5-7-2020

Threshold concepts and transfer: A curriculum mapping tool for first-year writing

Kerry Smith
James Madison University

Threshold Concepts and Transfer: A Curriculum Mapping Tool for First-Year Writing

Kerry Smith

A Thesis submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

for the degree of

Master of Arts

School of Writing, Rhetoric and Technical Communication

May, 2020

FACULTY COMMITTEE:

Committee Chair: Dr Kurt Schick

Committee Members/ Readers: Dr. Jen Almjeld and Dr. Laura Miller Schubert

Table of Contents

List of Tables

List of Figures

Abstract

Writing scholars Adler-Kassner and Wardle, Beaufort, and Devet have placed pragmatic learning goals of transfer at the core of education's purpose. This thesis shares the assumption of pragmatic learning goals for education and examines these goals for transfer through Meyer and Land's theory of threshold concepts in the context of first-year composition courses. Covering Meyer and Land's foundational work on threshold concepts and Thorndike and Woodworth's groundbreaking research that later informed Perkins and Salomon's work in transfer, this thesis aims to contextualize this literature within and operationalize it for first-year writing programs' curriculum course design through the creation and testing of a curriculum mapping tool.

Introduction

This thesis provides a systematic review of the history and literature pertaining to threshold concepts and transfer of learning. In addition to this, I offer a mapping tool for faculty to assess course material for departmental threshold concepts and teaching-for-transfer (TFT) techniques. This extensive review of scholarship provides a foundation for future research on threshold concepts and transfer techniques in first-year writing courses and beyond. The primary purpose set forth by this thesis is to design a mapping tool that can be used to align first-year writing curriculum with transfer-focused learning goals. This is inspired and informed by James Madison University's First-Year Writing Department and their recent program revisions aimed at supporting a curriculum centered on threshold concepts and transfer of learning.

This goal, and the broader goal for writing studies, is set forth in Adler-Kassner and Wardle's (2015) book *Naming What We Know:*

> If we want to actively and positively impact the lives of writers and writing teachers, we must do a better job of clearly stating what our field knows and helping others understand how to use that knowledge as they set policy, create programs, design and fund assessments, and so on. (p.7)

To put transfer theory into practice, we need to articulate what it is we know, how we know it, and offer models for using writing knowledge to help instructors, students, and writing programs.

Goals of the Curriculum Mapping Tool

The curriculum mapping tool offers a new framework for understanding, assessing, and changing courses and programs. My goal is to offer writing instructors a framework to help them understand, evaluate, and revise their course, but there are future implications as well. This tool helps faculty map their course material to their program's learning goals and breaks down the current core threshold concepts and the reinforcing transfer techniques used based on research and literature. In Scott and Wardle's (2015) discussion of building their undergraduate rhetoric program, they explain how their "faculty have recently begun to more strategically use threshold concepts as a helpful frame for clarifying, linking, and distinguishing among courses and other programs' elements" (p. 123). Not only can this curriculum mapping tool offer a new way for instructors to understand and revise their courses, but it could also offer a way for programs to become more cohesive and general education courses to work together to teach core transferable threshold concepts.

Checklist Warning

Before I outline the overall organization of this thesis, I want to address some apprehension in the field of creating a curriculum mapping tool ("mapping tool") such as the one I discuss in Chapter 5. In the beginning of their book, Adler-Kassner and Wardle (2015) warn against using threshold concepts as a checklist for course instruction and design:

> There is a difference between naming and describing principles and practices that extend from the research base of a discipline, as this book begins to do, and stripping the complexity from those principles in order to distill them into

> convenient categories to which generic attributes can be associated or attached. Any attempt to create a 'learning checklist' with these (or any other) threshold concepts would, in fact, engage in this complexity stripping" (p. 8)

While I acknowledge the warning offered by Adler-Kassner and Wardle, I believe there is value in providing instructors with a detailed, research-based curriculum mapping tool. The tool I propose does not seek to strip the complexity; in fact, Chapter 1 and Chapter 3 address at length the complexity and cross-disciplinary theory of both threshold concepts and transfer.

The truth of the matter is, most teachers do not possess ample free time to overhaul their entire course structure and material in a single semester. And often, a sort of checklist for course design can result in the addition of un-sequenced activities or assignments that have not been scaffolded for optimal learning conditions. The mapping tool I offer does not ask for instructors to add additional course content, it simply prompts instructors to examine and assess where their course is *currently* as it relates the core writing threshold concepts and transfer. The tool can act as a framework for understanding and identifying their course's threshold concepts and transfer strengths and weaknesses and help identify key areas for an intervention. A model, such as this mapping tool, can be practical and concise without oversimplifying the complex idea of threshold concepts. Writing studies has robustly investigated threshold concepts and transfer in order to define as a field what we know about them. I believe it is time to take what we know and use it to help instructors and students.

This mapping tool is not a mandatory checklist of simplified requirements that satisfy some abstract criteria for a program's learning goals; it is a flexible tool that can help instructors and programs assess current teaching practices for future interventions. Scott and Wardle (2015) explain how using threshold concepts offer a "flexible curriculum structure" (p. 123). Threshold concepts offer a tool for faculty to agree on their core concepts and goals with a framework that accounts for the interrelated, complex nature of learning:

> Such curricular planning can be imagined as flexible alignment rather than standardization; the nature of threshold concepts offers more flexibility than student learning outcomes while still enabling faculty members to define and articulate the emphases, boundaries, and interrelationships among a set of courses and experiences. (p. 123)

This mapping tool offers a flexible curricular framework for programmatic and individual assessment of course design and materials.

Overview of Thesis

In this thesis, I provide a review of threshold concepts and transfer and conclude by introducing a pre-assessment mapping tool for course design. Chapter 1 reviews the history and theory of threshold concepts, and Chapter 2 speaks directly to threshold concepts in the writing classroom. Chapter 3 reviews the history and theory of transfer, and Chapter 4 addresses transfer techniques in writing classrooms specifically. Chapter 5 introduces the mapping tool, how to use it, and offers an example using my own course material. Chapter 6 details future research opportunities for the mapping tool.

Chapter 1 and 2 explain the history, theory, and writing-related threshold concepts. Chapter 1 provides the history and definition of threshold concept and why they are troublesome for students. Chapter 2 covers specifically the core threshold concepts determined by the field as relevant to writing. These chapters were informed primarily by the work of scholars Meyer and Land (2003), Adler-Kassner and Wardle (2015), and Flanagan (2019).

Chapter 1 and 2 highlight two important features of threshold concepts: they are inherently troublesome and numerous. In order to understand how threshold concepts work, there needs to be an understanding of the role of troublesomeness. While each discipline has different and copious core threshold concepts for their field, this thesis covers only the broad writing-related threshold concepts as identified by writing studies scholars. Those two aspects of threshold concepts are the core pillars for Chapter 1 and 2.

Chapter 3 and 4 shifts in topic and introduce transfer of learning, Chapter 3 explains transfer's relevance to first-year composition (FYC) and its history and definition, including misconceptions and various nomenclature in transfer scholarship. This chapter goes on to discuss central kinds of transfer that occur in education and provides an in-depth examination of two core taxonomies of transfer created by experts. Chapter 4 transitions from a broad discussion of transfer to the specific techniques that facilitate positive transfer for students and common ways in which transfer of learning is impeded for students. These chapters were informed primarily by scholars Thorndike and Woodworth (1901), Perkins and Salomon (1988, 1992, 1999), Haskell (2001), and Beaufort (2007).

Chapter 3 and 4 highlight an important aspect of transfer: the levels, types, and kinds are interrelated and overlapping resulting in complex taxonomies. Still, I provide these taxonomies because they are central to a deep understanding of transfer and how the mind functions and learns from the past. Likewise, many of the transfer techniques share similarities, but I think it is important to separate them by their small distinctions. Transfer is complex and is more digestible when examined through the taxonomies described by Haskell and other scholars. This is why I have chosen to include some of the more complex theories of learning.

Chapter 5 and 6 transition from theory to practice. Chapter 5, using the review of literature from the previous chapters, introduces a mapping tool to help faculty examine their courses, and potentially writing programs, through the growing framework of threshold concepts and transfer. The mapping tool includes the core threshold concepts to writing and the transfer techniques that reinforce those concepts. Finally, I end with Chapter 6 which discusses the future research possibilities and questions to further investigate. The contents of Chapters 5 and 6 are both provisional but flexible to change. This thesis is just one small, but necessary, step towards future threshold concepts and transfer research.

This has been a colossal undertaking, but I believe I am a better student, teacher, and writer as a result. Through this process, I have identified core threshold concepts for me personally as a learner and examined the ways in which I use, and do not use, transfer techniques for my own course. My goal for all of this is to help students. As my advisor explained to me, "our job is to assist students in their learning in whatever way we can." This is my way.

Chapter 1: The History and Theory of Threshold Concepts

In this chapter, I will discuss the history and theory behind the term "threshold concepts" and the specific ways in which these concepts can pose difficulties for students. Threshold concepts, whether explicitly stated or implicit, are what comprise the core foundation of any discipline or department; they are the pillars that support a student's conceptual understanding of a subject. Without understanding these core concepts, a student cannot continue on their learning path.

This thesis used the theory of threshold concepts because of their specific focus on writing knowledge. Threshold concepts, in short, can be described as "expert knowledge." I posit that writing knowledge is particularly transferable. This is echoed by Nowacek (2019):

> Although Adler-Kassner and Wardle (2015) do not explore the question of transfer explicitly or in depth, the very premise—that the lens of a threshold concept might be transformative and irreversible—**suggests that expert knowledge may be more portable knowledge**, capable of transforming an individual's understanding of writing across many contexts. (p. 205, emphasis added)

To reiterate, threshold concepts are expert knowledge, and in the composition field, that knowledge is then writing knowledge. That writing knowledge is central to understanding the discipline as a whole. When learned, that writing knowledge can transforms a student's perspective of writing. Then, that writing knowledge and perspective can be transferred to

other writing contexts the student encounters. In this way, threshold concepts inherently possess a transferability for students.

Defining Threshold Concepts

The term "threshold concept" was developed by researchers Meyer and Land (2003), stemming from their work during a national research project on undergraduate education in the United Kingdom (Cousin, 2006). The research project examined characteristics of "strong teaching and learning environments" (Cousin, 2006) within five disciplinary contexts among various institutions of higher education. Through their interviews with experts in different disciplines, specifically economics, Meyer and Land found that the experts held specific concepts in their field central to the subject's mastery (Cousin, 2006). Threshold concepts (TCs) are core concepts that unlock passageways to previously unavailable ways of thinking and understanding. Meyer and Land explain this as a "portal" in which learners must cross through to progress.

The choice to use the term "threshold" has its roots in the discipline of anthropology and Latin. Land was influenced by anthropology's idea of the "rite of passage" deriving from the foundational text *Le rites de passage* by French anthropologist Arnold van Gennep in 1909 (McNamara, Roberts, Basit, & Brown, 2002). Rite of passage can be defined in the anthropological sense as, "recurrent patterns and sequences of crises in the development of the individual in a given culture" (Kinneavy, 1977, p. 1). These "sequences" are referred to as preliminal, liminal, and post-liminal. Scholars McNamara et. al (2002) define these stages in their piece discussing a modern anthropologic take on initial teacher training:

> In the first phase of passage, van Gennep depicted the individual as symbolically severed from a previously fixed point in the social structure and entering as traveler into the second, suspended or ***liminal***, phase between past and future identities. The traveler, upon successful negotiation of this second phase, would cross the ***threshold*** and be (re)incorporated into society with newly designated status." [emphasis added] (p. 863-864)

As it relates to my discussion of threshold concepts, I will focus only on the liminal stage.

Liminal, or liminality, comes from the Latin word *limen* meaning threshold, entrance, or doorway. In anthropology, liminal refers to the middle phase in the sequence of development. This particular stage is associated with ambiguity, a sort of social limbo, that occurs before proceeding to a new social status (Turner, 1974, p. 57). Land and Meyer, inspired by this anthropological term, describe a discipline's central concepts as "a threshold that people kind of have to move through" (as quoted in Rhem, 2013). Meyer and Land use the terms "liminal" or "threshold" to describe the stage of a learner in the process of stepping through confusion and unknown and arriving at a stage of understanding. Informed by rite of passage and liminal stage, Meyer and Land began using threshold concepts to describe what they encountered in their research.

Meyer and Land (2003) offer the example of *heat transfer* as a threshold concept for cooking. While pots, pans, and ingredients are involved, it is the "process of using heat" (Meyer & Land, 2003, p. 1) that is fundamental to cooking. In understanding the concept that cooking is centered on operating heat in "various degrees and sources" (Meyer & Land, 2003, p. 1), one then thinks about and understands cooking in a different way than

previously; cookery, or the "discipline," is now understood to be centered on the strategic regulation of heat and not solely about the utensils and ingredients used in the process. Thus, the perception of cookery is transformed by understanding the threshold concept of heat. In order to further describe threshold concepts, Meyer and Land defined five characteristics of threshold concepts: transformative, irreversible, integrative, bounded, and troublesome.

Out of the five, **transformative** is a more embodied characteristic—meaning, when a student understands a threshold concept, there takes place a major shift that impacts identity, subjectivity, perception, performance, and affect. This "significant shift" (Meyer & Land, 2003, p. 4) in perspective that follows understanding a threshold concept impacts students' attitude towards and performance in a particular discipline. The transformation of perspective is difficult to undo, which connects to the next characteristic.

Meyer and Land (2003) describe the **irreversible** characteristic of a threshold concept as a perspective that is not easily changed or unlearned, unless done so with considerable effort (p. 4). Michael ("Mick") Thomas Flanagan is an experienced researcher of threshold concepts in the teaching of electrical engineering ("UCL", 2018). Flanagan, an honorary lecturer in the Department of Electronic Engineering at the University College of London, is the author and creator of a website dedicated to the introduction and bibliography of threshold concepts. In it, Flanagan includes an example of the irreversible characteristic of threshold concepts from the Academy of Art University in San Francisco. The example is an image of the well-known FedEx logo. While some may not notice it immediately, there is an arrow embedded in the logo in between the "E" and the "x." Once

an observer is aware of the arrow embedded in the logo, it can be extremely difficult to unsee the arrow in subsequent observations of the FedEx logo. This is one way to understand the irreversibility of a threshold concept.

While the FedEx logo offers a "sticky" heuristic to understanding the irreversible feature, it's important to consider the complexity of threshold concepts. The instantaneous recognition of the arrow is not wholly synonymous with students' mastery of a threshold concept; it is not nearly as simple or linear. Land, Cousin, Meyer, and Davies (2005) introduce the idea of "learning as *excursive"* [emphasis in original] which characterizes students' learning processes as a journey (p. 60). While learning outcomes provide an intended direction, there will also be deviations and unintended outcomes. Glynis Cousin (2006) adds to this discussion saying, "In short, there is no simple passage in learning from 'easy' to 'difficult'; mastery of a threshold concept often involves messy journeys back, forth, and across conceptual terrain" (p. 5). While students' learning paths are divergent and complex, threshold concepts, once learned, are often unable to be forgotten.

Not only are threshold concepts irreversible once learned, but they are also **integrative**—meaning, they are likely to assist in connecting previously unseen aspects of a subject. Meyer and Land (2003) describe this as, "the previously hidden interrelatedness of something" (p. 4). The integrative feature comes after a student understands a threshold concept. Land, Cousin, Meyer, and Davies (2005) explain how this integration looks like in action:

> Once a student has internalised a threshold concept they are more able to integrate different aspects of a subject in their analysis of problems. Students who have not yet

> internalised a threshold concept have little option but to attempt to learn new ideas in a more fragmented fashion. On acquiring a threshold concept a student is able to transform their use of the ideas of a subject because they are now able to integrate them in their thinking. (p. 54)

Integrating multiple aspects of a subject can be transformative for a student's understanding of a discipline (Land, Cousin, Meyer, & Davies, 2005, p. 54) —meaning, their use of ideas changes as a result of learning a new threshold concept and integrating that with other concepts to alter their way of thinking about the subject.

For example, when a student understands the threshold concept of genre (a recognizable form of writing that responds to a recurring social act), their understanding of "purpose," as it relates to the rhetorical situation, may be transformed. If genres respond to recurring social actions, the student may then deconstruct the genre in order to understand a rhetor's particular *purpose* by examining the action that genre is responding to. In this way, the student's understanding of genre integrates with their understanding of purpose.

This feature of integration can also be problematic for two reasons: first, because students are studying a subject as a minorly tangential part of their degree and don't see themselves as a student of that subject; and second, because the integrative nature of threshold concepts complicates the world around them (Meyer and Land, 2003; Land, Cousin, Meyer, and Davies, 2005). Grasping one threshold concept alone can be difficult, but to also understand the interrelated concepts of a subject can be exponentially difficult for students entering a discipline.

The distinctions and boundaries between each respective discipline connects to Myer and Lands (2003) fourth feature of threshold concepts: that they are **bounded**. Weimer (2014), a professor of teaching and learning, discussing the bounded characteristic, states that "Thresholds border with other thresholds, and those boundaries and frontiers come to define disciplinary areas and academic territories." Threshold concepts are often, but not always, bound to a discipline or "conceptual space" (Meyer & Land, 2003, p. 5). Boundedness as a feature may also extend to discipline's specific language and terminology.

Flanagan and Smith (2008) demonstrate this using the example of "deprecate," a term that's common usage is associated with a negative connotation; however, in the computing world it simply means "to let an aspect of programming gently wither away" (p. 101). Within the bounds of that discipline, computing, the term means something different than defined outside the discipline—meaning, that term is bound by the discipline as some threshold concepts are, though not always, bound to specific disciplines.

An example from the rhetoric and composition field would be the term "rhetorical." Outside of the discipline, this word if often used as a shorthand for thoughtful or emotional speech. When in the context of writing and rhetoric courses, "rhetorical" means to shape a message, subconsciously or consciously, to address the needs or expectations of a certain audience; in that way, the term is bounded to the discipline.

The bounded, integrative features of threshold concepts make them especially complex for students to master, a characteristic that Meyer and Land (2003) describe as **troublesome**. Simply put, this means that threshold concepts are difficult for students to understand (Weimer, 2017). This is due to the complex aspects of troublesome knowledge:

ritualized, inert, conceptually difficult, alien, and tacit to name but a few. Perkins (1999) defines troublesome knowledge as, "knowledge that is conceptually difficult, counter-intuitive or alien." The troublesome nature of threshold concepts is a widely discussed aspect of threshold concept scholarship. Because of this, in the next section, I will return to the conversation of why threshold concepts are troublesome and discuss more in depth the specific aspects of troublesome knowledge mentioned above.

Along with the five characteristics most commonly associated with threshold concepts, two additional characteristics are often added: **discursive** and **reconstitutive** (Land et al, 2005; Rhem, 2013). The discursive feature is the extended or enhanced use of language that may occur as a result of passing through a threshold concept (Meyer & Land, 2003; Meyer & Land 2005; Flanagan, 2019), while "reconstitutive" seems to build off of the characteristics of integrative and transformative (Rhem, 2013). Reconstitutive, or reconstitution of self, is a description of the repositioning that may occur of one's self and the subject of study, which goes beyond a cognitive shift and addresses an ontological shift in the learner. These two features of threshold concepts are more of an amalgamation, extension, or combination of the previous five characteristics but are worth noting.

Why They are Troublesome

The "troublesome" nature of threshold concepts refers to the various types of knowledge that pose a particular amount of difficulty for students. Threshold concepts can be inherently challenging (Adler-Kassner, Majewski, & Koshnick, 2012; Clark & Hernandez, 2011; Meyer, Land, & Baillie, 2010). Perkins (2010) defines troublesome knowledge as "the characteristic ways in which learning poses challenges" (p. xliii); however, it is in these

encounters with troublesome knowledge that students are pushed towards a new way of learning and understanding. Troublesome types of knowledge can result in students getting "stuck." In fact, helping students to understand why threshold concepts are troublesome is a key to getting them unstuck. Timmermans and Meyer (2019) describe the transformation that is possible when students encounter troubles in learning threshold concepts:

> Teachers can be encouraged to create opportunities for students to confront the counter-intuitive, alien, or unsettling aspects of TCs – the very aspects which may cause learners to 'get stuck'. This 'stuckness' may prompt students to enter a liminal state, triggering a potentially developmentally productive type of dissonance felt not only at the cognitive level, but also at the affective, epistemological, and ontological levels. (p. 362-363)

Types of troublesome knowledge push the boundaries of student understanding and are not in opposition to learning a threshold concept but part of the process.

Threshold concepts push students towards unfamiliar conceptual areas and this can cause discomfort, confusion, and pushback. Understanding the troublesome aspects is integral to successfully introducing threshold concepts in a classroom setting. In this section, I will further discuss the specific types of troublesome knowledge and troublesome language mentioned above.

The Troublesome Kinds of Knowledge

Perkins, an emeritus professor at Harvard University, is one of the most cited in threshold concept scholarship ("Faculty and Research," n.d.). In Perkins' (1999) "The Many Faces of Constructivism," he describes different constructivist approaches for the different

types of knowledge. While there are many types of troublesome knowledge, the ones I will focus on in this section are as follows: ritual, inert, conceptually difficult, and foreign (or alien), and tacit. Also, important to understanding the difficulties students face when learning threshold concepts is the concept of troublesome language which I will discuss at the end of the section. Perkins' seminal piece offers a foundation for instructors to understand the specific ways in which these types of knowledge can be troublesome and provides ways to address it in the classroom.

Ritual Knowledge

"Columbus sailed the ocean blue in 1492." This common adage, from elementary or middle school, represents **ritual knowledge**. Ritual knowledge, as Perkins explains, "has a routine and rather meaningless character" (p. 8). It is a "call and response" type of knowledge that often lacks depth, context, and meaningful connections, similar to the writing rule "I before E except after C." Students can recite this rule in class autonomously until it becomes a reflex. This reflex is isolated from a true writing context and in their own writing they are unable to correctly apply the rule in action.

To avoid the autonomous nature of ritual knowledge, Perkins recommends teachers surround ritual knowledge with meaning: a group discussion, a lecture that provides context around a certain date or name, or problem-solving activities (p. 9). Hill (2010) also suggests that making knowledge relevant to the learner or highlighting other aspects of the knowledge (p.18). Ritual knowledge can hinder students' understanding of threshold concepts. This sort of knowledge is situated at a surface level, autonomous response that goes without deeper interaction or conceptual understanding. This knowledge swims around the mind, not

meaningfully connected or situated within a context. This, then, is how ritual knowledge can turn into inert knowledge.

Inert Knowledge

This sort of knowledge sits in the corner of your brain and, once summoned by a particular moment, can be recalled. This describes what I am calling "untethered knowledge." It's not situated in personal experience or connection to related concepts. It resides in the mind's attic where students can "express but not use" (Bereiter & Scardamalia, 1985, p. 65). An example of this is *voracious*, a word not generally used in a young student's active vocabulary but in their passive vocabulary—words that are understood by students but not used actively in their own vocabulary (Perkins, 1999, p. 8). Students can recall inert knowledge for vocabulary questions on the SAT, but the connection to their own lives and concepts in the world around them is nonexistent. Usable knowledge can become inert when it is not kept alive through meaningful connection and active use.

Conceptually Difficult Knowledge

Perkins (1999) explains conceptually difficult knowledge as "a mix of misunderstanding and ritual knowledge" (p. 9). While students will encounter conceptually difficult knowledge in all disciplines, it is most common in mathematics and science (Perkins, 1999, p. 9). An example of this is the idea that heavy objects fall faster because they are heavier. This common misconception clashes with the scientific law that objects in motion will fall at the same rate. This sort of concept disrupts students' previously held understandings.

While more prevalent in the sciences and math, there is conceptually difficult knowledge for students in writing as well. A writerly example is shown through students' habit of mis-defining the word "disinterested." To students, it seems logical that placing "dis" in front of a word then makes that word the negative inverse of the original word. For example, "organized" is defined as systematic and orderly and "disorganized" is defined as disorderly, unorganized, jumbled. The "dis" placed before organized makes the term the direct opposite of the primary word's meaning; however, the truth is not the same for the words "interested" and "disinterested."

Student writers, and other less experienced writers, conflate the word and meaning of disinterested with "uninterested." Disinterested means impartial, unbiased, having no stake in the outcome, while uninterested means bored, unconcerned, or indifferent. The "dis" placed before interested does not serve the same function as the "dis" in organized. This seems to many students as counterintuitive and difficult to understand because it contradicts their commonly held belief that "dis" redefines the original word and translates as the direct opposite.

While students may memorize an explanation of this principle through ritual knowledge, when faced an explanation that, specifically when quantitative in nature, contradicts a commonly held belief, students encounter conceptually difficult knowledge. To help students handle this kind of troublesome knowledge, Perkins (1999) suggests helping students create their own "imagistic mental models" and introduce the qualitative aspects of certain concepts that are often dominated by quantitative explanations (p. 10).

Foreign or Alien Knowledge

Foreign or 'alien' knowledge comes "from a perspective that conflicts with your own" (Perkins, 1999, p. 10). This knowledge is unfamiliar to the learner and comes from a different culture, discourse, or perspective (Flanagan, 2019). It can be uncomfortable, and therefore troublesome, for students to interact with knowledge that is alien to them based on their perspective and context.

Perkins (1999) uses the example of Harry Truman and his choice to drop atomic bombs on two cities in Japan in 1945 (p. 10). Students reflecting on this historical moment from their current context may see Truman's choice as absurd. This is because, from their perspective, Truman's choice is void of context and deeper understanding of what was happening culturally at the time. While justifying Truman's choice is not the point, pushing students to consider societal, cultural, and contextual factors when encountering foreign knowledge is important in enhancing their understanding.

This contextual and cultural consideration extends to students' understanding of terms in certain writing contexts and disciplines. The word "deconstruct" in English classes often means to break something apart and closely examine it. In literature classes and writing classes, "analyze" calls for the same action. Specific lexis is used as a result of the culture and context of the different discourse communities within disciplines. So, a student who has been enculturated into the English discipline may consider the lexis of a rhetoric-based discipline as foreign and unfamiliar. This is because without the cultural and contextual understanding, unfamiliar discourse communities contrast students' perspectives from their current context.

Tacit Knowledge

Meyer and Land (2003) extend upon Perkins' (1999) discussion of troublesome knowledge and introduce what they term *tacit* knowledge. This kind of knowledge counters explicit and demonstrative types of knowledge—reciting a date or information that can be demonstrated in writing. Instead, tacit knowledge is often unspoken, personal, and implicit (Meyer & Land, 2003, p. 7). Examples of tacit knowledge would be riding a bike or speaking in one's native language; both actions that are done implicitly. Like a native English speaker instinctually using the articles "a" or "an" correctly in speech or writing. The usage of articles is acquired subconsciously and becomes tacit knowledge for native speakers.

Through his qualitative research on education in Australian universities, Ritesh Chugh examines tacit knowledge transfer and the role of academic supervisors. In his work, tacit knowledge is further defined:

> Tacit knowledge can be defined as skills, ideas and experiences that people have in their minds and are, therefore, difficult to access because it is often not codified and may not necessarily be easily expressed, e.g., putting together pieces of a complex jigsaw puzzle, interpreting a complex statistical equation. (Chugh, 2015, p. 128)

Because this type of knowledge happens unintentionally, there are opportunities for crossover with other types of knowledge that operate similarly.

Meyer and Land (2003) suggest that tacit knowledge is often compounded with other types of troublesome knowledge. When students encounter new knowledge, there are many ways forms of troublesome knowledge can overlap and compound during the learning process.

Troublesome Language

Along with tacit knowledge, Meyers and Land (2003) include *troublesome language* as an additional form of troublesome knowledge as it relates to threshold concepts. In each discipline, there exists a language and lexis that "specialty-interest groups" utilize in order to achieve their discourse community's goals (Swales, 1990, p. 24). Discourse communities play a role in students' discipline-specific knowledge acquisition and this includes learning the language and values unique to that discipline's definitions.

Meyer and Land (2003) explain how language becomes troublesome to a student entering a specific community, stating "The discursive practices of a given community may render previously 'familiar' concepts strange and subsequently conceptually difficult" (p. 9). Each discipline privileges and teaches "particular understandings and ways of seeing and thinking" (Meyer & Land, 2003, p. 9). With this comes specific definitions and conceptions of language that are rooted in the discipline's values and conceptual framework.

Troublesome language can often pose challenges for students entering a new academic discourse community. An example of this is the word "culture" and how that is defined and used in a discipline like anthropology compared to how it is defined in art history. Because of how each discipline looks and understands the world, the way in which they define and use the concept of culture may differ greatly and cause confusion for students.

An example from the rhetoric and composition field is the word "context." Students new to the discipline sometimes confuse "context" with the word "content." For the scholars and experts in the field, the difference between those two words is obvious and

significant to the rhetorical situation; however, for students, this may be the first time they are hearing these terms used in different distinct ways. In another course, using those terms interchangeable may not pose a significant issue, but in rhetoric, it conveys two very different concepts. In this way, the lexis of rhetoric and composition can be troublesome for students.

A Conclusion

Threshold concepts are inherently troublesome because they are transformative, shift learners' understanding, and challenge previously helped perspectives. In students' early years of education, knowledge can become ritualistic and in turn become decontextualized and inert, leaving students with pieces of information that lack depth and broader application. Along with that, as students encounter knowledge that is conceptually difficult, they begin to encounter a dissonance between their commonly held misconceptions and the factual basis of certain concepts. The challenges posed by these concepts begin to confront not only students' misconceptions but their very own perspectives and understanding of the world. This pushes students to address foreign or 'alien' knowledge that challenges the historical and cultural boundaries of their own context. Upon being pushed into conceptually unknown territories, students are faced with unfamiliar language that challenges their prior definitions and conceptual frameworks. Threshold concepts, in all these ways, can be troublesome, but it is because of these difficulties that students' understandings are forced to change.

Encountering troublesome knowledge is what pushes students towards that state of liminality that can transform and progress their understanding. Understanding the forms of

troublesome knowledge can help inform instructors' approaches to teaching threshold concepts. If instructors are aware of the ways in which students may encounter confusion, then the classroom instruction can be built around addressing the common forms of troublesome knowledge and explicitly acknowledging these roadblocks for students.

In the preface of their book *Threshold Concepts and Transformational Learning*, Meyer, Land, and Baillie (2010) discuss the role of "difficulty" in understanding threshold concepts: "Insights gained by learners as they cross thresholds can be exhilarating but might also be unsettling, requiring an uncomfortable shift in identity, or, paradoxically, a sense of loss" (p. x). In order to move through a state of liminality, students face the unknown, the confusing, and the uncomfortable. The 'difficulty' here is the bedrock of understanding a threshold concept. A student must encounter, address, and process that difficulty in order to grasp the concepts necessary to understand their discipline's core concepts.

Chapter 2: Threshold Concepts in Writing Classrooms

Meyer and Land (2003) characterize threshold concepts as discipline-specific. This has pushed scholars to identify the threshold concepts core to their discipline. Adler-Kassner and Wardle's (2015) germinal book, *Naming What We Know*, comprises the core threshold concepts specific to writing studies. In this book, Adler-Kassner, along with over forty other scholars, identify five core overarching threshold concepts each with their own set of related sub concepts. I will discuss these five core concepts along with a sixth metaconcept based on Adler-Kassner and Wardle's "Writing is an Activity and a Subject of Study" and Downs and Wardle's (2007) framework for first-year writing as an "Introduction to Writing Studies" course. The names of the below six threshold concepts are derived directly from Adler-Kassner and Wardle's book:

- Writing is a Social and Rhetorical Activity
- Writing Speaks to Situations through Recognizable Forms (or Genre Awareness)
- Writing Enacts and Creates Identities and Ideologies
- All Writers Have More to Learn
- Writing is Cognitive and Metacognition Activity
- Writing is a Subject of Study

I posit that these core concepts are relevant for any writing situation. This is because students can appropriately apply these concepts in other writing contexts, which make writing concepts more transferable than other disciplines' core concepts. For example,

understanding the concept that Writing Speaks to Situations in Recognizable Forms (Bazerman, 2015, p. 3) can help a student understand the purpose and function of a primary analysis paper in history in a way that their understanding of the core concept of electromagnetism from physics class might not. In this sense, our discipline's threshold concepts possess a particular transferability, that, say, physics or electrical engineering core concepts may not have. I argue that there is promising potential for the transferability of writing threshold concepts when student writing tasks span across many disciplines.

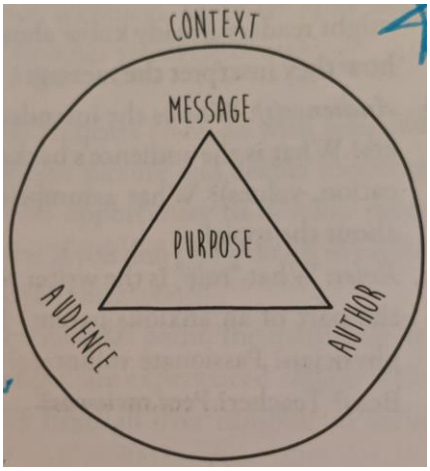
Writing is a Social and Rhetorical Activity

Inexperienced student writers see writing as an individual act, done in isolation, without outside influence. Instead of understanding that Writing is a Social and Rhetorical Activity (Roozen, 2015, p.17). This conception of writing is compounded by the way we talk about writing. Kevin Roozen (2015) calls these "shorthand descriptions" that simplify the complex act of writing into an isolated author creating a single text. Roozen uses the examples of "I am writing an email" or "I am writing a note" to demonstrate how the idea of a "single, lone writer" undermines the inherently social and rhetorical aspect of writing. He explains that these phrases suggest that "we are composing alone and with complete autonomy, when, in fact, writing can never be anything but a social and rhetorical act, connecting us to other people across time and space in an attempt to respond adequately to the needs of an audience" (p. 18). Writing is not an activity that is done in isolation, void of textual or human interaction.

In Lunsford's (2015) discussion of how writing "addresses, invokes, and/or creates audiences," she explains the interactional nature of writing represented by the *rhetorical*

triangle. To understand the rhetorical aspect of writing means to possess knowledge of the rhetorical situation. In their book *So What? The Writer's Argument,* Schick and Schubert (2017) offer students, or "apprentice scholars," a detailed look into scholars' reading and writing processes. In it, they represent various elements of the rhetorical triangle through an illustration (see *Figure 1*).

Figure 1 Rhetorical Situation



Note. Illustration of Rhetorical Situation from Schick and Schubert (2017).

Schick and Schubert describe communication as, "an interconnected framework involving author (writer or speaker), an audience (reader or listener), and a message (written text, speech, or image)—all interacting for some purpose within a specific social context or setting" (p. 7). Schick and Schubert use words like "interconnected" and "interacting" to further emphasize the interactional characteristic of writing. Lunsford expands this saying, "Writing is both relational and responsive, always in some way part of an ongoing conversation with others" (p. 20). The interactional essence of writing reflects the rhetorical nature of writing—specifically as it relates to audiences.

Whenever we write, there exists an audience, imagined or real. Roozen argues that, "Writers are always doing the rhetorical work of addressing the needs and interests of a particular audience, even if unconsciously" (p.17). Writing is inherently rhetorical. The question is then, how does knowing this help students? Lunsford addresses the concept of audience in the digital age and all the complexities that includes. She explains that students "shifting and expanding" their understanding of audiences, especially in this highly digital interactive culture, can push students to explore their own roles as audience, creators, and participants in this twenty-first century (p. 21).

Roozen offers a deeper understanding of instructors' role in teaching writing is a social and rhetorical activity: "If teachers can help students consider their potential audiences and purposes, they can better help them understand what makes a text effective or not, what is accomplishes, and what it falls short of accomplishing" (p. 18). Teaching the social and rhetorical nature of writing promotes rhetorical awareness, which scholars Beckelhimer, Griegel-McCord, and Ris (2009) define as an "awareness of the differences between various rhetorical situations and contexts." This awareness can help students make intentional rhetorical choices and recognize those choices and their effect in other texts and situations.

Along with the ability to identify and enact intentional rhetorical choices made for a writer's audience, the concept of Writing as a Social and Rhetorical Activity also includes an understanding of the referential, textual, and social nature of writing. While writing is, as Roozen states, "always an attempt to address the needs of an audience" (p. 17), it is also inextricably interactive with people and texts. Dryer (2015) extends upon this idea and explains that writing is also interacting with broader contexts, stating "the relations that

imbue a sentence with particular meanings come not just from nearby words but also from the social contexts in which the sentence is used" (p. 24). In this way, it is as if the rhetorical triangle transforms to more of a concept map, connecting all the ideas, influences, and relations between the textual, social and human interaction that occurs when we write.

Writing as a social and rhetorical activity is centered on an understanding that we are not writers in isolation. In teaching students that they are participating in ongoing conversations, interacting with previously stated ideas, or crafting a text for a particular audience, they will come to understand that writing is relational. Knowing the audience and recognizing the broader context in which writing is created is a transformative framework with which students can enter into new and unfamiliar writing contexts with an understanding that it is a rhetorical situation that can be examined and learned.

The threshold concept of Writing is a Social and Rhetorical Activity can benefit not only students but faculty and course administrators. Roozen (2015) specifically addresses these broader effects, stating:

> Understanding the rhetorical work of writing is essential if writers are to make informed, productive decisions about which genres to employ, which languages to act with, which texts to reference, and so on. Recognizing the deeply social and rhetorical dimensions of writing can help administrators and other stakeholders make better decisions about curricula and assessment." (p. 19)

This concept is not only valuable to writing courses, but any courses where there is writing. This concept in particular offers a framework for examining and understanding all of human

communication which can be incredibly valuable to students as they progress through their education.

Writing Speaks to Situations through Recognizable Forms (or Genre Awareness)

Writing Speaks to Situations through Recognizable Forms centers (Bazerman, 2015, p. 35) on the idea that we communicate, speak, and specifically write, in recognizable, performative forms where there are expectations, constraints, and enactments of disciplinarity. Just as in life we know to laugh at jokes and appear somber at funerals, writing also possesses similar approaches in expectations and decorum. Understanding of genre can benefit students because it transforms a pointless format or writing task into a meaningful form of writing that seeks to accomplish something specific.

Bazerman (2015) explains the broader purpose of understanding genre and its function for students, stating "Genre recognition provides a necessary clue for locating and making sense of any piece of paper or any digital display that comes before our eyes" (p. 36). The concept of genre offers students a framework for looking at writing, understanding writing, and successfully replicating various types of writing. A meaningful grasp of genre views genre as a form of enacting disciplinary, sourcing meaning from other texts, and embodying an author's purpose.

In each discipline, there are expectations for writers. For example, as Neal Lerner (2015) identifies, different citations are used in different disciplines because of the function and that discipline's purposes and values. When students take a history course, they are often tasked with writing assignments that a historian would write, like a primary source analysis.

In this sort of assignment, it is common for students to be required to use the field's preferred citation style—Chicago. Through writing in a genre used by the field and adhering to the citation style used by the field, students are then enacting that specific discipline through writing in that genre. In this way, genres can enact disciplinarity.

Genres are tools used by experts in a field to enact their discipline's values and purposes. Members of a discipline, or discourse community (see Swales, 1990), use genres to respond to the goals and purposes of the field. If students can see that writing in specific genres in specific fields is an act of partaking in that discipline, then the Chicago-style citation can become much more than a nuisance or superfluous requirement. Whether they are explicitly stated or not, there is meaning behind specific genre moves experts enact in their discipline's writing. Explaining these specific writerly choices and conventions to students as "genre" provides a way to distinguish between types of writing and view writing as an intentional act that responds in a recognizable form in a specific situation.

To understand the broad concept of genre is also to understand the ways in which all texts interact in order to create meaning. Kevin Roozen (2015) explains, "texts are profoundly intertextual in that they draw meaning from a network of other texts" (p. 44). Devitt (1991) provides an example of this through the intertextuality of tax documents. In referencing all the documents that are composed on tax accounting she states, "No text is single, as texts refer to one another, draw from one another, create the purpose for one another" (p. 336). These documents are a genre system—two or more genre sets that interact with each other in order to accomplish a purpose—and each text is inextricably connected to other texts in the system (Devitt, 1991, p. 340). For students, the idea of a

genre system and genre set could help them understand the interaction between a proposal for a paper topic and the final paper within the whole genre system of writing done in the course.

This idea of intertextuality can challenge students' perception of authorship and ownership as it relates to writing (Roozen, 2015, p. 46); however, it is a transformative core concept to teach that holds immense value. Roozen explains that, "For learners, recognizing that texts get their meaning from other texts is the first step toward thinking carefully and creatively about how forging and reconfiguring linkages to other texts and even other contexts can shift meaning in ways both subtle and profound" (p. 46). By introducing the threshold concept of genre and the ways in which texts within genres interact to create meaning, students are introduced to the ecological nature of writing. It transforms the one-dimensional perception of writing as a singular act with a singular purpose to a multi-dimensional perception of writing as an interactional act with a purpose that is embodied through genres that can enact disciplinarity. An awareness of genre can result in what Bazerman (2015) describes as "making deeper choices" as writers and students learning through the frameworks of various disciplines.

Writing Enacts and Creates Identities and Ideologies

The reason I have included the threshold concept of Writing Enacts and Creates Identities and Ideologies (Scott, 2015, p. 48) is because, in my own course, it has helped students understand the role and purpose of writing in the different contexts they will be exposed to in college and beyond. In my own course, I have many conversations with students about looking ahead to consider future writing tasks they will encounter in their

prospective disciplines. This includes discussions about the writing skills we use in class and how those may be applied *and* change in the different contexts they will encounter. We discuss different goals of different disciplines and how their genres of writing work to accomplish those goals as well as enact their disciplinarity. This concept has been an effective tool for students to begin understanding their own disciplines and the genres within. This also gets at the integrative characteristic of threshold concepts because the concept Writing Enacts and Creates Identities and Ideologies can help students with the concept of genre and Genre Awareness.

Scott (2015) begins his discussion of writing, identities, and ideologies with a definition of ideology, "An ideology is a system of ideas and beliefs that together constitute a comprehensive worldview. We make sense of the world around us *through* the ideologies to which we have been exposed and conditioned" (p. 48). Students engage in the acts of identity-building and ideology-forming through writing. When instructors recognize that and demonstrate as much to their students, then students can engage with class writing in a more intentional way and understand the future contexts they will later write in.

Ideologies are also attached to genres. If we see genre as social action, as Carolyn Miller (1984) suggests, then genres are actions that enact a specific discipline's values and goals. Bill Hart-Davidson (2015) describes genres as, "constructions of groups, over time, usually with the implicit or explicit sanction of organizational or institutional power" (p. 40). Genres are then sanctioned by the groups that create them in responses to recurring situations in that discipline. Writing in those genres then works to enact that discipline's ideology.

Writing Enacts and Creates Identities and Ideologies focuses on the ways that writing functions to both help students develop their own voice and works to perpetuate a discipline's values and goals. It brings to forefront that writing can never be fully decontextualized or void of the people and world around it. As Tony Scott (2015) explains, "Writing is always ideological because discourses and instances of language use do not exist independently from cultures and their ideologies" (p. 48). Disciplines each possess value and goals that support their overall ideology and that is enacted in part through writing.

Writing is truly never decontextualized from its context. Yancey (2015) states, "Writers' identities are, in part, a function of the time when they live: their histories, identities, and processes are situated in a given historical context" (p. 52). When we write, we imbue our historical and social personhood, whether implicitly or explicitly. Not only do writers bring their own identity to writing, but through writing, they enact their own ideologies and the ideology of the discipline they are writing in.

Roozen (2015) explains how writers create and enact their identity through writing themselves into a discipline. Students are able to situate their own identity within the existing ideology of the discipline. Roozen states:

> Given that our participation with our multiple communities involves acting with their texts, writing serves as a key means by which we act with and come to understand the subject matter, the kinds of language, the rhetorical moves, the genres, the media and technologies, and the writing processes and practices at play in our various sites of engagement, as well as the beliefs, values, and interests they reflect. (p. 51)

Just as students use writing to make sense of a discipline's ideology, they use writing to make sense of themselves and the world around them. Charles Bazerman addresses this, "Despite the limits of language, most of what we consider knowledge comes from the representation of the world and events in text (p. 38). It is through writing that we know what we know and through that shape who we believe ourselves to be.

While as a concept Writing Enacts and Creates Identities and Ideologies seems more ambiguous than the other threshold concepts, there are practical applications and broader implications of teaching this concept. Roozen (2015) touches this importance as it relates to understanding the identity work done through writing. He explains that writing is not simply a means to learn, but a way to engage "with the possibilities of selfhood available in a given community" (p. 51). Roozen addresses the misconception that students experience difficulties with writing primarily due to issues of intelligence and literacy. Roozen counters that misconceptions and suggests that students face difficulties with writing because they are not taught in a way that allows them to truly envision themselves as "participants in a particular community" (pg. 51). Through discussions of their future disciplines, as I have in my own class, students can begin to see themselves as members.

Roozen (2015) also provides a description for how administrators can programmatically address the concept of Writing Enacts and Creates Identities and Ideologies for their students:

> For administrators, this threshold concept highlights the demand for structuring the curriculum in ways that allow learners to develop a sense of what it means to become

> a member of an academic discipline and create models of assessment that address learners' identity work. (p. 51)

If educators want students to succeed and successfully assimilate into their major's discipline, then there needs to be instruction that explicitly acknowledges that there are different ideologies in each discipline. And also acknowledge to students that they will be pushed to consider their own identity and have to situate themselves within the existing discourse community they will participate in and be expected to master. As Roozen explains, "As we develop identities aligned with the interests and values of the communities in which we participate, we become more comfortable making the rhetorical and generic moves privileged by those communities" (p. 51). If the goal of enculturating students in the discipline of their future profession is so that they can effectively communicate within those communities, then we, as instructors, need to prioritize demonstrating to students how to be a member of that specific community.

All Writers Have More to Learn

"There's always more to learn." While a common phrase, the idea that there is always more to learn contradicts student writers' idea there are generalizable writing skills that, once mastered, teach them everything that can be learned about writing; when in fact, All Writers Have More to Learn (Rose, 2015, 59). As Rose (2015) argues "Many people assume that all writing abilities can be learned once and for always. However, although writing is learned, all writers have more to learn about writing" (p. 59). Writing is not an innate skill that comes naturally to anyone. Writing knowledge is fluid, contextual, and requires constant negotiation. Rose argues against the idea of "general writing" because each situation is

unique and calls for different approaches and strategies. Rose states, "Writers must struggle to write in new contexts and genres, a matter of transferring what they know but also learning new things about what works in the present situation" (p. 60). The struggles or difficulties students encounter in a writing situation means there is something there for them to learn.

Writing is a tool that involves more levels of understanding than an innate skill or ability. As Dryer (2015) explains, writing is a technology with limitations that requires constant negotiation. Dryer describes how, "any cultural artifact that mediates activity is a technology" (p. 28). Most all humans are born with the natural ability to speak or make noises that soon develop into an identification of symbols through speech; however, writing is not natural and changes from context to context. This means mastery of writing in one context that does not automatically translate to all other writing contexts.

The idea that student writers cannot succeed by applying the five-paragraph theme to all college papers or writing assignments can be a terrifying prospect--one that includes failure and a fear of that failure. In writing, learning often means failing. When explaining failure's role in writing development, Brooke and Carr (2015) invoke the popular adage by writer Lamott (1995), "Almost all good writing begins with terrible first efforts" (p. 303). In the purest sense, if a student fails at an attempt to write in a new way or in a new situation, then this affords them an opportunity to learn. It is often through failure that students learn. As Brooke and Carr explain that "They [students] must have the opportunity to try, to fail, and to learn from those failures as a means of intellectual growth" (p. 63). Failure creates opportunities for learning and, as writers, there is always more to learn.

The threshold concept that All Writers Have More to Learn is valuable in classrooms and to assessment. Understanding that there is more to learn, and privileging that concept in instruction, places an emphasis on process and not solely product. This can also reshape our approach to assessment and contextualize the efforts to determine a student's writing ability by examining one text. As instructors, we cannot assume that a successful literary analysis will lead to a successful rhetorical analysis. In understanding this, instructors can acknowledge the learning curve between assignments and incorporate the idea of failure into their students' coursework that promotes a learning-focused environment over a product-focused environment.

Writing is a Cognitive and Metacognitive Activity

The concept that Writing is Cognitive and Metacognition Activity (Dryer, 2015, p. 71; Tinberg, 2015, p. 75) can be difficult for students to initially understand. When the cognitive and metacognitive aspect of writing is not understood, writing can seem as simple as pen to paper or finger to keys. This view positions writing as an externalized act that begins when words are physically being written. While one-dimensional and decontextualized from the complex brain processes that occur when we write, this is an understandable way to view writing if students have not been taught that writing is always, as Dryer (2015) argues, a cognitive activity. In order to understand the social and rhetorical nature of writing—what happens externally— we need to "revisit what is known about composing processes inside the skull" (Dryer, 2015, p. 71).

Cognitive scientists and researchers in writing studies have identified the brain's integral role in the writing process. Much of the empirical research on cognition and writing

has supported what early research found that "neural processes essential to writing must be successfully coordinated across different areas of the brain" (Dryer, 2015, p. 72). Writing involves a complex coordination among many brain functions. In understanding the complex cognitive work behind writing, there needs to be greater attention given what we are truly asking our brain to do

Dryer (2015) discusses the limitations and constraints that exist in the brain's structure. The most important one, he claims, is a limitation called *working memory*. Working memory is where "fleeting and mutable bits of information, images, to-do lists, or immediate plans are held, juggled, and discarded" (Dryer, 2015, 73). There is only so much the brain can do at one time—cognitive overload— and so introducing an unfamiliar genre to students may not only be confusing but cognitively difficult. Dryer points to researchers' findings (see Quinlan et al. 2012) that surface errors (misspelling, misplaced commas, etc.) predictably increase when students are working with a new writing genre (p. 73). The brain is working hard to coordinate functions in order to understand and situate this new genre, that the capacity for smaller-level errors is severely diminished. Instructors need to understand how writing is cognitive and metacognitive and then closely examine what they are asking their students' brain to do.

Charles Bazerman and Howard Timber (2015) explain how writing is a fully embodied process. From the functions of the mind to the movement of the fingers, writing is an act "drawing on the full resources of our nervous system" (Bazerman & Tinberg, 2015, p. 74). Writing is an *embodied* act because not only does it call into action complex mental

functions, but it manifests in our physical body and personal affect—a grimace in frustration, a chuckle at a clever turn of phrase. Writing requires a fully present being.

It is not only beneficial to be present while writing but to be aware of the act of being present. This is what Bazerman and Tinberg call "metacognition." A student can know something—cognition—but for them to know how they know something requires metacognition. Tinberg explains that, "Metacognition requires that writers think about their mental processes" (p. 76). When required, students can generally complete a draft of a paper, calling on their cognitive functions to complete the task; metacognition would push them to consider *how* they are creating their draft, calling upon a broader examination of drafting and the mental processes used in order to complete the task. A true mastery of a writing task must include both cognition and metacognition.

Cognition helps students to *know* and metacognition helps build an awareness of *how* they know. This leads to a deeper, more sustainable knowledge. For example, if a student can identify the use of ethos in their essay, they demonstrate knowledge of that rhetorical appeal. But if they also identify how to use ethos, they can more likely carry that knowledge to other writing tasks. Asking students to consider how they know terms, how they approach a task, or how they have completed a writing assignment in the past, meaningfully engages both their cognition and metacognition and encourages writers to be rhetorically aware.

Writing is a Subject of Study

Adler-Kassner and Wardle begin their discussion of Writing is a Subject of Study (p. 15) by stating that "the production, consumption, circulation, distribution, and use of writing are also areas of inquiry" (p. 15). Adler-Kassner and Wardle explain how writing is a topic of

research and study in many fields. While this particular threshold concept is only discussed briefly as a "metaconcept" to the threshold concept Writing is a Social and Rhetorical Activity in Adler-Kassner and Wardle's *Naming What We Know*, is extended by Downs and Wardle's (2007). Downs and Wardle suggest an approach to teaching writing not just as a subject of study, but as a subject of study within a specific discipline.

The threshold metaconcept of Writing is a Subject of Study transformed how I conceptualized and taught my own FYC course. It reshaped my perception in two main ways: (1) it reframed my course from the "general writing" approach to a course focused on context and rhetorical situation and (2) it positioned me as a member of a discipline and not a generalist that is detached from a core field and loosely attached to any adjacent fields of study.

In "Teaching about Writing, Righting Misconceptions: (Re)Envisioning 'First Year Composition' as 'Introduction to Writing Studies,'" Downs and Wardle discuss their experience reframing first-year composition (FYC) as an "Introduction to Writing Studies" course. Downs and Wardle (2007) reimagine first-year composition (FYC) in an attempt to address the existing misconceptions of FYC and better prepare student-writers for future writing situations. They present a writing studies approach to FYC that seeks to introduce students not just to particular genres of writing but to the concept of contextual writing—that is, each context and discipline will ask different things of the writers and there is no one-size-fits-all set of writing skills that students can transfer easily into another course or profession. Their approach seeks to reclaim first-year writing courses and reframe them under the discipline of writing studies. To do this, writing studies professionals need to

address the harmful misconceptions and models of writing. Instead of teaching writing as a set of basic, transferable skills, Downs and Wardle argue that students should be taught "about the ways writing works in the world and how the 'tool' of writing is used to mediate various activities" (p. 558).

While seeing first-year composition (FYC) as an Intro to Writing Studies helped me to understand teaching writing in a way not previously possible, this approach may not support all writing programs' learning objectives. Not every writing program is in a position within their department or larger academic community to make a programmatic change of this scale. FYC as an Intro to Writing Studies can be especially useful to instructors given the opportunity to choose their approach FYC or already in programs that support first-year writing from a writing studies position. With this concept, I echo the goals of FYC as stated by Downs and Wardle, that students "move into their chosen disciplines with realistic and useful conceptions of writing and they know where to go for answers when confronted by writing-related problems" (p. 573).

Chapter 3: History and Theory of Transfer

Transfer is a concept that extends beyond the field of composition and as taken hold in many different disciplines. In order to understand transfer as a whole, I include the (sometimes very complex) theories by transfer experts and scholars.

In this chapter, I will discuss the history and complex theory behind transfer. First, I will explain transfer's relevance to first-year composition (FYC). Next, I will define transfer, describe the common misconceptions, and explain the common nomenclature. Then, I will describe the central kinds of transfer as outlined by scholars and offer a psychological model to understand transfer. This will be followed by an in-depth discussion of the levels of transfer and two central taxonomies, created by Haskell (2011), used to break down transfer into its different types and kinds.

Why it Matters to FYC

Thorndike and Woodworth's (1901) study along with seminal work of other transfer scholars (Bransford, et al., 2000; Perkins & Solomon, 1988, 1992, 1999; Haskell, 2001) provided the groundwork for the ongoing conversation in education about transfer of learning and its role in college classrooms. Anne Beaufort, writing professor and researcher, has been a central figure in transfer research in educational settings. In her book *College Writing and Beyond,* Beaufort examines one student's educational experience through a combination of ethnography and a longitudinal case study. In it, Beaufort argues that the transfer of writing skills is not given adequate attention in writing curricula (p. 6). She also makes a case for a new framework for university writing instruction:

> Freshman writing, if taught with an eye towards transfer of learning and with an explicit acknowledgement of the context of freshmen writing itself as a social practice, can set students on a course of life-long learning so that they know *how to learn* to become better and better writers in a variety of social contexts. (p. 7)

With this in mind, I want to articulate the values and assumptions for learning goals in first-year writing courses.

My review of threshold concepts and transfer research is situated on the assumption that academic writing's purpose is to achieve what Beaufort calls "pragmatic learning goals." She goes on to define this goal as "facilitating successful written expression in school and work contexts." These pragmatic goals seek to prepare students for the diverse writing situations they will encounter in school and the professional context. Along with pragmatic learning goals, I echo Beaufort's "goal of aiding positive transfer of learning to other contexts of writing." This goal is also echoed by scholars Downs and Robertson (2015) who state that the purpose of a FYC course is "to serve as a general education course, teaching transferable knowledge of and about writing so that what is taught and learned can be adapted to new contexts of writing" (p. 105). In this thesis, my assumption is that the purpose of first-year writing is situated in pragmatic learning goals that facilitate positive-transfer learning for students.

It is important to recognize that a focus on transfer learning in higher education rests on the underlying assumption that it is better to educate students about writing tasks rather than train them to perform only certain writing tasks (Bransford, Brown, & Cocking, 1999). If it is better to educate students about writing, it is better to educate them as early as

possible in their education. This importance of educating students early on about how to extend learning to other contexts is especially relevant to first-year writing. For more than a half of a century, first-year composition (FYC) has been a ubiquitous element of US university education (Hayes, Ferris, & Whithaus, 2017, p. 181). As a core fixture of the American higher education curriculum, FYC acts as an excellent site for examining and facilitating transfer.

An assumed learning goal of academic institutions is to prepare students for success after school, including success in students' personal, civic, and professional lives outside the classroom. This is a worthwhile goal, but it often seems to get lost in theoretical discussions and stagnates prior to the praxis of facilitating transfer. The field of writing studies, especially composition and writing centers, have begun to engage in more explicit academic conversations about transfer (Fisherman & Reiff, 2011; Hill, 2016; Skeffington, 2012). In the expanding field of study, there is still a need for programs to examine their course design through a transfer-focused framework. It is through these examinations of these pedagogical approaches that educators will become more informed about the practices of teaching and course designing for transfer. In order to successfully teach for transfer, we need to first understand transfer.

Defining Transfer

Similar to threshold concepts, "transfer" has its roots in Latin. Haskell (2001), author of the book *Transfer of Learning: Cognition and Instruction*, explains that "The word *transfer* is derived from *trans,* meaning *across* or *over,* and *ferre,* meaning to *bear,* thus, *to carry over*" (p. 24). Transfer of learning occurs when the mind recognizes similarities in experience and then has

applied a previously learned concept to a new situation (Devet, 2015; Haskell 2001). The concept of transfer originates from the field of educational psychology that examines the mind and human behaviors associated with learning. As a psychologist who has studied extensively transfer and its role in education, Haskell further defines transfer as "the basis of mental abstraction, analogical relations, classifications, generalizations, generic thinking, induction, invariance, isomorphic relations, logical inference, metaphor, and constructing mental models" (p. 26). In other words, transfer is what happens when the mind makes connections between the past and the present.

Transfer of learning stems from the term "transfer of practice" which was first introduced by educational psychologists Thorndike and Woodworth (1901). In their study, Thorndike and Woodworth examined "assumptions about learning" through using "transfer tests" to observe how the mind functions when individuals transfer learning from one context to another and how increased improvement of one mental function can influence a related mental function (Bransford, Brown, & Cocking, 2004, p. 51). As it relates to the aspect of transfer learning, Thorndike and Woodworth's theory suggested that the likelihood of transfer was connected to the mind's identification of similarities between the transfer task and learning task; that is to say that the more similarities between the contexts and the tasks within them, the more likelihood there is for the individual to transfer tasks done in one context successfully in another context.

In the realm of education, the concept of transfer can be defined as learning in one context and applying that learning in another context. Writing center scholar Devet (2015) pulls from Ellis' definition and states that transfer "means, [t]he experience or performance

on one task influences performance on some subsequent task" (qtd. in Devet, 2015, p. 121). Devet demonstrates how transfer looks in action through an example of a young child introduced to a recorder in school. The child becomes familiar with how to move their fingers and blow into the instrument. Then in the next few years, when the child is introduced to a new instrument with similar features, like a clarinet or flute, the child's mind can transfer that past experience with the recorder and apply that previously learned concept of a wind instrument to this new instrument.

Misconceptions of Transfer

Along with copious definitions of transfer, what it is, and what it looks like, there are also misconceptions surrounding transfer learning that are important to acknowledge. With interest in transfer rapidly growing within writing studies, it is important to address the common misconceptions surrounding transfer before diving into what it is. Devet (2015) addresses two primary misconceptions, and for the purposes of this thesis, I would like to echo her position. The first misconception is that "transfer of knowledge" or "knowledge transfer" is a synonym for "transfer of learning." While some scholars in composition studies have co-opted the term to refer to transfer learning, the original meaning comes from a business term simply "referring just to communicating information" (p. 121). The act of sharing information, say an employee handbook, would not constitute transfer because learning is not being applied in a comparable context. In order to maintain continuity, I will refer to transfer as either "transfer" or "transfer of learning." I think this is important to establish terms, especially when considering troublesome language.

The second misconception Devet addresses is the idea that transfer can simply and broadly be defined as something that occurs in "all learning." Devet explains how transfer of learning is distinct from learning, stating, "Students who correctly fill out endless exercises on punctuation often do not apply those grammar rules to their own" (p. 121). In this case, the students have learned but not transferred the information (Devet, 2015, p. 121).

When in fact, without transfer of learning, individuals experience "functional fixedness" (Devet, 2015; Haskell, 2001). Haskell (2001) describes functional fixedness as a "Failure to carry over previous learning all too frequently leads to rigid patterns of behavior and thinking" (p. 22). For example, an individual encounter a loose screw and searches only for a screwdriver, not recognizing that a coin can accomplish the same goal (Devet, 2015; Haskell 2001). Those "rigid patterns" are functional fixedness, where individuals can only conceive of a learning tasks' purpose within the specific use or context it was learned in. In this instance, learning does occur but not the transfer of learning. So, it is important to recognize that not *all* learning is transfer.

Other Nomenclature for Transfer

There are scholars who argue that the term transfer promotes too simplistic an understanding of the type of learning that occurs, and in turn, have used alternative terms. Scholars like Wardle (2012) suggest renaming transfer as "repurposing" in order to convey a more complex process than simply moving knowledge from one place to another. Beach (1999) uses the term "consequential transitions," and scholars Prenzel and Mandl (1993) offer the term "flexible applicability." Jarratt, Mack, Sartor, and Watson (2009) use "pedagogical memory" in order to better account for the student experience of transferring

writing abilities. While I appreciate the effort to better communicate the intricate process of transfer, I agree with Devet in that using the word "transfer*"* possesses a broader familiarity in the field and offers continuity.

While I intend to use the term "transfer," I do think it is important to include a discussion of two specific scholars and their unique definitions of transfer. I only include these two because they are both seminal to the field and have informed my understanding of transfer. The two are Beach's "consequential transition" and Nowacek's "integration."

Beach (1999), an education psychologist, first brought to the forefront the idea of transfer as "consequential transitions." Beach explains how generalization, which refers to the concept that humans utilize prior learning in current and similar contexts, leads to knowledge propagation (Gluck, Mercado, & Myers, 2011). Knowledge propagation is "the process in which individuals teach other individuals, teams, and knowledge bases with their own professional knowledge, ideas, or experiences so that the receivers can master the knowledge to the greatest extent" (Chen & He, 2014). It is through knowledge propagation that a transition of knowledge can be consequential.

It is consequential "when it is consciously reflected on, struggled with, and shifts the individual's sense of self or social position" (Beach, 1999). Knowledge is generalized and propagated as a result of social interaction and consequential transitions are connected to that knowledge and each learners' identity. Beach's main contribution to transfer scholarship was the idea that "consequential transitions link identity with knowledge propagation" (p. 42). The concept of transition is used to understand how knowledge is shared, generalized, and transferred in a society

The term "integration," as proposed by Nowacek (2011), refers to the act of transfer combined with meta-awareness. Integration is the step beyond habitual acts of transfer of learning. "Low road transfer," for example, which will be discussed later, is a kind of transfer that is done automatically and without much thought. Integration refers to the transfer that is done intentionally (Nowacek, 2011, p. 33), like "high road transfer." Transfer is a spectrum. In order to address this distinction, Nowacek poses the term integration to represent the kinds of transfer that "suggest the importance of mindfulness and meta-awareness but also connote an act of transfer that has positive consequences for the student (p. 33). I share Nowacek's intention for recognizing transfer, and the wide spectrum it falls on, in order to "better understand the circumstances that enable students to become agents of intentional and successful integration" (p. 33).

Understanding the various names and terms associated with transfer can help instructors of writing navigate the wide body of transfer research. It also provides an opportunity to explore the many frameworks for understanding transfer through scholar's own individual lenses. Beach's work provides a more societal perspective or transfer and Nowacek's concept of integration offers an interesting look at metacognition's integral role in transfer. Though I focus more deeply on other scholars' work in transfer, I would be remiss to ignore these frameworks for viewing transfer.

Central Kinds of Transfer in Education

In this section, using Perkins and Salomon's (1992) seminal piece, "Transfer of Learning," I will define positive and negative transfer, briefly discussing three subsets of negative transfer: ambivalent, difficult, and inappropriate. I will then discuss near and far

transfer and high and low road transfer, using figures to visually demonstrate each kind. It is valuable to understand the breadth and depth of the kinds of transfer in order to meaningfully examine teaching-for-transfer instruction and course design.

Positive and Negative Transfer

Perkins and Salomon state that transfer "assumes learning within a certain context and asks about impact beyond that context" (p. 3). In short, transfer of learning looks toward future applications; however, it is important to clearly define what *successful* transfer looks like. "Positive transfer" and "negative transfer," like many kinds of transfer, represent opposite outcomes on the spectrum of transfer.

Positive transfer is often referred to by the shorthand "transfer." For the purposes of this thesis, I am defining positive transfer as the appropriate application of writing principles learned in one context that improves performance in another context (Beaufort, 2007; Perkins & Salomon, 1992). Beaufort (2007) defines negative transfer as "applying principles of writing learned in one context inappropriately in another context" (p. 8). While Perkins and Salomon define it as, "when learning in one context impacts negatively on performance in another" (p. 3). Beaufort's definition focuses on appropriateness and Perkins and Salomon's focuses on performance.

In order to understand positive and negative transfer, I offer an example from writing—the five-paragraph theme. Some students may have mastered the five-paragraph theme and can expertly model this in assignments that ask for a five-paragraph format; however, if assigned a 10-page literature review, this heuristic can either help or hurt them. If the five-paragraph theme is transferred positively to other contexts, students then apply the

skills of organization that the five-paragraph theme demonstrates to their literature review. If their body paragraphs each have one point or theme, then in the longer literature review, the student would create paragraph breaks each time they transition to another idea or theme. If the five-paragraph theme is negatively transferred to this new writing context, the entirety of the 10-page paper would be organized into only five paragraphs. So, when evaluating successful transfer, consider whether past learning has these two outcomes: (1) it improved the student's performance and (2) whether the student appropriately applied past learning to a new context.

Ambivalent, Difficult, and Inappropriate Transfer

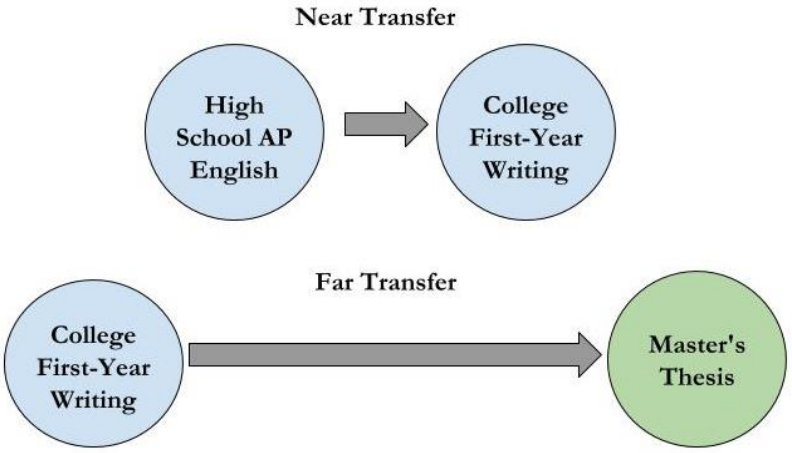
It is important for instructors to be aware that not all transfer is beneficial for students and transfer can be quite troublesome. In a piece about transfer in cross-cultural contexts, Volet (2001) provides descriptions for ambivalent, difficult, and inappropriate transfer; these kinds of transfer, as Donahue (2012) states, "do not serve students well" (p. 156). Ambivalent transfer refers to uncertain transfer, such as "cue seeking that works in one context but is discouraged in another" (Donahue, 2012, p. 156). Difficult transfer refers to a type of learning that improves performance in one context but does not improve the learner's performance in another context. Inappropriate transfer describes the use of certain acceptable "strategies in one context that are unacceptable in a new context" (p. 157). More discussion on the troublesome aspects of transfer in Chapter 4.

Near and Far Transfer

"Near transfer" is when learning is applied to a closely related and similar context and "Far transfer" is when learning is applied to a different, distant, seemingly unrelated

context. Perkins and Salomon (1992) use a metric of "closeness" to distinguish between near and far transfer; however, they add that this metric is broad and does not imply an exact definition of "closeness." Instead, they loosely use distance as a way to conceptualize the concept of near and far. Similarity and dissimilarity offer an equally helpful metric to determine near and far transfer. In order to demonstrate these two metrics of near and far transfer, I offer the below diagram (see *Figure 2*).

Figure 2 Near Transfer and Far Transfer



While simplistic, this figure offers a clear visualization of near and far transfer. The circles on the top demonstrate near transfer with circles in close proximity and sharing many similarities between the two tasks: high school AP English and college first-year writing. The circles on the bottom demonstrate far transfer with the circles separated by distance and the dissimilar tasks: first-year writing and a master's thesis. The colors translate to the difference in context in the way Perkins and Salomon explain the contexts of near and far transfer, stating "Near transfer refers to transfer between similar contexts" (p.4). While they explain

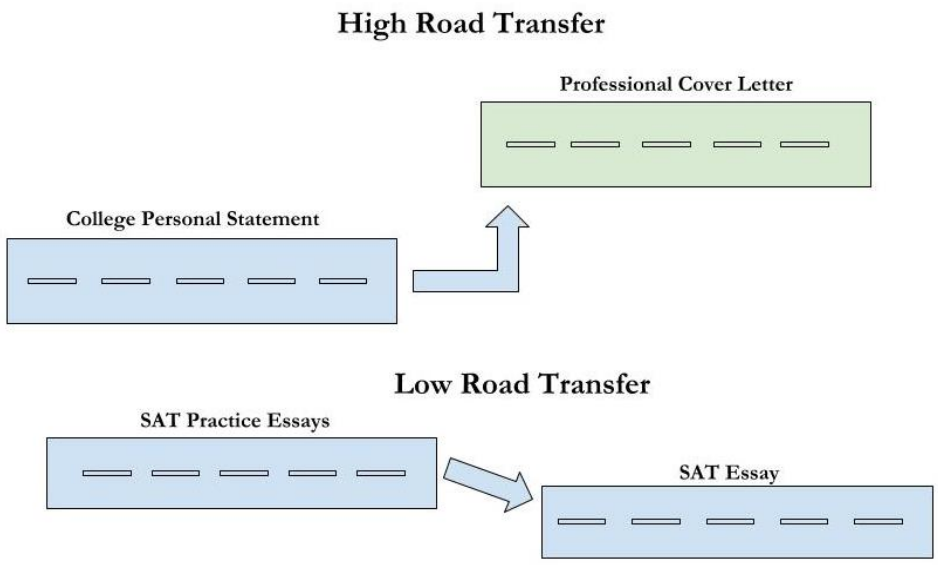
far transfer as, "transfer between contexts that, on appearance, seem remote and alien to one another" (Perkins and Salomon, 1992, p. 4).

In reference to Thorndike and Woodworth's (1901) study, Perkins and Salomon posit that "near transfer is much more likely than far transfer (p.4). This is based on Thorndike and Woodworth's finding that "identical elements" in a context and task were predictive of transfer. Building off Perkins and Salomon, writing scholars Downs and Wardle (2012) express a similar idea, stating " We are not arguing that transfer of writing knowledge cannot happen; rather, we are arguing that 'far transfer' is difficult (Perkins and Salomon, 'Teaching' and 'Transfer') and that most current incarnations of FYC do not teach for it as explicitly as is necessary" (p. 557). Understanding the difficulty of far transfer could help first-year writing instructors strengthen far transfer opportunities through explicitness and build upon near transfer opportunities.

Low and High Road Transfer

Low and high road transfer can be simply described as habitual and deliberate. Low road, similar to near transfer, occurs when contexts share similarities and the "stimulus conditions" are similar between the old and new context (Perkins & Salomon, 1992, p. 7). These contexts that precipitate low road transfer "trigger well-developed semi-automatic responses" (Perkins & Salomon, 1992, p. 7). While high road transfer occurs when there is an intentional interaction with ideas which is not "reflexive" but rather requires deliberate "mental effort" (Perkins & Salomon, 1992, p. 7). I offer the below diagram to represent these kinds of transfer (see *Figure 2).*

Figure 2: Representation of Low Road and High Road Transfer



This figure offers a simplistic foundation to understand high and low road transfer. The lower illustrations represent low road transfer. Low road transfer, like near transfer, occurs when there are similarities between contexts and this then initiates automated, habitual responses. In this example, a student takes multiple SAT practice tests leading up to the actual test day. Then, when tasked with writing an essay on the SAT test day, the student's mind triggers the automatic response built by the habit-creating act of taking practice tests. These habitual responses build and easily connect to other similar contexts.

The top illustration represents high road transfer. This kind of transfer occurs when a student deliberately makes connections between a past learning context and new ones. High road transfer is often not reflexive and instead relies upon an intentional "search for connections" (Perkins & Salomon, 1992, p. 7). The illustration includes two different roads: one is blue and one is green. The arrow pointing to the green road represents deliberate mindfulness and represents an intentional connection-making between the two different

color roads (contexts). The student in this illustration reflects on the past writing skills used in their personal statement (i.e. active over passive voice, descriptive words, showing and not telling) and deliberately transfers those skills to the new writing task of creating a cover letter. This action represents what Perkins and Salomon describe as "mindful abstraction from the context of learning or application and a deliberate search for connections" (p. 7). While high and low road transfer can at times work in tandem, both kinds of transfer are mostly distinct from one another (Perkins & Salomon, 1992, p. 7).

Two Taxonomies of Transfer

Haskell (2001) introduces two taxonomies of transfer in "Transfer of learning: Cognition, instruction, and reasoning." The first taxonomy deals with the six specific levels of transfer—level 1 being the most general and simple and level 6 being the most specific and complex. The second taxonomy is broken down into two categories that classify the kinds of transfer: (1) what type of knowledge is being used and (2) what kinds of transfer are involved. In this section I will discuss Haskell's two taxonomies of transfer that address the levels of transfer, types of knowledge used in transfer, and the interrelated kinds or transfer and their function.

The Six Levels of Transfer

The process of transfer begins when the mind identifies similarities through four methods: context, application, near, and far (Devet, 2019; Haskell, 2001). From those four cognitive methods, Haskell then created a taxonomy comprising six levels of transfer: nonspecific, application, context, near, far, and displacement or creative. These six

classifications of transfer, while briefly discussed, offer a foundation for examining process of transfer and understanding educational transfer as whole (see *Table 1)*

Table 1 Levels of Transfer

Level 1	Nonspecific	General/Simple ↓ Specific/Complex
Level 2	Application	
Level 3	Context	
Level 4	Near	
Level 5	Far	
Level 6	Displacement or Creative	

Nonspecific refers broadly to the contingency of all learning. As Calais (2006) explains "all learning is contingent upon being connected to past learning" (p. 2). While this is still important to understand, it is a much broader and inconsequential level of transfer than the levels of transfer discussed in educational settings. For my purposes, while relevant to understanding transfer overall, the nonspecific level of transfer is not of particular interest in my later discussions of transfer in education.

Application, on the other hand, refers to transferring what is learned in one context to another specific situation. The mind is able to identify similarities through specific application—the act of learning in one context and utilizing that learning to another similar situation. For example, when reading the instructions for building a shelf, you are able to directly apply that knowledge when you begin constructing the shelf.

In contrast to application, the level of **context** transfer refers to the transferring of learning to a slightly different context (Calais, 2006, p. 2). Context simply means that certain

acts can only be performed in certain situations, and so the mind is able to draw similarities between surroundings and conditions. For example, a student recognizes their professor in the building they have class; however, that same connection may be more difficult to make if the students sees the professor at the grocery store.

As discussed in the previous section, the mind also relies on making connections that are both near and far (Devet 2015, Haskell, 2001; Carais, 2006; Perkins & Salomon, 1992). **Near** refers to a transfer of learning that occurs in a similar context and situation (as demonstrated in *Figure 2 on* pg. 54). Perkins and Salomon explain near transfer as "when knowledge or skill gets used in situations very like the initial context of learning" (p. 4).

While **far** refers to transfer of learning that occurs in context and situation that, on face value, does not seem similar to the context in which the learning originally occurred (as demonstrated in *Figure 2* on pg. 55). What Perkins and Salomon describe as "when people make connections to contexts that intuitively seem vastly different from the context of learning" (p. 4).

The last level in Haskell's taxonomy of the six levels of transfer is **displacement or creative**. What Carais defined as "the creation of a new concept because of the interaction of the newly perceived similarity between the new and the old" (p. 3). This type of transfer requires more than a mere observation of similarities but an understanding of a concept and how it informs an understanding of new or unfamiliar concepts.

Haskell and Carais suggest that level 1 and 2 (nonspecific and application) represent simple types of learning. What Perkins and Salomon (1999) refer to as "ordinary learning." is the type of transfer that is inherent to all learning. But what this thesis examines, and most

education scholars are interested in, are the types of transfer that Perkins and Salomon call "the hoped-for transfer." For example, a student may succeed at solving certain math equations on a test, but when faced with those exact types of equations needed for completing taxes, they are unable to solve those same problems. This hoped-for transfer asks students to consider what they are learning in a much broader context than the specific, sometimes simplified, context in which they learn it in.

The Five Types of Knowledge

As described in the previous section, Haskell's taxonomy of six levels of transfer addresses the when, how, and where of transfer. This section describes the "what": Haskell's complementary taxonomy breaks down how different kinds of knowledge can transfer. This second taxonomy—the kinds of transfer— can be separated into two categories: "(1) What type of knowledge is the transfer predicated on? (2) What specific kind of transfer is involved?" (Carais, 2006, p. 4). This section first covers the first category: the types of knowledge used in transfer (see *Table 2).*

Table 2 Five Types of Knowledge

Declarative	Knowledge of or about anything
Procedural	"How-to" knowledge
Strategic	Knowledge of our own cognitive processes
Conditional	Knowledge/awareness of when knowledge may be applied in context-appropriate ways
Theoretical Knowledge	Understanding of various explanatory connections of phenomena

In order to break down the first category, I will focus on the four types of knowledge cognitive scientists generally mention involved in transfer: declarative, procedural, strategic, and conditional (Haskell, 2001; Carais, 2006). Along with those four, I will also discuss Haskell's fifth addition, one he called "theoretical knowledge." These five together are the types of knowledge that transfer is founded on.

Declarative knowledge is easily stated; it is knowledge that is known explicitly or not at all. For example, a student knows what a semicolon is or does not. It is knowledge that can be known and then can be easily stated.

Procedural knowledge is centered around the "how-to" aspect of knowledge, as Calais describes. This type of knowledge extends beyond knowing what something is and focuses on the knowledge necessary in order to complete action or actions. A student may be able to recognize Microsoft Word but still may not know how to *use* it. That *using* knowledge is procedural knowledge.

Strategic knowledge refers to a broader knowledge of the brain's cognitive processes. Carais explains how this knowledge includes an understanding of learning and memory processes and how they develop (p. 4), for example, a student's understanding of, for example, cognitive load and the brain's processing power.

Conditional knowledge is an understanding and recognition of when to apply certain knowledge in a specific context that is appropriate (Carais, 2006, p. 4). For example, a student is asked to analyze a text for an assignment in history class. Based on the student's prior knowledge of how to analyze (break things apart and examine closely), the student applies that certain knowledge to this specific context of this assignment.

Theoretical knowledge is the knowledge that helps us make what Carais calls "explanatory connections." This kind of knowledge allows us to look at occurrences and recognize layered relationships between other occurrences. Theoretical knowledge provides a unique lens that allows us to make sense of the world around us. Carais further defines this as the "understanding of various explanatory connections regarding phenomena, cause and effect, and in-depth level relationships" (p. 4). An example of this is a student who is introduced to rhetorical theory. The theory provides the student with a framework to examine symbolic, verbal, and written communication.

Fourteen Interrelated Categories of Transfer

This next category of Haskell's second taxonomy addresses the **specific kinds of transfer involved.** This category comprises fourteen interrelated kinds of transfer. Both Haskell and Carais warn against presuming that each kind of transfer exists in and of itself completely apart from the other kinds. In the mind's complex process of transferring knowledge, overlap and crossover are realistic possibilities. So, while I will define each of the fourteen individually, it is important to note the *interrelated* aspect of the kinds of transfer. Additionally, it integrates with the Five Types of Knowledge and there is overlap (see *Table 2).* In this section, I will discuss each of the fourteen interrelated kinds of transfer with examples and explanations for each (see *Table 3).*

Table 3 Fourteen Interrelated Kinds of Transfer

Content-to-Content	Utilizing knowledge in one subject area in order to learn another area
Procedural-to-Procedural	Applying procedures learned in a specific skill area to another skill area

Declarative-to-Procedural	Learning something and using that knowledge to *do* something
Procedural-to-Declarative	Employing practical knowledge to gain additional abstract knowledge
Strategic	Gaining knowledge about cognitive processes
Conditional	Knowing when to apply what we have learned appropriately in a specific context
Theoretical	Transferring in-depth understanding from one area to another
General or Nonspecific	Enabling our past nonspecific knowledge To additional dissimilar situations
Literal	Applying directly knowledge of procedures to a new learning situation
Vertical	Learning that requires knowledge of prerequisite skills
Lateral	Implementing past learning to the identical level in a knowledge hierarchy
Reverse	Modifying or reviewing schemata relative to their similarities to novel information
Proportional	Recognizing abstract principles and connecting them to related principles
Relational	Identifying similarities in structures despite causal relationships

The first kind of transfer is **content-to-content**, also called declarative-to-declarative. This kind of transfer uses past content or declarative knowledge to help learn in another subject area. Carais (2006) explains this kind of transfer as existing knowledge that can "expedite or interfere" with "routine" learning and new knowledge making (p. 4). For example, knowledge of alphabetical letters and the sounds they make, together and individually, can help a young student read a word in English class.

The next three kinds of transfer focus around procedural knowledge. The first of these three is **procedural-to-procedural**, also called skill-to-skill. This kind of transfer is centered on procedural knowledge in a certain skill area and utilizing that knowledge in another skill area. An example of this is a student using an written outline for their English course's literary analysis paper and then using an outline for their history class' primary analysis paper.

While **declarative-to-procedural** transfer uses knowledge previously learned to help an individual "actually do something" (Carais, 2006, p. 4). For example, a student learns about the rules for a specific punctuation, like a semicolon, in class and then later uses that knowledge to use that specific punctuation in their own writing.

Procedural-to-declarative is the inverse kind of transfer—meaning, a student uses procedural knowledge in a way that can then help them better understand declarative knowledge. For example, students who engage in class peer reviews could then use that procedural knowledge to understand writing center theory. These three kinds of transfer address the procedural aspect of knowledge and the ways in which it can be used to learn in other situations.

Strategic, conditional, and theoretical kinds of transfer involve a learner making specific choices about their knowledge. Phye (1992) defines strategic transfer as, "the spontaneous access and retrieval (remembering) of previously learned formal procedures for the successful solution of a problem." This kind of transfer focuses on the knowledge of cognitive processes, like cognitive load, and using that knowledge to problem-solve in another learning situation. For example, a student learns about cognitive load, and so in a

paper, the student decides to break up long portions of text and format their sentences in the old-to-new information sequence to reduce their reader's cognitive load.

Conditional knowledge is when a learner chooses what knowledge is appropriate to apply to a certain context. For example, a writing center consultant may find consulting strategies are appropriate to apply in their class peer review because of the similar educational context and underlying purpose of peer review.

Theoretical transfer is "when we are able to transfer our in-depth understanding of cause and effect relationships in one area to another" (Carais, 2006, p. 5). For example, a writing consultant is able to connect motivational theory to writing center theory in order to better understand writing studies theory. Each of these three kinds of transfer highlight choices that learners can make about their knowledge and how, when, and where to apply it.

General transfer and literal transfer lie on opposite sides of the spectrum. General or nonspecific transfer is used when past knowledge is applied to another unrelated context. This kind of transfer applies knowledge from a seemingly dissimilar situation to another situation. For example, a student who diagrams sentences for grammatical structure could apply that knowledge to computer coding which focuses on grouping and sorting different functions in order to complete a task.

Literal transfer, however, is a form of near transfer. This kind of transfer takes knowledge from a similar situation and applies it to a near situation with similarities. For example, a student in an English class when asked to analyze a poem is told that "analyzing" means to break down and examine how something works. Later in that class, when asked to write a literary analysis, that student applies that definition of analyzing in order to approach

the writing task. In short, general transfer is applied knowledge from a seemingly unrelated context and literal transfer is applied knowledge from a similar context.

Vertical transfer refers to a sort of leveling-up in knowledge while lateral transfer refers to applying knowledge to a similar or identical situation. Donahue (2012) defines vertical transfer based on the definition of scholar Gagné:

> Vertical transfer is what's learned in one context that is (re)used in a next-level-up higher function, acting in fact as a prerequisite for that next level, as compared to lateral transfer, in which what is learned in one context is simply (re)used in another parallel context (with a similar level of demand)." (p. 150)

This kind of transfer relies on prerequisite knowledge that is used to gain another level of knowledge (Donahue, 2012). For example, learning to write a full paragraph can then be leveraged to write an entire essay comprising multiple paragraphs.

Lateral transfer moves from some similar situation to another. Carais describes lateral transfer as the application of knowledge in another situation with "the identical level in a knowledge hierarchy" (p. 5). This kind of transfer does not require building block knowledge, like vertical, but it is a lateral re-appropriation of knowledge.

Reverse transfer, also called backwards transfer, is when an individual modifies or revises a previous model of learning. In this kind of transfer, the flow of knowledge is reversed. In a way, this kind of transfer reverse-engineers a particular problem in order to understand how certain knowledge can then be applied to solve the problem. For example, a student is assigned a research paper in a nursing course and evaluates all the skills that are

necessary to accomplish this task. After breaking down all the necessary skills, the student realizes that an understanding of APA citation style could be a benefit to them.

Propositional and relational are the last two kinds of transfer in the fourteen interrelated kinds of transfer. **Propositional** transfer is when knowledge is applied to abstract concepts and ideas. For example, a student who is assigned a paper and that begins with "critical," something like "critical analysis." This word is often abstract and offers very little descriptive help in understanding the purpose of the assignment. So, this student takes this abstract description of "critical" and transfers what they know about the term in order to concretely inform how they approach the assignment. So, they might consider how they might analyze, interpret, or evaluate a text in order to be critical.

Relational transfer occurs when we identify similar structures "despite the lack of any underlying causal relationship" (Carais, 2006, p. 6). An artist's abstract painting and an author's poetic prose, while on the surface seem wildly different, share similar structures and crafting approaches. Both propositional and relations focus a learner making connections and extrapolating knowledge that can be applied to situations that may otherwise seem unrelated.

Chapter 4: Facilitating Positive Transfer: Techniques and Obstacles

Now that I have discussed the levels, types, and categories of transfer, it is important to examine how transfer manifests in writing classrooms. This section addresses two items: (1) the ways instructors can facilitate transfer through understanding transfer techniques, and (2) the obstacles to transfer that students face in the classroom.

Many of the transfer techniques connect to each other or build off one another. So, while I am addressing them individually for clarity, there are frequent overlaps between these approaches. In this section, I will discuss nine techniques for facilitating positive transfer. Note that these are only some of the many transfer techniques. As the field of research and scholarship grows, so will our understanding of techniques for teaching-for-transfer.

Explicit Expectation and Abstraction

A study done by Benander, Kramer, and Lighter (2008) examined the importance of instructors articulating explicit expectations for transfer in the classroom. Researchers sought to assess the expectations for transfer between teachers and students and investigate the students' difficulties in the process of transfer. They posited that faculty assumed transfer of learning is inextricable to the learning process, but they wanted to know if this was the same for students.

In order to examine attitudes towards transfer, the researchers surveyed students and (full- and part-time) faculty from a variety of disciplines and courses from the same two-year college about expectations of transfer and any potential barriers to transfer. The survey given to participants asked them to rate questions on a Likert-type scale and ending with an

open-ended question. The questions all dealt with either the importance of transfer, the ease of transferring material across similar contexts, or across dissimilar contexts. The study results had three major findings: (1) the attitudes toward transfer differ greatly between faculty and students; (2) faculty and students demonstrated a difference in attitude towards potential barriers to transfer; (3) while students "rated transfer as less important than faculty did," (p. 62), they did provide examples of transfer in their open-ended responses to the survey. Most notably, the survey results identified a need for faculty to be explicit in their expectations for transfer.

As seen in Benander et al's study, students may not consider transfer as important as faculty considers it. Because of this, it is essential that instructors provide clear expectations for transfer and initiate conversations about transfer. Benander et al. emphasize this:

> This survey shows a clear need for faculty to be explicit about their expectations for transfer. Assignments requiring reflection about prior learning can communicate transfer expectations, while reference to specific skills learned in other courses would indicate that expectations are not idiosyncratic." (p. 63)

Here Benander et al. offer a technique for explicit transfer expectation setting in the classroom: reflective assignments. As previously discussed, reflective assignments push students to think deeper and consider past and current learning in order to make connections.

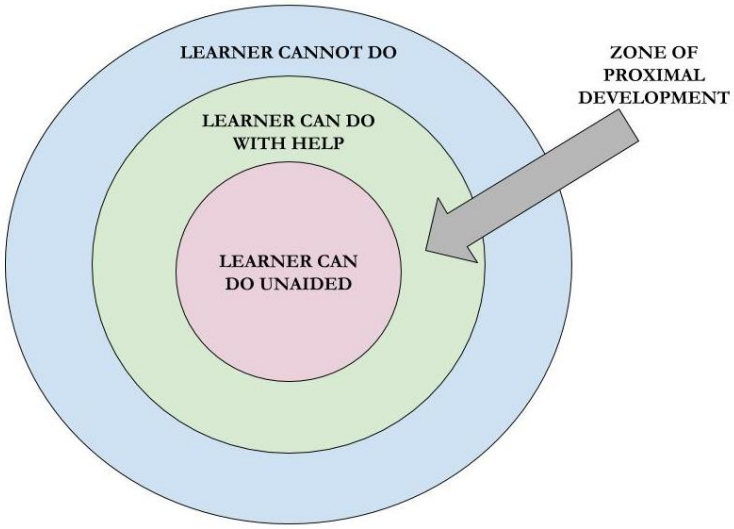
Along with instructors' explicit expectations, students' explicit abstraction plays a pivotal role in successful transfer. Explicit abstraction refers to when students are able to verbalize a concept or idea that is not physical but conceptual. Perkins and Salomon (1992)

state that, "Transfer sometimes depends on whether learners have abstracted critical attributes of a situation" (p. 6). Students can do this through summarizing and discussing a particular situation and the principles involved in that situation.

Scaffolding

Vygosky's seminal theory and concept for development and learning introduced the idea of scaffolding. Vygotsky was a psychologist known for his education theory of cognitive development called "Sociocultural Theory of Cognitive Development" (Kozuline, 2004). This theory centers on the idea that children learn through social interaction ("Vygotsky's Sociocultural Theory," 2020). Within this theory, Vygotsky created the concept of "Zone of Proximal Development" which refers to "the distance between the child's observed developmental level and the level of her potential development given guidance in collaboration with an adult or peer" (Hobsbaum, Peters, & Sylva, 1996, p. 17). Visualizing this concept can create deeper understanding (see *Figure 3)*.

Figure 3 Zone of Proximal Development



Note: Vygotsky's concept of Zone of Proximal Development from the theory "Sociocultural Theory of Cognitive Development"

This concept broadly describes how transfer occurs and introduces the method of scaffolding instruction (Donahue, 2012; Hobsbaum, et al., 1996). Donahue (2012) explains how Vygotsky's "Zone of Proximal Development" calls upon knowledge previously learned, stating "the known or acquired knowledge is used in 'stretch' contexts in which new domains call on the existing knowledge in new ways" (p. 151). In an instructional setting, teachers need to scaffold content and assignments in order to build students' knowledge and assist in facilitating transfer of that learning for "stretch" contexts.

"Scaffolding," a term created by Wood, Bruner, and Ross (1976), was originally used to "describe tutorial interactions between an adult and child" (Hobsbaum, et al., 1996, p. 17). Scaffolding in the education field is known as a metaphor for the "temporary support provided for the completion of a task that learners otherwise might not be able to complete" (Van de Pol, J., Volman, M., & Beishuizen, J, 2010, p. 272). This model is foundational to creating transfer-focused writing courses.

Building off of other writing scholars (Rogers, 2004; Jaxon, 2003; Alsup & Bernard, 2002; Dias, et al., 1999; Rogers), Donahue (2012) explains how "transfer is more likely to occur when teachers provide work that is appropriately challenging to students' current ability levels, drawing on students' zones of proximal development" (p. 151). Scaffolding is an essential aspect to teaching-for-transfer (TFT) because it highlights context's pivotal role in transfer. The ability to transfer is, as Donahue states, "not carried 'in' the individual," but instead occurs "by person-context mutual interactions and the way knowledge is presented

in new situations" (p. 151). Instructors need to be aware of Vygotsky's concept, scaffolding, and how context awareness can facilitate transfer in the classroom.

Metacognitive Awareness

Writing studies researchers posit that metacognitive awareness, as a teaching technique, facilitates transfer and assists in encouraging knowledge transfer (Hill, 2016; Yancey, Robertson, Taczak, 2014; Bean, 2011; James, 2008; Yancey, 1998). Hill defines metacognition as "the idea of having an awareness and understanding of one's own learning and thought processes" which is "often associated with the ability to transfer knowledge successfully" (p. 83). Perkins and Salomon call this "arousing mindfulness" in which a student is alert and engaged or "active self-monitoring" where a student engages metacognitively with their thinking processes. This awareness is often encouraged through the use of reflective assignments in the classroom.

Writing researchers Downs and Wardle (2007) describe self-reflection as a reliable means for facilitating transfer. While transfer is a major byproduct of reflective writing, these sorts of writing tasks also push students to think about their writing and reasoning processes more deeply and holistically (Bean, 2011; Skeffington, 2012). The metacognition elicited by reflective writing helps prepare students for "transfer-focused thinking" (*Elon Statement on Writing Transfer*, 2013). Reflection-based writing tasks can aid in a student's development of genre awareness and this awareness can then promote transfer (Bean, 2011). With this in mind, instructors can promote the act of externalizing the mind's writing processes and explicitly expressing when past knowledge is being applied currently.

Donahue (2012) builds on the idea of metacognition's ability to facilitate transfer in writing studies, stating that:

> Successful transfer may also require a level of conscious or reflective activity. The learner needs to be aware of decision making, explicitly calling on earlier experiences in the new context, using cognitive and metacognitive processes. (p. 154)

It is important to note, as Donahue does, that scholars have begun to question meta awareness and its role in transfer. Haskell explains how conscious attention, or metacognition, is best suited for near transfer. While this is important to consider, research draws strong ties between metacognition and transfer.

Remixing and Repurposing

In the context of transfer, the terms "remix" and "repurpose" generally "are used to describe writers' process of conscious reflection on prior knowledge and adaptation of it for new contexts and purposes ("Elon," 2013, p. 2). This requires that a student reflect on past learning and then intentionally add or revise that learning to apply it in the new context. Introducing the technique of remixing and repurposing to students can offer them a way to understand the writing process and how it develops and changes over time.

This technique focuses on inviting opportunities for students to consciously discuss and integrate their own experiences of past learning as a helpful exercise in transfer. Students are then made aware of future opportunities where remixing and repurposing may assist their performance in another writing situation. Robertson, Taczak, and Yancey (2012) argue:

> Explaining remix as a way of integrating old and new, personal and academic knowledge and experience into a revised conception and practice of composing for

> college may provide a mechanism to help students understand how writing development, from novice to expertise, works and, again, how they participate in such development.

This positions students as active participants in their own writing development. They are not just simply learning a writing skill and regurgitating it through future writing performances. Students are made aware of the opportunity they have to add and build on their existing knowledge in order to make it work for them in future writing situations.

Boundary Crossing

This technique, also called "boundary zones" and "think spaces," involves "bringing ideas, concepts, or instruments from one domain into another" (Donahue, 2012, p. 165). According to Tuomi-Gröhn, Engeström & Young (2003), situations in which boundary crossing is used are "productive in promoting curricular transfer." These situations push students to employ the use of "boundary objects/tools." Boundary tools are used to make connections across different activity systems in order to help the student in the system they are currently learning in. Donahue (2012), informed by Tuomi-Gröhn, et al. (2003), states "Intentional creation of 'boundary-crossing' places for learning creates developmental transfer" (p. 165). Instructors can create space for these "places" and build into their curriculum more opportunities for students to employ their boundary tools in order to build knowledge and promote creative transfer.

Instructors can do this by reworking the rhetorical situation of a previous assignment and changing the variables. One example of this is a "Genre Translation" assignment. In this assignment, a professor takes an academic research paper previously written by the student

in the class, and then asks the student to consider a different audience and genre for the content of the paper. The student then has to creatively transfer the information from one rhetorical situation and apply it in a completely different rhetorical situation. Assignments like these engage students while pushing them to consider the many ways they can apply past learning to new contexts.

Repetition and Diversity

This technique relies on repetition and diverse repetition that occurs in different contexts. Perkins and Salomon (1992) examined a research study that suggested "transfer may depend on extensive practice of the performance in question in a variety of contexts" (p. 6). By introducing students to a transferable skill through repetitious diverse practice, students are able to better automize that skill and apply it more readily in different situations.

In her discussion of short essays as a transferable teaching strategy, Skeffington (2012) speaks to the value of repetition of practice and scaffolding assignments. She discusses how to enhance transfer and address students' misconceptions of first-year writing. Skeffington explains the benefits of sequencing assignments, breaking them up into shorter, more frequent essays and tasks. She states, "This kind of repeated, more focused practice offers students the opportunity to consider the connections between different assignments" (p. 28). Repetition helps students make connections between similar tasks and offers repeated exposure to a specific set of writing skills.

Haskell discusses the value of offering a variety of repetition. To achieve this, once the concept or skill is introduced, an instructor repeats and builds on that skill in order to

make the students capable of using and identifying when a skill can be applied in another situation. Haskell highlights the importance of reinforcing learning in a variety of ways:

> The research on teaching for transfer clearly shows that for transfer to occur, the original learning must be repeatedly reinforced with multiple examples or similar concepts in multiple contexts, and I would add, on different levels and orders of magnitude. Teaching that promotes transfer, then, involves returning again and again to an idea or procedure but on different levels and in different contexts, with apparently 'different' examples. (p. 26-27)

For instructors, this means that designing courses to intentionally sequence assignments that repeat and slowly build upon (similar to scaffolding) skills is imperative to facilitating positive transfer. Repeated exposure offers students more opportunities to learn and then transfer that learning.

Metaphor or Analogy

This technique relies on the usage of metaphor or analogy in order to provide a familiar foothold of understanding for students. Perkins and Salomon describe this process as "things known about the 'old' domain of knowledge can now be transferred to a 'new' domain thereby making it better understood and learned" (p.6). As an example, consider an introduction for a paper.

Conventionally, the purpose of an introduction is to communicate to the reader what will be discussed and how the author plans to discuss it. In teaching introductions to students, instructors may explain them as a "movie preview," where the audience is introduced to the main characters and conflict. The familiar or "old" information about what

a movie preview is can then be transferred to the "new" information about introductions in papers.

Rhetorical Analysis

Similar to the threshold concept Writing is a Social and Rhetorical Activity, this technique centers on instructors framing writing assignments as social actions. Donahue (2012) explains how when students are able to transfer writing abilities successfully, they then begin to see "texts as accomplishing social actions" (Carroll, qtd. in Donahue, p. 154). Students are then exposed to situations where specific writing skills are needed in order to accomplish a task, rather than view those skills as general and unattached to a social situation.

In Bean's (2011) *Engaging Ideas,* he offers a helpful approach for instructors in designing "meaning-constructing" tasks that help students understand rhetorical analysis. Meaning-constructing tasks push students to approach a writing assignment with critical thinking and consider writing tasks in their authentic rhetorical situations. Bean explains how this can be done by giving students a "RAFT" and a "TIP" (p. 98). RAFT is an acronym that stands for Role (or purpose), Audience, Format (or genre), and Task. TIP stands for Task as Intriguing Problem. The transfer technique rhetorical analysis can be implemented through designing assignments using RAFT and TIP.

Genre Analysis

This technique uses analysis and awareness in order to help students deconstruct genres to offer intentional opportunities for transferring that genre knowledge to other writing situations and contexts. Donahue (2012) explains how "Students whose teachers

help them deconstruct the genres of their field transfer writing knowledge or ability more effectively" (p. 165). By teaching that certain texts are genres that fall within a genre system in specific discourse communities, students can build an awareness that can then help them navigate future unfamiliar writing contexts.

Genre awareness not only teaches students how to analyze and write in a specific genre, it also sharpens their rhetorical awareness. Clark and Hernandez (2011), building off of Devitt (2004), explain this, stating:

> When students acquire genre awareness, they are not only learning how to write in a particular genre. They are also gaining insight into how a given genre fulfills a rhetorical purpose and how the various components of a text, the writer, the intended reader, and the text itself, is informed by purpose. (p. 67)

This demonstrates the role genre awareness has in first-year writing classes, especially ones that use rhetoric as their foundation. If students can transfer their genre analysis skills to other situations in order to understand the generic moves of discourse communities, they will be much more prepared to learn and succeed in writing in new genres.

Obstacles to Transfer

There are many barriers to transfer of learning. If instructors can learn and identify some of the more common barriers to transfer, they can identify weaknesses in their course design or approach in order to facilitate positive transfer. Donahue (2012) describes the role instructors play in transfer for their students, stating that "What we do as teachers, what institutions shape, and what we define as writing can all obstruct successful transfer of

writing ability" (p. 156). If transfer is a central learning goal for education, then instructors need to become educated on the ways transfer can be impeded and stifled.

Novice to Expert

The transition from novice to expert is a long and difficult process. The initial stages of learning as a novice can be overwhelming. Learners can have difficulties transferring learning from one situation to another when they are novices (Donahue, 2012, p. 151). In her examination of cognitive psychology in "How Theories about Memory and Transfer Can Influence Composition Pedagogy," Foertsch (1995) states that novices who "are still struggling to master the basic skills of a domain . . . may be too preoccupied with the intricacies of problem-solving to notice similarities between the current problem and ones they have encountered in the past" (p. 372). Novices experience difficulties in making the cognitive connections necessary for transfer.

Smit (2007) also identifies this difficulty for novice students and explains how when writers face knowledge that lies outside their domain, they often rely on general knowledge. Along with that, students often experience a "regression." This occurs when "students taking on new writing tasks often manage previously acquired abilities poorly for a time, as they carry several layers of cognitive processing out at once" (Donahue, 2012, p. 152). Making connections and identifying similarities is central to transfer, and the long transition from novice to expert poses many difficulties that can impede transfer of learning.

Surface Similarities

Surface Similarities pose a similar difficulty to transfer of learning as struggling through a novice status. Students face transfer difficulties when, as Donahue (2012) explains,

they are consumed by "surface similarities rather than conceptual analog" (p. 156). For example, take two writing tasks: a research paper and a literature review. Students who are new to a literature review may focus on the superficial qualities both assignments share, like incorporating multiple sources and reporting their content. When, however, each assignment, conceptually, accomplishes different things. While a research paper is often used to investigate a topic and report on information, a literature review is often used to situate a researcher within existing research and examine gaps in the existing research. Donahue, pulling from scholars Bawarshi and Devitt, describe how students can also become too comfortable with one form of writing, like a research paper in high school, that when they are pushed to incorporate some of those writing techniques to another assignment in another context, like a literature review, transfer is impeded because they are so tied to the form they initial learned.

Hyper Contextualization

While Surface Similarities explains the detriments of solely focusing on the features of a particular writing task, Hyper Contextualization explains the detriments of ingraining writing tasks into specific contexts. This happens when writing tasks are taught in a way that embeds them into a single context, and students can become "welded" (Haskell, 2001) to the task and the one context it was learned. This can happen when students are not taught the "underlying concepts" (Bransford et al., 1999) or not exposed to other contexts in which the writing task may be produced. Students then have a one-dimensional, surface understanding of a writing task and this prevents transfer of that writing task to other contexts. This

highlights the importance of teaching writing skills alongside the many contexts in which the skill may be used.

School Writing vs. Writing in the World

Another obstacle for transfer of learning is the wide gap between "school writing" and "writing in the world." Donahue (2012) and Dias, Freedman, Medway, and Pár (1999) discuss the disconnect between writing done in school and the writing done in the world. The distance between learning contexts and working contexts is often too vast for students. Dias et al. express that learning in school has "a 'learning purpose,' useful in school only and in fact contradictory to the needs writers have beyond school" (p. 223). School writing is often tied to personal learning and individualistic goals (i.e. grade centric) which can clash with collaborative work contexts that focus on group ethos and group outcomes (Donahue, 2012; Dias, et al., 1999). The discrepancy in contexts can result in negative transfer for students as they enter the workforce.

FYW as Anti-Transfer

In the ongoing conversation in composition about the field's, what Donahue (2012) calls, "crisis of purpose," there is debate over whether first-year composition is "anti-transfer" in its approaches (p.157). First-year writing courses are approached in a variety of ways that can drastically vary from instructor to instructor and program to program. For example, a recent guide to composition pedagogies lists up to twelve different approaches, ranging from feminist to technology to rhetorical approaches (Tate, Rupiper, & Schick, 2001). This myriad of approaches includes many different, and sometimes contradicting, goals for the course.

The goals for first-year writing can often be in opposition to each other. One goal for first-year writing is that it teaches students durable skills that will assist students in future writing contexts; however, in order to do so, there would need to be an agreed upon definition of what "good" writing is and views on that vary. There is also the question of which of these durable skills are generalizable and what danger is there in assuming all writing skills are generalizable. In its current construction, first-year writing is, at best, seen as a generalizable course for "good" writing. The question then is, what is good writing? Are all writing skills generalizable? Is this conducive to transfer of learning for students?

James Madison University's First-year Writing Program is seeking to address this "crisis of purpose" in their recent course redesign. The new WRTC 103 design puts threshold concepts and transfer at the forefront. The goal and purpose of the newly revised course is to teach threshold concepts using transfer techniques. The mapping tool introduced in Chapter 5 offers a path for instructors and programs to examine their current design and identify opportunities for course redesign in order to effectively teach threshold concepts through research-based transfer techniques.

Chapter 5: Threshold Concepts and Transfer: A Curriculum Mapping Tool

The curriculum mapping model is based on the work of instructor Dr. Jacobs (1997, 2006, 2010). In a resource created by Wamego Public Schools (2017), curriculum mapping is defined as "the process indexing or diagramming a curriculum to identify and address academic gaps, redundancies, and misalignments for purposes of improving the overall coherence of a course of study and, by extension, its effectiveness." The curriculum mapping tool provides a method for instructors to examine transfer in their course using the threshold concept. As shown in Chapter 1 and Chapter 3, threshold concepts and transfer have a deep, complex history that spans many disciplines and includes a wide lexicon. Teaching is difficult enough and mandating that all teachers to maintain readership on the ever-growing literature of threshold concepts and transfer is unrealistic. This tool offers a comprehensive, yet concise, method for mapping curricular goals to course design and instructional approaches through the framework of threshold concepts and transfer.

If first-year writing instructors and programs are serious about framing learning goals around transfer, there needs to be a concerted effort to examine current course design and instructional approaches. The intent for the previous chapters is to provide the foundational scholarship for threshold concepts (TCs) and transfer techniques (TTs). This chapter's goal is to offer a functional curriculum mapping tool and instructions for faculty to examine their writing courses in order to understand the TCs taught, and not taught, and to identify transfer-focused and transfer-inhibiting approaches in their curriculum. In this chapter, I will

introduce and explain how to use the mapping tool and offer an example of how I used the mapping tool using my own course.

How to Use it

There are two ways to use this mapping tool: (1) for mapping TCs and TCs in a single course's curriculum and (2) for mapping TCs and TTs across an entire program's curriculum. I include below some brief instructions for both with steps (modeled after DeClark's, 2002, p. 28), followed by my own example using the mapping tool for individual assessment of my course.

For mapping a single course, there are four steps for using this mapping tool:

1. Identify learning objectives for the curriculum, desired core threshold concepts (using Chapter 1 and 2), and presumed transfer techniques of course (using Chapter 3 and 4);

2. enter current course materials into the mapping tool (using Chapter 5);

3. examine the mapping tool results and identify current TCs taught and transfer techniques used, and any notable gaps;

4. compare mapped curriculum to the department's core goals for TCs and transfer.

For departmental mapping, there are five steps for using this mapping tool:

1. Identify the department's first-year writing curriculum learning objectives, core threshold concepts (using Chapter 1 and 2), and desired transfer techniques for the curriculum (using Chapter 3 and 4);

2. establish where the course should be as it relates to TCs and teaching-for-transfer;

3. enter current course contents into the mapping tool (using Chapter 5);

4. examine the mapping tool results and identify current TCs taught and transfer techniques used, and any notable gaps;

5. compare the mapped course to the curriculum's core goals for TCs and transfer.

Curriculum Mapping Tool

The mapping tool is organized with a column of TCs on the left and a row of transfer techniques on the top. The spaces below allow you to fill in the squares with assignments, content or in class activities that correspond with a TC and a transfer technique (see *Table 4).*

Table 4 TC and TT Curriculum Mapping Tool

Threshold Concepts ↓	Transfer Techniques →								
	Remixing & Repurposing	Meta-cognitive Awareness	Rhetorical Analysis	Boundary Crossing	Genre Analysis	Repetition & Diversity	Explicit Expectations	Metaphor & Analogy	Scaffolding
Writing is a Social & Rhetorical									
Genre Awareness									
Writing Enacts & Creates Identities & Ideologies									
Writers Always Have More to Learn									
Writing is Cognitive & Metacognitive									
Writing is a Subject of Study									

Trial Run: Mapping One Section of First-Year Writing

Below, I will walk through each of the steps for individual assessment with the mapping tool. I will then explain why I decided to enter specific curriculum features into particular blocks.

Step 1: Identifying Learning Outcomes, Threshold Concepts, & Transfer Techniques

In this step, I will identify the learning objectives for my WRTC 103 curriculum, core threshold concepts, and desired transfer techniques. For my Spring semester course, my learning objectives are as follows:

- Students will learn how to write reflectively and make connections to their past writing experiences and current conception of writing (Writing Literacy Narrative paper, weekly prompts);
- Students will learn the basic principles of researching, identifying reliable sources, and creating effective introduction and conclusion paragraphs (Writing Investigation paper);
- Students will learn the basic principles of writing a resume and cover letter (Rhetorical Situation Assignment);
- Students will learn basic design principles and implement them in their creation of a cover letter and resume (Rhetorical Situation Assignment);
- Students will learn strategies for giving and receiving effective feedback in peer review;

- Students will learn about fallacies, the rhetorical situation, rhetorical appeals, and rhetorical elements (Rhetoric and Fallacies Exam).

Based on Chapter 2, my desired core threshold concepts for my course are:

- Writing Speaks to Situations in Recognizable Forms,
- All Writers Have More to Learn,
- Writing is Cognitive and Metacognitive, and
- Writing Enacts and Creates Identities and Ideologies.

Using Chapter 4, the transfer techniques I think I use are:

- metacognitive awareness,
- explicit expectations,
- repetition and diversity, and
- genre analysis.

After I have entered my material into the mapping tool, I will return and examine these learning goals, stated core threshold concepts, and presumed transfer techniques for my course.

Step 2: Mapping the Curriculum

In this step, I have entered my current course materials into the mapping tool. Each of the assignments, in-class activities, and lectures ("materials") listed below were organized into the mapping tool according to their corresponding TC and transfer technique. These TCs and transfer techniques, as mentioned throughout, overlap and possess interrelated qualities. So, in choosing which box to input my material, I did not input it into *every* box

where it may be relevant, but I chose the quadrant that *best* and most *accurately* fit the intention and context of that particular material.

Using my own course as an example, I have filled in some of the squares with my own course material and teaching approaches (see *Table 5)*.

Table 5 Example TC and TT Curriculum Mapping Tool

Threshold Concepts ↓	Transfer Techniques →								
	Remixing & Repurposing	Meta-cognitive Awareness (Reflection)	Rhetorical Analysis	Boundary Crossing	Genre Analysis	Repetition & Diversity	Explicit Expectations	Metaphor & Analogy	Scaffolding
Writing is a Social & Rhetorical Activity	Rhetorical Situation Assignment		"Mike Smith murder" activity			Peer review		Roadmap as preview for the audience	
Genre Awareness					The "school tours" activity			I explain genres as "tools" that help an action	
Writing Enacts & Creates Identities & Ideologies							Biweekly Reflection Prompts		
All Writers Have More to Learn				Writing Investigation					
Writing is Cognitive & Metacognitive		Writing Literacy Narrative assignment							
Writing is a Subject of Study							"Introduction to Writing Studies" unit		

Step 3: Analysis of Results

In this step I will examine the mapping tool results for the current TCs taught and TTs used. I will discuss some potential overlap between TCs and transfer techniques and address any notable gaps or areas of high concentration highlighted by the mapping tool.

Current TCs and Transfer Techniques

My course's curriculum map suggests, Writing is a Social and Rhetorical Activity is the threshold concept most prominently identified in my course. I reinforce the threshold concept Writing is Social and Rhetorical Activity with four transfer techniques: remixing and repurposing, rhetorical analysis, repetition and diversity, and metaphor and analogy. The course materials I have entered into the mapping tool include the (1) Rhetorical Situation Assignment, the (2) "Mike Smith Murder" activity, (3) peer review throughout the semester, and the (4) "roadmap" for introduction analogy.

The **Rhetorical Situation Assignment (RSA)** is my last major assignment in my course. For this assignment, the students are tasked with finding a job, volunteer, or scholarship opportunity ("post" for short) and crafting a cover letter and resume for their chosen post. In the units prior, as a class, we have covered the rhetorical situation, audience awareness, genre, rhetorical tools, building and supporting arguments, and developing a strong argument (or thesis). The RSA demonstrates the social aspect of writing through peer collaboration and review and examining existing models written by others. It also demonstrates the rhetorical aspect of writing by focusing on crafting content specifically for an employers'/audiences' expectations, needs, and values. This assignment uses the remixing and repurposing transfer technique because it requires the students to reflect on past learning in the course and then intentionally add or revise that learning to apply it in the new context of cover letter and resume writing. The RSA is by far the most robust assignment in my course.

The threshold concept of Writing is Social and Rhetorical Activity is also reaffirmed through an in class exercise the **"Mike Smith Murder" activity** using the transfer technique rhetorical analysis. This activity starts with introducing the students to five facts regarding the who, what, where, when, and how of Mike Smith's murder. They are then tasked with taking on the following roles and writing tasks: detective and police report, coroner and autopsy, friend and eulogy. The students are allowed to add and make up any information, but they cannot change the core five facts surrounding the murder.

After, as a class we engage in a discussion of what they wrote, how they wrote it, and what information they added and excluded. This activity teaches how Writing is Social and Rhetorical by demonstrating the collaboration required to gather the information (eye witnesses, family members, the medical examiner) and different approaches to the writing tasks based on the audience (report for court, eulogy for funeral). In the discussion, the transfer technique rhetorical analysis is used when students are prompted to examine the actions that result from these genres of writing (a conviction, an emotional response). It's notable that the technique Texts as a Social Action is used with a very active and involved activity.

The next two transfer techniques I use to reinforce that Writing is a Social and Rhetorical Activity are repetition and diversity and metaphor and analogy. I use repetition and diversity in how I sequence **peer review**. The students engage in peer review at least two to three times per major assignment; however, the way we conduct peer review changes each time. The students complete a peer review of a final assignment that's already been submitted in order to examine how their peers approach it differently. They then are

instructed to have both higher order concerns (HOCs) and later order concerns (LOCs) focused peer reviews, as well as a blind peer review towards the end of the semester.

The course's peer review sequencing reflects Perkins and Salomon's recommendation of Repetition in order to enhance transfer. In peer review, the students are also instructed to identify their peer's "roadmap." In the course, I use the **"roadmap" as an analogy** for understanding the function of a thesis statement or introduction. A roadmap in a paper indicates to the reader the scope, topic, and organization of a piece of writing. It also prompts the students to consider how their writing might be understood by a reader, indicating the social and rhetorical aspects of writing.

I teach the threshold concept of Genre Awareness using two transfer techniques: genre analysis and metaphor and analogy. I use genre analysis as a course activity where, as a class, we deconstruct and examine the genre of **"school tours."** We talk about the expectations and varied style of school tours and the overall purpose that the genre seeks to accomplish. This pushes students to consider the recognizable form of school tours and consider a social act they may not otherwise consider as a genre. Building off of that, I use the metaphor and analogy technique for describing **genres as "tools"** that people use to accomplish something. This pushes students to consider the social action aspect of genres. Both the activity and analogy work in tandem to make students aware of genres and their role in their everyday life.

I teach the threshold concept Writing Create and Enact Identities and Ideologies using the TT explicit expectations. I do this occasionally in their "**Biweekly Reflection Prompts."** Prompts are usually centered around a specific question or topic that the student

has to respond to in writing. One specific prompt asks "What writing tasks will you encounter in your discipline or future profession? What are the goals and values of that discipline or profession?" This explicitly asks students to consider the ideology of their discipline or future profession and thus consider how that ideology is enacted through the various writing tasks within.

I also use explicit expectations in my teaching of the threshold concept Writing is a Subject of Study. I do this in my course's second unit called **"Introduction to Writing Studies."** In this unit, I introduce the students to the concept of "writing" as much more than a task but an entire field of study. This unit's goal is to drastically reframe the student's conception of writing and to situate this course within a specific discipline.

I teach the threshold concept All Writers Have More to Learn using the transfer technique of boundary crossing. I do this throughout the assignment sequence called the **Writing Investigation.** Preceding this assignment, students read Schick and Schubert's (2017) textbook *So What? The Writer's Argument.* The chapters they read cover the notion of "scholarly apprentice," how scholars read and write, strategies for finding and using reliable sources, ideas for supporting arguments, and the concept of writerly style. This assignment requires each student to develop a writing question that they then research. Using that research, they refine their question and organize their paper based around the results of their investigation of the question.

Throughout this assignment, they are pushed into a "boundary zone" that requires them to apply "ideas, concepts, or instruments" from the textbook to their Writing Investigation (Donahue, 2012, p. 165). This assignment prompts students to consider what

they do not know and reinforces the concept that All Writers Have Something to Learn. This assignment employs boundary crossing because it provides students an opportunity to creatively apply what they have learned in the textbook to what they are currently doing in their Writing Investigation. This is the second most comprehensive and labor-intensive assignment in the course.

I teach the threshold concept Writing is a Cognitive and Metacognitive Activity by using the transfer technique metacognitive awareness in the **Writing Literacy Narrative** paper. This assignment asks students to compose a three-page paper reflecting on how they learned to write and how that has impacted how they write now. Writing, and learning to write, involves cognition. We discuss in class how to reflect on the ways we have learned in the past that can help contextualize both their struggles and knowledge of writing in the present. In this way, this assignment teaches how Writing is a Cognitive and Metacognitive act by having them reflect on how then learned through metacognitive awareness.

Potential Overlap

As evident in the analysis above, there can be significant overlap between both threshold concepts and transfer techniques and threshold concepts with other threshold concepts. For example, Genre Awareness and genre analysis appear on the surface very similar. I think a helpful way to distinguish between the two is to consider the first as the learning outcome (threshold concept) and the second as the instructional (transfer) technique. When students deconstruct a genre, they gain greater awareness of genres as a whole. There is also overlap between threshold concepts. For example, Genre Awareness

can give way to understanding how Writing is a Social and Rhetorical Activity. In this way, a threshold concept can reinforce understanding of another different threshold concept.

Both transfer and threshold concepts are complex concepts with significant overlap because much of what reinforces transfer learning in one area does so in another similar area. While it can make it difficult to distinguish between threshold concepts and transfer techniques, I think it is important to acknowledge practicality of the taxonomies used to make sense of the many concepts and techniques.

To present a more straightforward, practical example, I only entered major assignments and recurring activities into my course map. The overlap between threshold concepts and transfer would be much more apparent as an instructor inputs more and more course material into the mapping tool. The goal of this tool is to simply help identify major gaps and areas of concentration in order to help instructors examine and redesign their courses more effectively.

Notable Gaps and Concentration

There are two major threshold concepts and transfer techniques I noticed were absent or weak in the mapping tool results. The most notable threshold concept gaps were Writing Enacts and Creates Identities and Ideologies and Writing is Cognitive and Metacognitive. Even though I had one course material for each, I feel like that material was weaker and less comprehensive than the other threshold concept course materials. The transfer techniques I saw as mostly absent were explicit expectation and repetition and diversity. This is particularly interesting considering these two techniques are often cited as

the most effective in facilitating transfer. In my next course iteration, I plan to improve these gaps.

There was one particular threshold concept my course appears to favor along with two more frequently used transfer techniques. I saw a lot of course material concentrated around the threshold concept Writing is a Social and Rhetorical Activity. While the transfer techniques most prominently seen in the mapping tool were Transfer metaphor and analogy and explicit expectations. In my next course, I plan to keep the focus on the threshold concept of Writing is a Social and Rhetorical activity and reinforce it with even more transfer techniques.

Step 4: Discussion of Implications and Findings

I will now return to my desired core threshold concepts and presumed transfer techniques used in my course. Because James Madison University's First-year Writing Department is currently revising the course objective for WRTC 103, I will not be comparing my mapping tool results to the department's objectives.

While I did have at least one course material to my desired core threshold concepts (Writing Speaks to Situations in Recognizable Forms, All Writers Have More to Learn, Writing is Cognitive and Metacognitive, and Writing Enacts and Creates Identities and Ideologies), I was surprised to see that Writing is a Rhetorical and Social Activity was not listed under my desired threshold concepts. Especially considering how prominent it was in the mapping tool results. This demonstrated to me that *desired* concepts and the *actuality* of the concepts taught are often very different. This discrepancy is called "low implementation fidelity" by assessment experts.

I was again surprised by the disparity between the transfer techniques I thought I used and the ones I actually used most often in the course. Out of the four techniques (metacognitive awareness, explicit expect, repetition and diversity, genre analysis) I thought I used often in the course, only one was accurate—explicit expectation. This demonstrates to me that I need to incorporate a more diverse set of transfer techniques and reexamine places in the course I miss opportunities to do so.

Conclusion

While this example is only an abbreviated version of the real thing, it still offers valuable insight. The mapping tool helped me identify the areas in my course that can be redesigned to be more effective in both teaching threshold concepts and facilitating transfer through transfer techniques. As this mapping tool continues to be tested, it will become more refined and more useful. Right now, in its beginning stages, I recognize there are a lot of ways it can improve as both a teaching and instructional tool. My hope is that this offers a starting place for both conversations about teaching-for-transfer and future programmatic changes that will help students.

Chapter 6 Future Research

This thesis is a small step in a long research process. In order to create the most informed and field-situated mapping tool, I conducted a review of the threshold concept and transfer scholarship in the form of a systematic literature review. This review is the foundation for future research that supports pragmatic learning goals for course design and first-year writing departments. Future research is divided up between two phases: Phase 1 comprises steps to build out, test, and functionalize the mapping tool; Phase 2 includes a pre-assessment, intervention, and post assessment. I will provide a brief outline of these phases and steps within and pose some research questions to be explored in the future.

Phase 1: Test and Refine the Mapping Tool

This phase includes a three-step research plan that examines threshold concepts and transfer techniques on an individual instructor basis. Phase 1 also includes intentional opportunities to test and build out the mapping tool for the pre-assessment in Phase 2. This phase also allows for the creation of a bank comprising example course material for teaching threshold concepts and teaching-for-transfer.

Step 1: Testing the Mapping Tool

In order to test out the functionality of the mapping tool, a randomized selection of first-year writing instructors (full-time, part-time, and adjunct) will individually input their course materials into their own copy of the tool and participate in a focus group. A resource key for terms and definitions of threshold concepts and transfer will be provided along with the mapping tool. After the participants input their course material, the mapping tool will be

collected and examined for any gaps or similarities before conducting a focus group. In the focus group, the participants will be asked to provide feedback on the mapping tool and suggest revisions. At this point in the research, the names will not be anonymized in order to create specified interview questions that correspond with the instructor participant and their filled-out mapping tool. Following the focus group, the feedback will be used to revise the mapping tool for Phase 2.

Step 2: Conducting Instructor Interviews and Student Surveys

In order to limit researcher subjectivity, participants will be interviewed and asked to expand or clarify the information entered into the mapping tool and the participants' students will be surveyed to examine their perception of the course material. The interview questions will include common questions asked to all participants and specific questions for each participant based on their unique mapping tool information. After the participants are interviewed, a survey will be distributed to their students regarding their perception of the course material as it relates to threshold concepts (core concepts) and transfer (future applicability).

Step 3: Building a Bank of Course Material

After Step 1 and Step 2, the mapping tools that have been completed, expanded on, and clarified by the participants will be entered into a bank of course material organized by threshold concepts and transfer technique. This bank will later be used as examples for core department threshold concept/transfer-focused course design. The course material will be organized by the certain threshold concept and transfer techniques used. This bank will be referred back to in Phase 2 Step 3 in creating an intervention.

Phase 2: Curriculum Mapping and Alignment

This phase includes a four-step research plan for conducting a departmental pre-assessment, intervention, and post assessment for core threshold concepts of WRTC 103. While Phase 1 is more focused on examining individual instructors in first-year writing, Phase 2 is a departmental examination of the approaches to the pragmatic learning goals of the course.

Step 1: Completing Curriculum Mapping

If approved, James Madison University's Department of First-Year Writing instructors will complete a pre-assessment using the mapping tool. This will be done after a presentation to the department that will address three items: (1) explain the research project and mapping tool, (2) provide examples from the course material bank, and (3) discuss the overall purpose to create an intervention that supports pragmatic learning goals. Instructors will be given the same resource key as given to the participants in Phase 1, Step 1.

Step 2: Establishing Core Threshold Concepts

After the instructors complete the curriculum mapping tool, the department (as a whole or just the department administrators) will meet to discuss the results from the mapping tool and the central threshold concepts for the department's WRTC 103 course. This will happen after the pre-assessment so that the department can discuss where they currently are and what gaps have been identified from the mapping tool results. After the department has established the key threshold concepts for the WRTC 103 course, the research can proceed to the next step.

Step 3: Curriculum Revision

Using the core threshold concepts determined by the department, the researchers will identify the core concept most absent from the pre-assessment mapping tool results. From this, an intervention will be created to address the absent threshold concept. A random selection of instructors will implement the intervention and another selection of instructors will not. The instructors implementing the intervention will begin at the start of the semester and include the intervention in their first course unit.

Step 4: Evaluate Implementation

At the end of the courses' intervention unit, the researchers will conduct a post assessment. This will include both instructor interviews and a survey of students' perception and attitude towards the intervention with questions related to threshold concept comprehension and successful transfer techniques. For example, "Based on what you have talked about in class, how would be define a 'genre'?" (open-ended question) and "How would you rate the importance of the content you learned in the last unit?" (Likert-scale question). This will be done in the middle of the semester, as opposed to the end of the semester when students are least likely to participate due to finals. The post assessment will be included in the course schedule before the start of the semester so that it will not disrupt or displace teaching time. For this reason, the student surveys responses will be accounted for before the start of the semester as an in-class time activity. The results from the post assessment will be examined and presented to the First-Year Writing Department.

Future Research Questions

It is difficult to be brief when discussing future research questions as it relates to threshold concepts and transfer, because it calls into question the very goals and purposes of education. I have identified three broad areas for future research, specifically for first-year writing: (1) studying threshold concepts and transfer together, (2) examining deeper the student perception of transfer, and (3) looking at first-year writing's consensus on student goals and learning outcomes. It is imperative that educators continue to question, investigate, and examine our approaches and practices so that we can best serve our students.

Much like the scholarship surrounding it, research questions about threshold concepts and transfer, individually, are changing and expanding. What I think is a viable area of research are the questions about where threshold concepts and transfer intersect. How do they inform each other? In what ways do they work together, and work against each other, in the classroom? Are there combinations of threshold concepts and transfer techniques that are most effective? Are there combinations that are least effective? With this systematic literature review as a foundation, there are many ways that these questions can be posed, examined, and researched.

One aspect of threshold concept and transfer research that is lacking is the inclusion of the student perception of these teaching goals and approaches. Benander, Kramer, and Lighter (2008) offer an excellent example of the valuable information gathered when students are entered into the equation. In the study of Benander et al., through surveying students and their attitude towards transfer, they discovered that explicit transfer expectations are central to successful teaching-for-transfer. I think there is much more the

field can learn if we dive deeper into examining student perception. Afterall, pragmatic learning goals are about the learner. An instructor can state and engage in approaches that work towards these goals, but if students' perception and attitude of transfer and threshold concepts are not sought out as metrics of these outcomes, instructors are not teaching-for-transfer but teaching for themselves.

As stated earlier in my thesis, I make an assumption that pragmatic learning goals are embedded into the core purpose of FYC. This is an area for investigation. While I hope it is true, I am not sure whether first-year writing programs across the country share those goals. Often FYC is housed within English and literature and many first-year writing programs do not subscribe to a single source of disciplinarity as their teaching foundation. With this comes a variety of goals, purposes, and approaches. Downs and Wardle (2007) address this, along with the many student misconceptions of writing, in their research. I think it is necessary to continue examinations of writing programs as Downs and Wardle have done with their own. As difficult as it may be, if instructors seek to improve first-year writing, there needs to be a large-scale examination and clarification of the learning goals we hope to achieve in teaching these courses.

Conclusion

While I only focus on three broad areas for potential future research, the opportunities are vast for threshold concepts and transfer research in the field. This review of research and literature provides a firm foundation for both instructors and researchers to examine and pursue inquiries into first-year writing curricular approaches and beyond. I

chose to focus specifically on first-year writing because I believe the opportunities for meaningful transfer of learning are great, but it does not stop there.

Dan Berrett (2014) places transfer at the heart of academic institutions, stating "students' ability to connect and link ideas is central to what a higher degree should teach" (p. 120). Many disciplines and departments center their mission around preparing students for the future tasks ahead. This can be accomplished through teaching core threshold concepts facilitated by and transfer of learning techniques. Threshold concepts and transfer are not unique to writing courses—they are imperative to all situations where learning occurs. This is why the investigation into how we, as instructors, can assist in facilitating transfer through teaching-for-transfer curriculum design is fundamentally important to the mission of education.

References

Adler-Kassner, L., & Wardle, E. (2015). *Naming what we know: Threshold concepts of writing studies*. Boulder: University Press of Colorado.

Adler-Kassner, L., Majewski, J., & Koshnick, D (2012). The value of troublesome knowledge. *Composition Forum,* Vol. 26.

Bazerman, C. (2015). Writing speaks to situations through recognizable forms. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp.35-37). Utah State University Press.

Bazerman, C. & Timber, H. (2015). Writing is an expression of embodied cognition. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 74-75). Utah State University Press.

Beach, K. (2003). "Consequential transitions: a developmental view of knowledge propagation through social organizations." Tuomi-Gröhn, Terttu, and Yrjo Engeström (Eds) in *Between school and work: new perspectives on transfer and boundary-crossing.* Bingley, UK: Emerald Group Publishing, 39-61.

Bean, J.C. (2011). *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom.* San Francisco*:* Jossey-Bass Publishing.

Beaufort, A. (2012). College writing and beyond: Five years later. *Composition Forum, Vol. 26*. Retrieved from https://compositionforum.com/issue/26/college-writing-beyond.php

Beaufort, A. (2007). *College writing and beyond: A new framework for university writing instruction.* Utah State University Press.

Beckelhimer, L., Griegel-McCord, M., & Ris, C. N. (2009). From memoirs to museums: Enhancing rhetorical awareness through public texts. Ohio Journal of English Language Arts, 49(2), 14–22. Retrieved from https://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,cpid,athens,shib&custid=s8863137&db=ehh&AN=47437110&site=eds-live&scope=site

Benander, R., Kramer. E., Lighter, R. (2008). Faculty and student attitudes about transfer of learning. *InSight: A Journal of Scholarly Teaching, Vol. 3, 58-66.*

Berrett, D. (2014, April 7). Students can transfer knowledge if taught. *Chronicle of Higher Education.* Retrieved from http://chronicle.com

Bereiter, C. & Scardamalia, M. (1985). Cognitive coping strategies and the problem of inert knowledge. In S.S. Chipman, J.W. Segal, & R. Glaser (Eds), *Thinking and learning skills. Vol. 2: Current research and open questions* (pp. 65-80). Hillsdale, NJ: Erlbaum.

Bransford, J., Brown, A. L., & Cocking, R. R. (1999). *How people learn: Brain, mind, experience, and school.* National Academy Press. Retrieved from

https://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,ip,cpid,athens,shib&custid=s8863137&db=cat00024a&AN=vmc.b16436660&site=eds-live&scope=site

Brooke, C & Carr, A. (2015). Failure can be an important part of developing writing. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 62-64). Utah State University Press.

Calais, G (2006). Haskell's taxonomies of transfer of learning: implications for classroom instruction. *National Forum of Applied Educational Research Journal.* 20 (3), 1-8.

Chen, S., He, W. (2014) Study on knowledge propagation in complex networks based on preferences, taking Wechat as an example. *Hindawi Journal.*

Chugh, R. (2015). Do australian universities encourage tacit knowledge transfer? In *Proceedings of the 7th International Joint Conference on Knowledge Engineering and Knowledge Management*, ISBN 978-989-758-158-8, p. 128-135. DOI 10.5220/0005585901280135

Chugh, R, (2013). Workplace dimensions: tacit knowledge sharing in universities, *Journal of Advanced Management Science,* vol. 1, no.1, pp.24-2

Clark, I. L., & Hernandez, A. (2011). Genre awareness, academic argument, and transferability. *WAC Journal*, 22, 65. Retrieved from http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2003&xri:pqil:res_ver=0.2&res_id=xri:ilcs-us&rft_id=xri:ilcs:rec:abell:R05150965

Cousin, G. (2006). An introduction to threshold concepts. *Planet*, 17(4), 4-5, Retrieved from *http://gees.ac.uk/planet/p17/gc.pdf* (accessed 8 April 2011).

DeClark, T. (2002). Curriculum mapping: A how-to guide: Using curriculum mapping to align instruction. *The Science Teacher, 69*(4), 29-31. Retrieved April 30, 2020, from www.jstor.org/stable/24155946

Devet, B. (2015). The writing center and transfer of learning: a primer for directors. *The Writing Center Journal, 35*(1), 119-151. Retrieved March 3, 2020, from www.jstor.org/stable/43673621

Devitt, A.J. *Writing genres.* (2004). Carbondale: Southern Illinois UP. Print

Devitt, A. J. (1991). Intertextuality in tax accounting: Generic, referential, and functional. In Charles Bazerman and James Paradis (eds.), *Textual Dynamics of the Professions: Historical and Contemporary Studies of Writing in Professional Communities*: 336-357. Madison, WI: University of Wisconsin Press.

Dias, P.X., Freedman, A., Medway, P., & Pár, A. (1999). *Worlds apart: Acting and writing in academic and workplace contexts.* Lawrence Erlbaum Associates, Inc., Publishers.

Dirk, K. (2010). Navigating genre. In Charles Lowe and Pavel Zemliansky (eds.) *Writing spaces: Readings on writing, Volume 1.* 249-262. Parlor Press

Donahue, C. (2012). Transfer, portability, generalization: (How) does composition expertise "carry"!

In Ritter, K. & Matsuda P. (Eds.), *Exploring composition studies: Sites, issues, perspectives* (pp. 145-166). Boulder, Colorado: University Press of Colorado. Retrieved March 24, 2020, from www.jstor.org/stable/j.ctt4cgjsj.1

Downs, D. & Robertson, L. (2015). Threshold concepts in first-year composition. In Linda Adler-Kassner & Elizabeth Wardle, Editor (Ed), Threshold *concepts in first-year composition.* Boulder: University Press of Colorado.

Downs, D. & Wardle, E. (2007). Teaching about writing, righting misconceptions: (Re)Envisioning 'first year composition' as 'introduction to writing studies. *College Composition and Communication* 58:4, (pp. 552–84).

Dryer, D. B. (2015a). Words get their meaning from other words. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 23-26). Utah State University Press.

Dryer, D.B (2015b). Writing is not natural. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 27-29). Utah State University Press.

Dryer, D, B. (2015c). Writing is (also always) a cognitive activity. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 71-74). Utah State University Press.

Ellis, H. C. (1965). *The transfer of learning.* New York: Macmillan.

Elon statement on writing transfer. (29 July 2013). Retrieved from http://www.elon.edu/e-web/academics/teaching/ers/writing_transfer/statement.xhtml

Faculty and Research: David Perkins. (n.d). *Harvard Graduate School of Education.* Retrieved from https://www.gse.harvard.edu/faculty/david-perkins

Fishman, J. & Reiff, M. J. 2011. Taking it on the road: Transferring knowledge about writing and rhetoric across curricula and campuses. *Composition Studies*, 39 (2), 121-144.

Flanagan, M. T. and Smith, J. (2008). From playing to understanding: the transformative potential of discourse versus syntax in learning to program. In *Threshold concepts within the disciplines,* Land, R., Meyer, J.H.F. and Smith, J., (eds), Sense Publishers, Rotterdam, pp 91-104,

Flanagan, M. T. (2019, September 27). Threshold concepts: Undergraduate teaching, postgraduate Training, Professional Development and School Education. *University College London (UCL) London, UK.* Retrieved from https://www.ee.ucl.ac.uk/~mflanaga/popupIrreversibilityA.html

Foertsch, J. (1995). Where cognitive psychology applies: how Theories about memory and transfer can influence composition pedagogy. *Written Communication*, *12*(3), 360–383. https://doi.org/10.1177/0741088395012003006

Gluck, M. A., Mercado, E., &; Myers, C. E. (2011). *Learning and memory: From brain to behavior* (2nd ed.). New York: Worth Publishers. p. 209. ISBN 9781429240147.

Haskell, R. E. (2001). *Transfer of learning: Cognition, instruction, and reasoning*. San Diego: Academic Press.

Hayes, H., Ferris, D.R., & Whithaus, C. (2017). Dynamic transfer in first-year writing and 'writing in the disciplines' settings. In *Critical transitions: writing and the question of transfer,* edited by Chris M. Anson and Jessie L. Moore, UP of Colorado, 181- 213.

Hill, H. (2016). Tutoring for transfer: The benefits of teaching writing center tutors about transfer theory. *The Writing Center Journal*, 35(3), 77-102. Retrieved from http://www.jstor.org/stable/43965691

Hill, S. (2010), Troublesome knowledge: Why don't they understand? *Health Information & Libraries Journal*, 27: 80-83.

Hobsbaum, A., Peters, S., & Sylva, K. (1996). Scaffolding in reading recovery. *Oxford Review of Education, 22*(1), 17-35. Retrieved March 25, 2020, from www.jstor.org/stable/1050801

Jacobs, H. H. (1997*). Mapping the big picture: Integrating curriculum and assessment K-12*. Alexandria, VA: Association for Supervision and Curriculum Development. Jacobs, H.H. (2004). *Getting results with curriculum mapping*. Alexandria, VA: Association for Supervision and Curriculum Development.

Jacobs, H. H. (2006*). Active literacy across the curriculum: Strategies for reading, writing, speaking, and listening*, Larchmont, NY: Eye On Education. Jacobs, H. H. (2008). Keynote presentation. Glendale, AZ: Regional Curriculum Mapping Conference.

Jacobs, H. H. (2010*). Curriculum 21: Essential education for a changing world.* Alexandria, VA: Association for Supervision and Curriculum Development

James, M. A. (2008). The influence of perceptions of task similarity/difference on learning transfer in second language writing. *Written Communication* 25(1), 76-103.

Jarratt, S.C., Mack, K, Sartor, A., & Watson, S.E. (2009). Pedagogical memory: Writing, mapping, translating. *WPA: Writing Program Administration*, 33:1-2.

Meyer, J., & Land, R. (2005). Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning. *Higher Education, 49*(3), 373-388. Retrieved January 22, 2020, from www.jstor.org/stable/25068074

Kinneavy, J. (1977). Freshmen English: An American rite of passage. *Freshman English News, 6*(1), 1-3. Retrieved February 6, 2020, from www.jstor.org/stable/43518517

Kozulin, A. (2004). Vygotsky's theory in the classroom: Introduction. *European Journal of Psychology of Education,19*(1), 3-7. Retrieved March 25, 2020, from www.jstor.org/stable/23421397

Lamott, A. (1994). *Bird by bird: Some instructions on writing and life.* New York: Pantheon Books.

Land, R. & Cousin, G. & Meyer, J.H.F. & Davies, P. (2005). Threshold concepts and troublesome knowledge (3): Implications for course design and evaluation. *Improving Student Learning Diversity and Inclusivity*. 53-64.

Land, R., Meyer, J.H.F. and Baillie, C. (2010) Editors' preface: Threshold concepts and transformational learning. In: *Threshold concepts and transformational learning*, Land, R., Meyer, J.H.F. and Baillie, C., (eds), Sense Publishers, Rotterdam, pp. ix-xlii.

Learner, N. (2015). Writing is a way of enacting disciplinarity. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 40-42). Utah State University Press.

Lunsford, A. A. (2015). Writing addresses, invokes, and/or creates audiences. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 20-21). Utah State University Press.

McNamara, O., Roberts, L., Basit, T., & Brown, T. (2002). Rites of passage in initial teacher training: Ritual, performance, ordeal and numeracy skills test. *British Educational Research Journal, 28*(6), 863-878. Retrieved February 5, 2020, from www.jstor.org/stable/1501502

Meyer, J. and Land, R. (2003). Threshold concepts and troublesome knowledge: Linkages to ways of thinking and practising within the disciplines', in Rust, C. (ed.), *Improving Student Learning: Improving Student Learning Theory and Practice - Ten Years On*. Oxford: Oxford Centre for Staff and Learning Development.

Miller, C. (1984) Genre as social action. *Quarterly Journal of Speech*: 151-167.

Nowacek, R. (2011). *Agents of integration understanding transfer as a rhetorical act.* Conference on College Composition and Communication of the National Council of Teachers of English.

Perkins, D. (2010) *Foreword*. In Threshold *concepts and transformational learning*, Land, R., Meyer, J.H.F. and Baillie, C., (eds), Sense Publishers, Rotterdam, pp. xliii-xlv.

Perkins, D. N., & Salomon, G. (1988). Teaching for transfer. *Educational Leadership*, 46(1), 22-32.

Perkins, D. N., & Salomon, G. (1992). Transfer of learning. In *International encyclopedia of education* (2nd ed.). Oxford, UK: Pergamon Press. Retrieved from http: learnweb.harvard.edu/alps/thinking/docs. traencyn.htm

Perkins, D. N., & Salomon, G. (1999). Science and the art of transfer. The Thinking Classroom. *The Cognitive Skills Group at Harvard Project Zero*. Retrieved from http:/learnweb. Harvard, edu/alps/thinking/docs/trancost.htm

Phye, G.D. (1992). Strategic transfer: A tool for academic problem solving. *Educ Psychol Rev* 4, 393–421. https://doi.org/10.1007/BF01332145

Prenzel M., Mandl H. (1993) Transfer of learning from a constructivist perspective. In *Designing Environments for Constructive Learning,* Duffy T.M., Lowyck J., Jonassen D.H., Welsh T.M. (eds) NATO ASI Series (Series F: Computer and Systems Sciences), vol 105. Springer, Berlin, Heidelberg

Rhem, J. (2013). Thresholds are troublesome. *The National Teaching and Learning Forum.* (22) 4, 1-5.

Robertson, L., Taczak, K.,and Yancey, K.B. (Fall 2012). Prior knowledge and its role in transfer.

Composition Forum, 26. Retrieved from https://compositionforum.com/issue/26/prior-knowledge-transfer.php

Roozen, K. (2015). Writing is a social and rhetorical activity, In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 17-19). Utah State University Press.

Rose, S. (2015). All writers have more to learn. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 59-61). Utah State University Press.

Schick, K., & Schubert, L. (2017). *So what? The writer's argument*. New York: Oxford University Press.

Scott, T. (2015). Writing enacts and creates identities and ideologies. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 48-50). Utah State University Press.

Scott, J. B. & Wardle, E. (2015). Using threshold concepts to inform writing and rhetoric undergraduate majors: the UFC experiment. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 122-139). Utah State University Press.

Skeffington, J.K. (2012). Enhancing transfer from first-year composition: A pedagogy of shorter essays. *Journal of Teaching Writing*, 27(2), 27-45.

Smit, D.W., & Hesse, D. (2007). *The end of composition studies*. Carbondale: Southern Illinois University Press. muse.jhu.edu/book/24946.

Smith, J. (2006) *Lost in translation: Staff and students negotiating liminal spaces*, SEDA Annual Conference, Liverpool, 2006.

Sommers, N., & Saltz, L. (2004). The novice as expert: writing the freshman year. *College Composition and Communication, 56*(1), 124-149. doi:10.2307/4140684

Swales, J. M. (1990) *Genre analysis: english in academic and research settings*. Cambridge: Cambridge University Press.

Tate, G., Rupiper, A., & Schick, K. (2001). *A guide to composition pedagogies*. New York: Oxford University Press.

Thorndike, E.L. & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions. *Psychological Review*, 8, 247-261.

Timmermans, J.A. & Meyer, J.H.F. (2019). A framework for working with university teachers to create and embed 'Integrated Threshold Concept Knowledge' (ITCK) in their practice. *International Journal for Academic Development,* 24:4, p. 354-368

Turner, V. (1974). Liminal to liminoid, in play, flow, and ritual: an essay in comparative symbology. *Rice Institute Pamphlet - Rice University Studies,* 60, no. 3. Rice University: https://hdl.handle.net/1911/63159.

Tuomi-Gröhn, T., Engeström, Y., & Young, M. (2003). From transfer to boundary-crossing between

school and work as a tool for developing vocational education: An introduction. In T. Tuomi-Gröhn, & Y. Engeström (Eds.), *Between school and work: New perspectives on transfer and boundary-crossing* Amsterdam: Pergamon Press.

UCL department of electronic and electrical engineering. (2018, January 30). *University College London UCL*. Retrieved from https://www.ee.ucl.ac.uk/~mflanaga/

Van de Pol, J., Volman, M., & Beishuizen, J. (2010). Scaffolding in teacher-student interaction: A decade of research. *Educational Psychology Review, 22*(3), 271-296. Retrieved March 25, 2020, from www.jstor.org/stable/23364144

Volet, S. (1999). Learning across cultures: appropriateness of knowledge transfer. *International Journal of Educational Research*, 31(7), 625-643.

"Vygotsky's Sociocultural Theory of Cognitive Development." (February, 2020). *The Psychology Notes HQ*. Retrieved from https://www.psychologynoteshq.com/vygotsky-theory/

Wamego Public Schools. (2017). *What is curriculum mapping?* PDF document. Retrieved from https://www.usd320.com/vimages/shared/vnews/stories/5a1448f5d101a/What%20is%20curriculum%20mapping%20article.pdf

Wardle, E. (2012). Creative repurposing for expansive learning: Considering 'problem-solving' and 'answer-getting' dispositions in individuals and fields. *Composition Forum*, 26. Retrieved from http://compositionforum.com/issue/26/creative-repurposing.php

Weimer, M. (2017, November 7). Threshold concepts: portals to new ways of thinking. *Faculty Focus*. Retrieved from https://www.facultyfocus.com/articles/teaching-and-learning/threshold-concepts-portals-new-ways-thinking/

Wood, D.J., Bruner, J.S. & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychiatry and Psychology*, 17, 2, pp. 5-16.

Yancey, K.B. (2015a). Introduction: coming to terms: composition/rhetoric, threshold concepts, ad a disciplinary core. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies*. Boulder: University Press of Colorado.

Yancey, K. B. (2015b). Writers' histories, processes, and identities vary. In L. Adler-Kassner & E. Wardle (Eds.), *Naming what we know: Threshold concepts of writing studies* (pp. 52-54). Utah State University Press.

Yancey, K. B. (1998). *Reflection in the writing classroom*. Logan: Utah State University Press.

Yancey, K. B., Robertson, L., & Taczak. K. (2014). *Writing across contexts: Transfer, composition, and sites of writing*. Boulder: University Press of Colorado.