the principal and put a stop to the silent war between the custodian and a first year teacher attempting to engage students in hands-on learning. D remarked, "The hard part about being a teacher was that there were all sorts of forces against being an innovator."

D collected methods and materials, designing assignments to foster critical and creative thinking. "When I see something, I figure out how to do it better or differently. So you know, even though I subscribed to professional magazines, I still looked to them for ideas, but I still made them my own." D continued to grow in her ability to challenge students with a wide spectrum of learning needs through differentiated instruction and student choice.

I asked D how she kept track of resources and stayed organized. Her answer: boxes! "Every summer I took boxes home, I mean, I worked all summer." D collected and organized boxes based on themes, planning an organized sequence of learning with creative assignments and materials. Project-based learning requires experimentation. The reward: high levels of student engagement and learning.

> As professionals we try things out and see if they work with the kids, and what I found is when I used those kinds of strategies with the students they were most actively engaged, they were more enthusiastic, they were more like, 'What are we going to do today?'

More events and opportunities changed D's experience: she made the switch to 5th grade to worked with teachers willing to collaborate and specialized in teaching social studies (her passion). D also enrolled in a master's program in gifted education. Both moves led to expertise. Her colleagues shared ideas and students benefitted from the collaboration. The master's program provided knowledge of the range of student learning needs and instructional methods to challenge students.

A resourceful teacher, D strategically applied knowledge from a variety of sources to increase her expertise. D "discovered this method out of necessity. You review methods, you review philosophy, and always ask the question, 'Does this fit my teaching style?'" D mastered the art of curriculum design to engage students in critical and creative thinking. The first student, Tess, raised D's awareness of the learner characteristics and needs in her class during the first year of teaching. Another student, Jack, helped her see how family background and invisibility took away the "spirit" of another student, a few years later.

Tearing up, D described Jack as a student who was "always, always in trouble". A fifth grade student, Jack defied school rules and spent most of his time inside with his teacher as punishment, instead of outside with his peers during recess. School rules required students with behavioral problems or unfinished work to stay indoors during recess. D worked with Jack, discovered his gifts, and admired his spirit. Jack refused to do repetitive work, asking why he should complete 10 mathematics problems, when he

could show her his learning with the first five. D realized he was right, and reduced some of his assignments, causing Jack to feel recognized and valued.

Jack's mother cried during a conference when she learned D appreciated Jack. Later D learned more about Jack: he witnessed the murder of his father at a tender age. Clearly troubled, Jack acted out his problems. Later in the school year, a district-administered test and screening process identified Jack for gifted education services. Jack sobbed, "Everyone always told me something's wrong with me. And when I got the letter [about my acceptance], someone told me now something is right with me." Jack finally felt like he mattered.

On the last day of class, after the others students left, Jack sobbed in D's classroom. Showing his emotion about the year and D's effect on him, Jack let go and shared his grief at leaving her class. D later worked with Jack during his secondary years, still trying to convince him to engage in learning, and fostering his growing sense of efficacy.

Two students taught D powerful lessons about teaching. Tess raised D's awareness of the need to meet the needs of a wide spectrum of student needs and interests through recognition of learning needs and the strategic delivery of differentiated plans and resources. Jack grabbed her heart and convinced D of the value of relationships in teaching. D valued Jack's spirit and respected his identity in a nurturing relationship. D changed her attitude too. She learned to view student defiance potentially as a legitimate concern or a creative expression of identity, instead of a willful disregard to school rules. D realized student behavior might even reflect a certain logical response to circumstances. She now takes time to get to know students and learn about them on a deep and personal level. She understands why students make certain decisions, sometimes when they appear to be acting against their own interests.

D's personal pedagogy and expertise grew from these powerful experiences, learned during the early years of teaching. She now shares her expertise in differentiated curriculum, class management, empowering relationships, and passion for her subject and students, as a professor and mentor in higher education. Applying the REAL model of teacher learning (Noonan, 2013) illustrates how D's experiments in teaching led to increased expertise.

Becoming a REAL Teacher and Professor: Analyzing D's Story

A quick glance at the REAL model shows how D's "reading" and "reflection" on Tess's learning needs resulted in experimentation and the adoption of new attitudes and approaches to learning (Noonan, 2013). D described "ramping" up her approach, and incorporating more choices and challenging activities in her curriculum design and stations. The recognition of learning needs helped D realize the importance of meeting individual needs – an attitudinal change led to the adoption of more innovative approaches. The experience caused D to reflect on the entire spectrum of learner needs, and search for creative ways to meet student needs.

Collaboration represented an important aspect of D's growing expertise. As a teacher invested in learning and leading (the last letter of REAL; Noonan, 2013), D understood her pathway to success involved collaborating with others and making changes in the curriculum to make it her own. D's investment in resources for student

learning resembled a similar pathway used by T to find new ways to engage learners. D's desire to gain more knowledge through enrollment in higher education to address student needs revealed her appreciation of a gap in her knowledge, and a desire to grow in the profession.

Jack taught D how to care about students. D "read" and "reflected" on Jack's circumstances, experimented with ways to motivate him to engage in learning, and reduced his disruptive behavior. D used knowledge of Jack as a valued person in her class to recognize his individuality and affirm his spirit. Her affirmation unlocked Jack's talent blocked by his significant sorrow over his life circumstances. D's observations regarding the success of her efforts and active student learning led her to make a lifelong commitment to using project-based learning in teaching with young students and adult learners. When asked to make a list of principles and practices associated with effective teaching, D offered the following list: "active learning, developing the creative ability of kids, critical thinking, grouping for instruction, project-based learning, performance assessment, and of course, caring about students."

Another story illustrates how a novice teacher made an accidental discovery while supervising a service-learning program during the summer months. W learned one of his most important lessons about teaching from 14 year-old students. The story, submitted in response to a reflective assignment in graduate school (used with permission), illustrates how teacher learning profoundly affects practice.

Accidental Discoveries: How W Became a Real Teacher

I asked students in a supervision class to tell a story about a time when they experienced a significant episode of learning resulting in substantial change. I adopted the same question used in my interviews with expert teachers, only this time I asked students to write a story about their experience. I first share W's story and then analyze it using the REAL model of teacher learning (Noonan, 2013). If pressed to give this story a title, I think it might be called, "The Real Meaning of Service Learning."

> During the summer months, I worked as the director of a service work program. I assigned 50 students weekly to complete meaningful community projects. On one particular week, I assigned a small group of 12 eighth graders to repair and paint a 91-year old man's house.
>
> I met with the homeowner and soon learned he was a great guy. He lived alone but was alert and loved to talk. We discussed what he wanted, and he was happy with whatever I could provide. I later discussed the project with the housing inspector and was given a specific list of items needing attention. I ordered and delivered the materials and met with the homeowner one last time. I warned the homeowner about the teenagers arriving bright and early the next morning, and told him to expect lots of noise.
>
> Talk about failure, no matter what time of the day I showed up to visit this job site, little was getting done. An adult leader supervised the job and simply shrugged when I asked what was happening. Every time the students got to work, they would slowly disappear and end up in the house talking to the elderly man. I had a plan and these kids didn't seemed to care. I felt inadequate and stuck. The

week ended and I apologized to the housing inspector.

When I asked the students why they let me down and did little to fix the man's house, a female student said, "Because it wasn't important." I wondered how a 14-year-old student felt qualified to make a decision like that. I asked for clarification and was told a story I was too busy to have recognized at the time.

The students explained the homeowner was dying. He had cancer and he had only a year, maybe a little more, to live. He wasn't in physical pain, but he knew this was his last summer. When the kids arrived, they started their work. When they took their first break, the homeowner brought his chair outside to sit with them. When they grabbed a scrapper or brush, he would ask them to come into his house to see something. The man had a houseful of memories and he took the whole week to tell his stories to the students.

The homeowner and his wife lived together for 70 plus years until she died. Their only child died in infancy. The elderly man didn't have any close family or friends, most were long dead, and his only companion was his cat. He didn't care about his house because it was to be willed to a distant relative he hardy knew, but he worried about the cat.

When the students would try to go back to work, the man remembered something else important, and so the students never felt comfortable leaving the house or the homeowner alone. The man told the students there was nothing worse than being alone, and he couldn't imagine leaving his cat with no one to care for it. He thought it might be best to put his cat down. The man didn't want his cat to suffer and he talked to the students about his decision.

As if to punctuate the story, one eight grader asked my why I hadn't noticed the elderly man standing in his doorway crying, when we left the last day. Boy did I miss this one! I was so wrapped up with my vision and goals, I didn't take the time to ask or listen to a small group of 14-year-olds. I learned to never be in such a hurry that I lose track of the human aspect of my students. In many ways they are probably more in tune to the important lessons of life than I am, and it is often worth my time to listen. There are times you can't move forward until you deal with the problems of the day.

The Human Aspects of Teaching: Analyzing W's Story

W made an accidental discovery about teaching and learned an important lesson from his students. Using the REAL model to analyze the story (Noonan, 2013), W initially "*read*" the situation incorrectly, making erroneous assumptions about the reason students failed to complete the house repair and painting of the elderly man's home. He experienced "a nagging problem" in his practice, feeling disappointment about his students' failure to complete the service project. His inquiry about the situation and subsequent *reflection* caused him see things differently. Students offered a different type of "service" to a lonely man, spending five days listening to an elderly man discuss his life and concerns. The students valued his existence as a human being, and met his need to talk to about his life through attentive listening.

W's reflection on the experience caused him to *change his attitude toward his students*. His students responded more sensitively to a situation than he imagined. He

learned his students possessed good judgment and sound values, even at a young age. The reflection on this experience changed his attitude about his students and role as a teacher. W vowed to listen to students and learn from them. This breakthrough in his understanding about the importance of listening to students led to many experiments in teaching. W strove to include student views and concerns in his lessons. He changed both his attitude and approaches to teaching.

When W encountered the next situation requiring "reading" and "reflection", he considered the students' point of view, helping him become a "real" teacher. W's personal pedagogy included a respectful and a compassionate response to students and active learning. W crossed a threshold and saw new opportunities for engaging students in learning. Respectful and genuine listening to students served as the foundation for successful relationships with his students.

The stories told by T, D, and W illustrate the lasting effects of early learning on expertise. In the last section of my paper, I show the relationship between the REAL model of teacher learning (Noonan, 2013) and threshold theory (Meyer & Land, 2003/2005), including how the combination of action research and threshold theory contribute to understanding about the experience and power of teacher and professor learning.

Combining Threshold Theory and the REAL Model of Teacher Learning

As teachers/professors (and other professionals) detect problems in practice and struggle to resolve them, they feel stuck and often engage in multiple attempts to understand and solve problems. Threshold theory (Meyer & Land, 2003/2005) suggests some problems must be resolved to experience a threshold crossing in a discipline or field. Successful resolution results in a shift in knowledge and changed identity. Teacher learning leads to increased competence and greater authenticity in the role of teacher. Combining the stages of teacher learning in the REAL model with threshold theory illustrates how the experience and successful resolution of a nagging problem in practice results in increased expertise.

Threshold crossings (Meyer & Land, 2003/2005) concern "typical" challenges, such as, class management, managing demanding workloads, learning a curriculum, forming relationships with students, providing an organized and sequenced approach to learning, and more. Figure 2 illustrates how informal action research described in the REAL model incorporates threshold crossings and concepts in teacher learning.

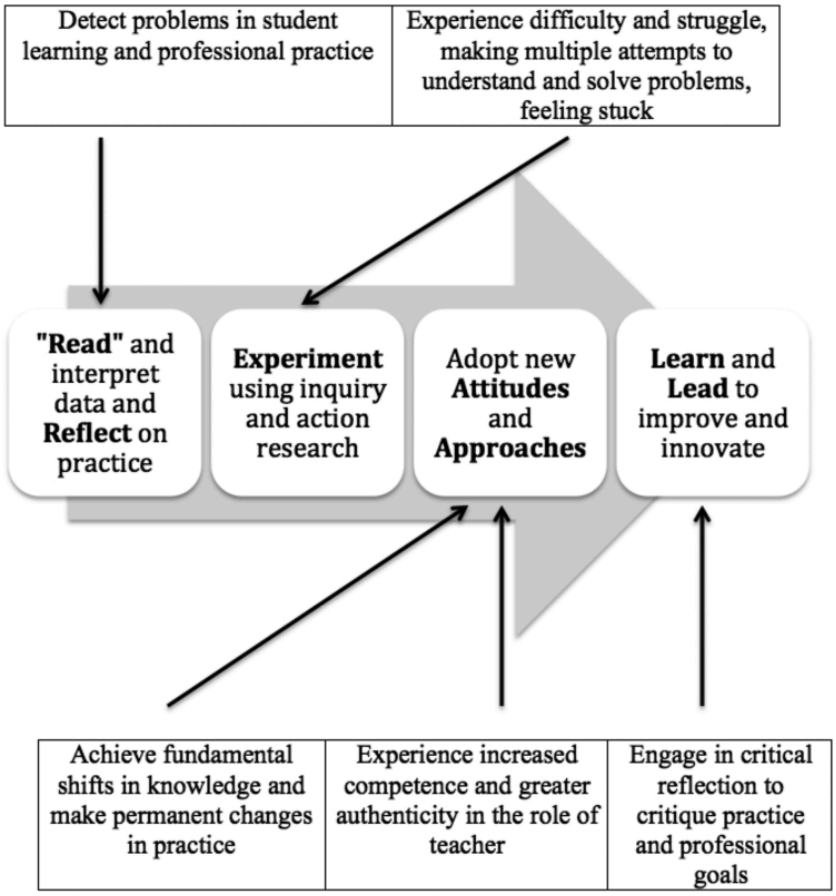

Figure 2. The REAL Model of Teacher Learning and Threshold Crossings and Concepts (Noonan, 2013, p. 43)

Experiments in teaching predictably lead to changes in attitudes and approaches (Noonan, 2013). These changes represent substantial growth in expertise. As novice teachers become proficient, they learn what to do and why. The knowledge gained leads to a changed identity, helping a struggling teacher or professor increase their professional knowledge (what they "profess to know"; p. 13) as a result of a powerful episode of learning.

As teacher and professors, we lead our students and field due to critical reflection on practice. A return to previous habits and attitudes represent a retreat in practice. We know better and sometimes make the same "dumb" (disturbingly unaware of my own behavior; Noonan, 2013, p. 53) mistakes again. This makes teaching endlessly fascinating, and at times, frustrating. Expert teacher and professors do not achieve a state of "expertise", but instead engage in a process of continuous improvement and innovation to *grow in expertise* as a result of continuous learning.

Summary

I described and illustrated the powerful effect of teacher learning on the development of expertise, providing three examples of teacher learning from two in-depth interviews and one graduate student response to a reflection on practice. I used an informal model of

action research typically experienced by teachers to reflect on their experience (called REAL; Noonan, 2013), illustrating how teacher experiments with alternative approaches led to learning and expertise. I also illustrated how threshold crossings lead to the acquisition of threshold concepts – central principles and practices associated with effective teaching (Meyer & Land, 2003/2005). Some nominated principles and practices from my study of expert teachers include: caring relationships, engaging student interest by making connections to their experience and culture, using experiential learning to stimulate student interest and desire to learn, and providing feedback to support student learning.

Most teachers/professors might easily list the typical challenges experienced and the "solutions" leading to successful teaching. However, individual experiences in resolving these challenges result in the specialization of teachers in certain areas of expertise. This might involve nurturing relationships, innovative methods, organizing the content using an "issues" approach, and more. This unique combination of approaches results in a personal pedagogy for effective teaching and learning (Noonan, 2013).

My interviews with expert teachers revealed how unique experiences and creative solutions resulted in the adoption of preferred styles and approaches to teaching. Expert teachers achieve a unique and strategic approach to teaching and routinely reflect on their practice to improve and innovate.

I developed the following definition of threshold crossing and concepts as it applies teacher/professor learning: "Threshold crossings and concepts in teacher [and professor] learning and expertise maybe defined as (1) *fundamental shifts in knowledge and understanding* (2) *achieved through critical reflection and learning*, resulting in (3) *an altered professional identity* and (4) *permanent change in practice"* (Noonan, 2013, p. 42). The definition describes what happens when REAL teachers learn.

An exploration of how teachers/professors learn reveals the challenges in professional practice, including the initial struggle of novices to acquire knowledge to achieve proficiency as well as the recurring struggles in practice encountered by experienced and expert teachers. An awareness of how real teachers and professors learn through informal action research reveals the need for continuous reflection and inquiry in becoming and being an expert teacher/professor. Adopting narrative inquiry as a professional development tool may provoke thoughtful discussions of effective methods and a new appreciation for the unique contributions of expert teachers to student learning and the profession.

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