COGNITION AND COMPOSITION:

DELIBERATE PRACTICE IN A FIRST-YEAR COMPOSITION COURSE

by

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TABLE OF CONTENTS

ABSTRACT

COGNITION AND COMPOSITION:
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Drain from the invisible demands writing makes on writers' brains may be lowering students' self-efficacy. Deliberate practice, as developed by the psychologist Anders Ericsson, is a way to make those demands visible and to work toward a positive result. Deliberate practice is especially well suited to composition, given the large overlap between the two fields.

A core component of deliberate practice is training the brain to automate parts of the writing process, to free up as much limited short-term memory as possible. Doing so minimizes the cognitive demands of writing, which, in turn, raises students' self-efficacy. After reviewing the theory, this thesis proposes a potential first-year writing course based on deliberate practice.

Cognition and Composition:

Deliberate Practice in a first-year Composition Course

Alicia Brown

Preface

In this paper, I have adopted a less-than-formal tone. This is important to me, as it makes the paper more accessible to more readers. I strongly feel that thick academic language makes many people feel stupid: they feel as though they can't even read! And, as you'll see in this thesis, I am passionate about helping others realize their own potential, not shutting them down for not being "smart enough."

I acknowledge that my audience includes academic professionals who could easily read academic language, and my desire for accessibility to non-professionals does not mean I will forgo credible methodology.

Introduction

What is deliberate practice?

In the early 1990s, psychologists Anders Ericsson, Ralf Krampe, and Clems Tesch-Römer studied violin students. My first introduction to this study, a blog post by writer (and soon-to-be Georgetown professor) Cal Newport titled, "If You're Busy, You're Doing Something Wrong: The Surprisingly Relaxed Lives Of Elite Achievers," fascinated me so much that I kept it in the back of my mind, especially as I began teaching writing.

In the study, Ericsson, Krampe, and Tesch-Römer sought to discover the differences between exceptional violin players and ordinary violinists. They found that both groups practice the same number of hours a day as others, but the exceptional players practice differently, using principles of deliberate practice.

Deliberate practice requires specific goals, is focused on specific skills or subskills, includes feedback, and takes a person outside their comfort zone. Deliberate practice is more than the idea of practicing a lot. Practice alone is repetition. Deliberate practice changes practice based on feedback, instruction, and results. Imagine two children learning to play the piano. Both are required to practice 15 minutes a day. One plunks out notes for 15 minutes. The other uses the techniques their teacher shared, pays attention to the teacher's feedback, and adjusts their practice accordingly. If it seems ridiculous to practice as the first child, it is. Most of us already accept principles of deliberate practice, even if we've never been formally introduced to it.

Deliberate practice can be summed up in a five-step method:

1. Understand what should students learn to do

2. Break it down into steps

3. Teach the step: take students out of their comfort zone but not too far

4. Repetition and feedback: try, fail, feedback, try, continue

5. Include models to replicate

A key feature distinguishing deliberate practice from other forms of practice is the concept of developing mental representations, or patterns held in long-term memory. Because short-term memory is limited, a person is relying on short-term memory to work cannot consider more than about seven things. However writing is so complex, it would overwhelm this extremely limited short-term memory (Kellogg and Whiteford 254). Long-term working memory is essential for becoming proficient at a skill: short-term memory can't hold enough information to use in complex activities like writing, and deliberate practice works on creating and making efficient the use of long-term working memory (Ericsson and Pool 59).

For example, in music, when a musician "hears" in their head how the song they are learning should be played, that's a mental representation. Musicians can learn how a song should sound by listening to a recording of the song. Some musicians, with sufficient sight reading skill, can "hear" the song just by looking at the notes on a page. Similarly, an artist visualizing what their painting will look like before beginning to work is creating mental representation of the painting.

A simple mental representation I built for myself in fourth grade made it incredibly easy to write half the answer to a question without any thought at all. In fourth grade, Ms. Bartell was always insisting that we needed to include the question in our answer. For example, if the question was "When did World War II begin?" "1939" was incorrect, but "World War II began in 1939" was

correct. So, unconsciously, I saw the pattern: take the second half of the sentence, alter the verb tense, and then think about what the question was asking. My mental representation made it so I could write quite long sentences without even thinking. I would write "WWII began in…" before even mentally processing the question or considering its answer. I recall doing group work with a few classmates on questions like this. I charged ahead with my pattern. "Wait, wait!" they cried. Their approach was to answer the question first, then put the answer into words, so they didn't understand what I was doing. "I'm not answering the question," I said, "just setting up the words." This approach got me better grades: the class often got answers marked wrong, not because their answers were incorrect, but because they didn't include the question in the answer. I never lost points for this, and I didn't even have to think. It was easy. This is the power of mental representations.

I'd like to think my way allowed me to put more brain power toward the actual answer, since the sentence setup took no thought or effort at all. Anders Ericsson, the spearhead of the deliberate practice method, agrees. Patterns—like my fourth grade sentence pattern—are held in long-term memory, making it "possible to process large amounts of information quickly, despite the limitations of short-term memory" (Ericsson and Pool 61).

To those who haven't developed mental representations, the patterns might not make sense. Ericsson tells us, "in pretty much every area, a hallmark of expert performance is the ability to see patterns in a collection of things that would seem random or confusing to people with less well developed mental representations" (Ericsson and Pool 63). As I worked with my group in fourth grade, the words I wrote down first must have seemed random or confusing—we hadn't even discussed the question! Half the time, we hadn't even finished *reading* the question. What could I possibly be writing?

These patterns help a person develop the skills necessary to do well, and doing well helps a person build mental representations. Ericsson calls this a "virtuous circle" because "the more skilled you become, the better your mental representations are, and the better your mental representations are, the more effectively you can practice to hone your skill" (Ericsson and Pool 79-80).

These mental representations also are key to developing self-feedback skills. The mental pattern tells the performer what the ideal performance should look like. Any deviations from that in practice thus give the performer instant feedback on what needs to be worked on (Ericsson and Pool 77).

Anders Ericsson spent his career studying deliberate practice. Some notable publications of this psychologist and Conradi Eminent Scholar at Florida State University include his 1993 article, "The Role of Deliberate Practice in the Acquisition of Expert Performance" in *Psychological Review*, his 2007 article, "The Making of an Expert" in the *Harvard Business Review,* and his 2016 book, *Peak: Secrets from the New Science of Expertise. Peak*, co written with author Robert Pool, is in many ways a summation of his decades of work on deliberate practice. Ericsson claims this psychology-based practice works "by harnessing the adaptability of the human body and brain to create, step by step, the ability to do things that were previously not possible" and takes "into account what works and what doesn't in driving changes in the body and brain" (Ericsson and Pool 9).

Research Questions and Anticipated Contributions

My purpose in continuing this conversation is to explore whether a classroom based on deliberate practice can help reluctant writers, those who come to our classrooms convinced they are not good writers. As Cassity says, "understanding how composition skills develop from the perspective of cognitive psychology can help us design and implement more effective writing instruction" (Cassity 19-20). I take inspiration for this thesis from this idea and continue it by: 1) exploring whether deliberate practice can help build self-efficacy, and 2) outlining a class arranged around deliberate practice. Cassity discusses the *why* and *what*, I discuss the *how*. For the purpose of this thesis, I focus the implementation of cognitive psychology on just deliberate practice; an encapsulation of the entire field of cognitive psychology is beyond the scope of this thesis, but exploring deliberate practice in composition is an excellent starting point, given the clear overlap between composition and deliberate practice.

I am arguing that deliberate practice can be integrated into a composition course and that it can benefit those students who have not yet been reached by other pedagogical methods—those who have "learned" that they are stupid or "just not writers." More than anything, when I am faced with a fresh, compulsory introductory composition class with wary eyes and hesitant pens, the idea of deliberate practice prompts me to ask: can Ericsson's work help them build self-efficacy? Can deliberate practice help convince students that "I'm just not an English person" is invalid and that they can build the capacity to write well, whether or not they currently have that capacity? Can it help them believe in their own intelligence, and would doing so help smooth the path to writing well?

This thesis will explore these questions through examining research. Though I do not engage in it here, classroom research would be an ideal next step for further probing the ideas explored in

this thesis. A responsible classroom research project would necessarily begin with research and thought, which is represented by this thesis.

Method

In this thesis, I combine Anders Ericsson's theory of deliberate practice in composition context with studies on self-efficacy in writing to yield a new theoretical framework. Deliberate practice in composition is aligned with much of the research our field has already done. In fact, I originally planned on showing that alignment in this thesis, until I came across Kathleen Cassity's "Practice, Patience, and Process in the Age of Accountability: What Cognitive Psychology Suggests about the Teaching and Assessment of Writing," which does precisely that. Once I saw the work was completed in her paper, I could push the idea forward: how to make this method helpful for students with low self-efficacy.

Large numbers of students believe they aren't good at writing. Many of these already are good writers, but discount themselves. Others' low self-efficacy is making it harder to write and prevents them from improving. Instead of focusing on writing itself, they focus on their lack of talent. Looking at composition through the lens of deliberate practice, it appeared likely that mental exhaustion was a key factor in low self-efficacy. For example, consider a person who has gone through a rigorous weight training routine. Often, at the end of such a workout, muscles feel like jelly and the person walks away with wobbly legs. The exhaustion of the muscles is not an indicator of weakness; quite the opposite: it's an indicator that muscles have been used. The mind, too, can get tired and worn out, especially after rigorous mental effort, like writing. Except it's harder to recognize that the mind is being worked out; often mental exhaustion is interpreted as weakness, thus lowering self-efficacy. As Anders Ericsson says, "There is no easy way to

8

observe the resulting changes in your brain as it adapts to the increasing demands being placed on it…. And because you can't see any changes in your brain, it's easy to assume that there really isn't much going on" (Ericsson and Pool 26).

If students approach writing in much the same way as we approach working out—expecting wobbly muscles at the end of a workout and sore muscles the next day—could that improve their self-efficacy? Could seeing that some of the difficulty of writing is the fact that they are doing an intense mental workout help students believe in themselves more? Because deliberate practice is focused on the mind—not surprising, since it comes from the field of psychology—it makes sense to use it as a method both to approach improving self-efficacy, which is an aspect of the mind, and to address the weight of the mental demands of writing.

This approach has its limitations, however. The most glaring is the fact that I have not yet implemented this in a classroom setting. However, I see this thesis as a way to responsibly prepare for implementing it in a classroom. Understanding this approach and assessing possible effects on students is the first step; implementing it in a classroom is a second. Another limitation is that some of Ericsson's claims seem outlandish. For example, he claims humans have unlimited potential of humans:

> To date, we have found no limitations to the improvements that can be made with particular types of practice. As training techniques are improved and new heights of achievement are discovered, people in every area of human endeavor are constantly finding ways to get better, to raise the bar on what was thought to be possible, and there is no sign that this will stop (114).

As an example, he reminds readers that newspapers claimed the marathon of the 1908 olympics was "the greatest race of the century," yet the gold medal winner would only barely qualify for the Boston Marathon today, a race that attracts 30,000 qualifying runners each year. While sports records are constantly broken and training methods are constantly improving, I am skeptical that practice can improve human ability infinitely.

Ericsson also gets into muddy ethical waters by claiming that lying can be effective. He shares a story of Gunder Hägg, a runner. His father timed one of his runs, about 1,500 meters long, at 4 minutes and 50 seconds. This was a turning point in his career: Gunder was so inspired by this quick time that he pressed himself and went on to break fifteen world records. However, later, Gunder's father admitted that the time for the 1,500 meter run was 5 minutes and 50 seconds. Ericsson justifies the lie by saying, "the power of such belief is so strong that it can even trump reality" (172). While I agree that a person's belief can affect reality and help a person overcome current limitations, it is unethical to try to change a person's belief through lies and misinformation. In addition, I cannot believe that lying to students is an effective teaching method. Rather, I believe that teaching them about the powerful effects of belief on their writing, and reasons for their mental exhaustion, is an effective way to increase their belief in themselves.

Regardless of Ericsson's overenthusiasm for deliberate practice and the occasional outlandish claims his enthusiasm leads him to, deliberate practice as a whole is still an excellent method to approach composition, and particularly to help students with low self-efficacy. I will outline some of the positives in the next section: the literature review.

Literature review: composition and deliberate practice

Deliberate practice sounds a lot like what many composition instructors do in their classrooms. In fact, in 2013, Kathleen Cassity wrote an article in *Journal of Teaching Writing* titled "Practice, Patience, and Process in the Age of Accountability: What Cognitive Psychology Suggests about the Teaching and Assessment of Writing," illustrating how well composition meshes with deliberate practice. She concludes, "This [deliberate practice] approach suggests that much of what our field espouses has been appropriate all along" (Cassity 28). Many compositionists, including the few represented here, use Ericsson's work and his deliberate practice approach. I found nearly a dozen recent articles praising and utilizing deliberate practice in written composition.

One of Kathleen Cassity's major points is that, "while the field of composition studies has done an excellent job of discovering and disseminating **what** works, cognitive psychology can tell us more about ***why***" (Cassity 38, emphasis added). For example, Cassity discusses three stages of skill development:

> the early cognitive stage, in which the learner becomes acquainted with the targeted expectations, the intermediate associated stage, in which 'specific inputs are associated with appropriate responses from the study of examples'...; and the autonomous stage, in which the learner has sufficiently internalized the complex skill, 'thus reducing the degree of attention and effort required.'" (Cassity 22-23)

I am not the only compositionist to strongly agree with Cassity that "understanding how composition skills develop from the perspective of cognitive psychology can help us design and implement more effective writing instruction" (Cassity 19-20). For example, in 2017's "The Effect of Keyboard-Based Word Processing on Students With Different Working Memory

Capacity During the Process of Academic Writing," Steffie Van Der Steen, Dianne Samuelson, and Jennifer M. Thomson address long-term memory. After referring to Ericsson's work on long-term memory, the authors conclude that Ericsson's work is "in line with research on the role of WM [working memory] in writing" (284). Regarding new writers and working memory, Van Der Steen, Samuelson, and Thomson conclude, "novice or struggling writers are hindered by the limited capacity of their WM system. For this latter category of students, reduction of cognitive task demands competing for limited WM capacity is thus an important goal" (284). I argue that many students see this hindrance and interpret it as a lack of writing skill, thus lowering their self-efficacy.

With a similar nod to Ericsson's work, Thierry Olive and Jean-Michel Passerault in "The Visuospatial Dimension of Writing," their 2012 article in *Written Communication*, also address long-term working memory and the cognitive demands on writers. Rather than focus on reducing cognitive demands, Olive and Passerault suggest utilizing long-term memory: "Direct access to long-term memory would reduce processing demands" (334-335). Ericsson calls this a use of mental representations; Cassity refers to as automation.

Is this automation even possible with an activity as complex as writing? In 2009, psychologists Ronald Kellogg and Alison Whiteford wrote an article in *Educational Psychologist* advocating the use of deliberate practice to teach writing. This article, "Training Advanced Writing Skills: The Case for Deliberate Practice," discusses many of the demands that writing makes on the mind and argues that these demands must be reduced and automated (Kellog and Whiteford 255). Both, they claim, happen through deliberate practice: "for the skill as a whole to be well controlled, its component processes must become *relatively* automotive and effortless through

practice" (Kellogg and Whiteford 251). Kellog and Whiteford offer strategies that writing students can use to "funnel limited attention and storage to only one or two processes momentarily" (257). They conclude that, yes, separating, practicing, and automating the component processes of writing is possible and does increase writing ability. As Cassity explains, "Cognitive psychology suggests that the best way to assist novice writers is to separate the various components deliberately, allowing the writer to focus his or her executive attention on fewer tasks" (Cassity 31). Focusing on fewer tasks is often referred to as reducing the cognitive load: many "tasks" are actually mental demands, especially in activities like writing.

Further, in *Contemporary Perspectives on Cognition and Writing* titled "Meaningful Practice: Adaptive Learning, Writing Instruction, and Writing Research," authors Gwen Gorzelsky, Carol Hayes, Joseph Paszek, Edmund Jones, and Dana Lynn Driscoll discuss mental representations in terms Ericsson's deliberate practice theory, particularly focusing on how deliberate practice can help reduce the conscious effort needed to perform a task like writing. The purpose of practice, they conclude, is "to tap into non-conscious behavioral structures," or mental representations (quoting R.T. Connors, 116).

I believe the same automation approach can be seen in the book, *They Say, I Say*. Authors Gerald Graff and Cathy Birkenstein want to "demystify academic writing by isolating its basic moves, explaining them clearly, and representing them in the form of templates" (viv). Advanced writers tend to have their own templates—or independently created templates similar to Graff and Birkenstein's—stored in their long-term memory. Thus, when a writer needs to introduce what an author is saying, the writer pulls up—unconsciously, most of the time—a phrase to signal to the reader that they are introducing an author's thoughts. Ericsson would call this a mental representation, stored in long-term memory. Cassity would call it automation. *They Say, I Say*

attempts to help writers create this automation by providing the templates that an advanced writer would eventually create, and giving students the opportunity to practice using those templates until they are automated, thus freeing the writer's mental capacity to focus on what to say, rather than how to say it.

The core purpose of mental representations—or automation—is to free up mental space for the other mental demands writing makes. As Cassity says, creating mental representations "[leaves] executive attention and working memory free to attend to the multiple cognitive demands of a specific writing situation. In contrast, the less practiced writer will have automated far fewer of the necessary resources, and whatever is not automated will make demands on working memory, diverting significant executive attention and slowing down the composing process." (Cassity 21). Not understanding this can lead to low self-efficacy, which in turn can limit a writer's ability. Students need to understand that this slow down and the weight of using working memory comes from using short-term memory, not from a lack of writing skill.

While deliberate practice is generally accepted and frequently referred to in composition, some of these authors keep us grounded with concerns. For example, Gorzelsky et al. note that at first blush, Ericsson's theory seems "counter-intuitive" because after skills are automated, deliberate practice theory "involves breaking down an already-learned skill into components and then deliberately focusing on those components in order to de-automatize them, so that they can be relearned in better ways" (121). Cassity, too, notes this stage of deliberate practice and indicates that it can almost feel like a student is regressing: "At the very moment when a student is making significant progress, he or she may appear, at least for a while, to be getting worse" (Cassity 24). According to Cassity, this is "because the 'complexity of the task increases as one develops'.... Thus, those unfamiliar with the nature of learning curves may mistakenly see deterioration when

a writer is actually progressing toward a higher level of mastery" (23-24). If we are attempting to use deliberate practice to raise self-efficacy, this has the potential to undermine the effort. However, Gorzelsky et al. integrate scholarship based on Ericsson to emphasize that, though it is counterintuitive, this de-automatization builds self-regulation and the ability to overcome prior bad habits (121) and is, therefore, worth the risk. Continuing deliberate practice can re-automatize these improved skills: "expert writers adapt successfully to varying rhetorical situations across contexts because they have both content knowledge and some internalized writing knowledge. Thus they need not devote working memory to either." (Gorzelsky et al. 120).

With deliberate practice in composition as a base, I discuss some of these mental demands in the next chapter, and then talk about options for dealing with them. However, before discussing the mental demands, I consider the role of self-efficacy in composition and in deliberate practice. My goal in pursuing the research of this thesis is to use deliberate practice as a method to help writers with low self-efficacy.

Chapter 1

Self efficacy in composition

Self-efficacy is "a judgment of one's capability to accomplish a certain level of performance" (Bandura 391). In other words, self-efficacy is a person's belief and confidence in their own ability to do the task (Khost 276). This belief in the self is important, even essential. *In Persons in Process: Four Stories of Writing and Personal Development in College*, Anne Herrington and Marcia Curtis argue that students have a "psychological need to believe in personal agency" (359). The same argument is made in other composition work like Nick Tingle's *Self Development in College Writing* and Chris Burnham and Rebecca Powell's chapter in *A Guide to Composition Pedagogies*. This belief in self is powerful: "A person's efforts in completing a task can be more a function of what that person perceives about their own capability than a result of what is actually true about their capability" (Khost 274). Ericsson says almost the same thing: "The power of such belief is so strong that it can even trump reality" (172).

Research supports this idea that belief in the self actually does make a difference when writing. For example, Peter Khost, in his chapter, "Researching Habits-of-Mind Self-Efficacy in First-Year College Writers" in *Contemporary Perspectives on Cognition and Writing*, describes a host of studies showing a correlation between grades and self-efficacy beliefs (Khost 276). Khost ran his own study to determine if self-efficacy could improve with a tiny amount of attention: with five-minute biweekly writing sessions on metacognition. These sessions involved five minutes of freewriting on a habit of mind topic (or a control placebo topic). These "metacognitive sessions did correlate with improved habits of mind self-efficacy" (281). Khost concludes that writing is,

beyond doubt, influenced by a person's self-efficacy: "Self-efficacy is indeed a predictive construct for writing performance. This includes a large number of studies across decades, subject populations, and experimental designs" (279). Another writing researcher, Albert Bandura, tells us that self-efficacy moderates thought processes (Khost 276).

My personal low self-efficacy regarding math means that I rarely attempt mathematical problems beyond basic addition and subtraction. And when I am forced to, I drag my feet. I make math harder than it needs to be because I not only have to solve the problem, but I have to overcome my limiting belief in my own ability just to get started. In their paper, "The Relationship between Self-efficacy and Writing Performance across Genders," authors Felor Hashemnejad, Masoud Zoghi, and Davoud Amini tell us more effects of low self-efficacy: "low self-efficacious learners believe that they have innate low ability, choose less requesting [sic] tasks on which they will make few errors, and do not try hard because they believe that any attempt will reveal their own lack of ability."

Khost describes low self-efficacy as a potential "internalized helplessness that undermines the level of effort they put into such work" (Khost 277). If they are not aware that low effort is part of the cause for poor performance, this helplessness can become a vicious cycle: low effort produces low results, which reinforces the helplessness that leads to low effort. We must help students break out of this cycle.

Ericsson, in discussing beliefs that create low self-efficacy, says that low self-efficacy "is damaging in that it can convince people that they might as well not even try" (Ericsson and Pool 168). This is similar to Khost's claim that self-efficacy affects the ability to influence and change a person's own behavior, "determine[s] whether or not the people try to complete the task, how

often they do so, how much effort they put in, how much effort they expend in the face of related difficulty, their feelings of reward or success at the task's conclusion... , and their feelings before and during performance of the task" (274). Low effort, helplessness, and an unwillingness to even try: these are severe consequences of low self-efficacy. Conversely, the benefits of high self-efficacy are remarkable.

Hashemnejad et al. in "The Relationship between Self-efficacy and Writing Performance across Genders" discuss high self-efficacy: learners who have already solved a problem can now "believe that their own competency will [improve] when they work more, the learners assign their success according to their own attempts and schemes and acknowledge that errors are a process of acquisition" (1045). Building on past successes like this is a key part of deliberate practice. Ericsson reminds us, "The goal [of deliberate practice] is not just to reach your potential but to build it, to make things possible that were not possible before…. Once you do this, learning is no longer just a way of fulfilling some genetic destiny; it becomes a way of taking control of your destiny and shaping your potential in ways that you choose" (Ericsson and Pool 48).

Hashemnejad et al. are not the only ones to study the effect of self-efficacy on writing specifically. There have been so many studies confirming this that Khost can declare, "Positive correlations are known to exist between writing self-efficacy and performance" (273). Even more exciting, there is evidence that increasing self-efficacy can help students at risk of failing. Khost cited a study that specifically linked self-efficacy and race: "the increase of self-efficacy beliefs for writing performance...for academically at-risk black and Hispanic students found that it yielded an 80% pass rate compared to the 60% pass rate produced by a control group" (Khost 277).

Writing requires complex mental acrobatics. Yet, because it is something students have done—and have been judged and graded on—for almost their whole lives, it could be that the familiarity of writing hides the complexity. Students who don't recognize that writing takes so much mental effort could be convinced that it's hard because they are not good. My own students have expressed this idea multiple times.

Another aspect of the complex mental work involved in writing that can lower self-efficacy is the fact that improvement can sometimes be invisible. Ericsson reminds us, "There is no easy way to observe the resulting changes in your brain as it adapts to the increasing demands being placed on it…. And because you can't see any changes in your brain, it's easy to assume that there really isn't much going on (Ericsson and Pool 26). One of the benefits of deliberate practice is the way it reveals the invisible mental work a student is doing. Because deliberate practice involves breaking a skill—or, in our case, a cognitive challenge—down into parts so that students can practice, students will learn of all those parts: the cognitive weight that writing puts on the mind. An understanding of all this weight can improve self-efficacy: the weight is there because of the cognition required to write, not because a student is a bad writer. With this knowledge of the mind, students can see that changes are happening. Their assumption that nothing is happening is challenged, and they can develop belief in themselves—belief based in fact.

Additionally, the practice itself gives students the opportunity to improve the different aspects of writing in isolation, so that they are stronger writers when the isolated parts are unified again. Finally, practicing enough to automate the mental demands of writing lightens the difficulty,

because the mind is using its abundant long-term memory, rather than its limited short-term memory, to do more of the writing.

Self-efficacy and Automation

One source of self-efficacy is "mastery experiences," as Khost described (274). Through deliberate practice, we can give students mastery experiences: opportunities to practice until a particular mental demand is mastered.

An important principle in deliberate practice is that of feedback, so the next opportunity to practice is not a repetition of the first attempt, but a repetition of the first attempt *with changes based on feedback*.

The sheer mental difficulty of writing can be a source of low self-efficacy. Even if students learn about the mental demands of writing, it is unlikely to be enough to build self-efficacy if writing continues to be mentally straining. …writing is always going to be difficult, though…

If writing wasn't as difficult for students, would this increase self-efficacy? We've seen that less-advanced writers tend to use their limited short-term memory to write, making writing exponentially harder, thus significantly decreasing self-efficacy. Recall the words from Van der Steen et al.: "novice or struggling writers are hindered by the limited capacity of their WM system" (Van der Steen et al. 284). The resulting low self-efficacy will, in turn, limit these writers.

Teaching students to use their long-term memory instead (or, in other terms, automate parts of the writing process) will reduce the mental demands made on the limited short-term memory.

Deliberate practice is an ideal method to do so, because it is built around the concept of mental representations (or automation). Deliberate practice splits writing into its component parts, so you can practice the components, master them, then automate them. If we do this with the mental demands writing makes, it could help build reluctant writers' self-efficacy.

Changing self-efficacy via deliberate practice

How do we take first-year composition students with low self-efficacy, a "I'm just not a writer" belief and all the accompanying limitations, to high self-efficacy?

Khost identifies four sources of self-efficacy, four ways of increasing self-efficacy: doing the task, seeing someone else do it, being persuaded to do it, and "physiological/emotional states" (Khost 274). Persuasion might look like grades—or the threat of failure. A physiological or emotional state could be waiting until a person "feels like" writing. But we know these aren't terribly compelling. Seeing someone else do it could include mentor texts, which we frequently employ when teaching composition. Of the four sources of self-efficacy, however, doing the task—or, in Ericsson's terms, practice—has the most effect on a person's self-efficacy (Khost 275).

In addition to practice, understanding the heavy cognitive load that writing requires is another method of improving self-efficacy. For example, Dirk Remley in his chapter, "Neural Implications for Narrative in Multimodal Persuasive Messages" in *Contemporary Perspectives on Cognition and Writing* (2017), suggests that we teach students exactly what is going on in the brain as they write (135). Remley cites studies that note that, for complex topics like writing, teaching the associated neuroscience concepts helps students write better. Not only can improved

skills boost self-efficacy, but understanding why writing is difficult in the first place can increase self-efficacy, too.

Being able to recognize and acknowledge the invisible mental work sounds an awful lot like metacognition, which is highly praised in cognitive composition studies.

Metacognition

Metacognitive awareness helps students become conscious of the positive, successful changes in their brains that practice brings about. At its simplest, metacognition is thinking about thinking. Cognitive studies in composition are currently focusing on metacognition, and our understanding of the role and value of metacognition is vastly increasing (Carillo 39).

Ellen Carillo, for example, describes metacognition as mindfulness, and Kara Taczak and Liane Robertson enhance this view by defining metacognition as

> the ability to mindfully monitor and consider why specific choices were made in a particular writing moment including, but not limited to, considering the different types of knowledge(s) learned before and acquired during that particular writing moment, and to be able to utilize that knowledge there and elsewhere. (217)

In this sense, knowledge of writing's mental demands is a form of metacognition. Donald Schon, philosopher and developer of the idea of reflective practice, would agree: "[he] argues that the awareness of, and inquiry into, one's intellectual processes will make the learning more felicitous (Burnham and Powell 121).

Mindfulness and awareness also appear in Alice Horning's work as she describes some of the specific kinds of awareness that successful writers and readers have: "awareness of text structure,

context and language as well as skills in analysis, synthesis, evaluation and application that they bring to bear on their reading and by extension on their writing. Only when novice writers think and respond like these expert readers can they move toward becoming critically literate, expert writers" (80).

Closely related to mindfulness, awareness, and metacognition is the concept of reflection, which Dianna Winslow and Phil Shaw, in their article, "Teaching Metacognition to Reinforce Agency and Transfer in Course-Linked First-Year Courses," describe as a tool for gaining self-awareness and taking ownership of learning (217). Winslow and Shaw see reflection as a way to develop metacognitive awareness: "when cognition and metacognition are accessed together through reflection, students are able to assess themselves as writers, including their own understanding of these different types of knowledge, allowing them to adopt the active stance in their own learning advocated by the Framework" (Winslow and Shaw 212).

Boyle explains that reflective writing builds metacognitive activity the way deliberate practice does. And, like deliberate practice, reflection is meant to alter the writer's mind: "Current-traditional rhetoric (CTR) pedagogy used repetitive formal writing tasks to routinely train an individual's cognitive abilities. These pedagogical encounters stressed form over function to shape an interior mind" (535).

While most scholars are enthusiastic about metacognition and its potential, some keep us well grounded with a few concerns. Anne Beaufort, for example, in *College Writing and Beyond: A New Framework for University Writing Instruction*, reminds us of the potential for overwhelm. Though metacognition can increase the richness of mental life, "that increasing richness, because of its time and cognitive demands, requires the judicious reduction of peripheral problems"

(182). In other words, being aware of how the brain works takes brainpower, which reduces how much mental effort is available for writing. Metacognition, then, is a benefit and a hindrance. It does help composition students to learn that their brains are working, but doing so also adds to the cognitive demands of students. Teaching metacognition and teaching the mental demands that writing makes require a careful balance to not overwhelm students.

Metacognition and deliberate practice

Deliberate practice is ideally situated to give opportunities to build self-efficacy both through practice and through metacognition. For example, compare the definition of metacognition from Taczak and Robertson above to one of Ericsson's examples of surgeons employing deliberate practice: after a surgery, these surgeons studied the surgery, focusing especially on unexpected occurrences, to reflect on the situation and improve for the next time. In composition courses, we can give students the same opportunity to look at their own unanticipated events—where they got stuck or where they didn't do well, for example—and try to figure out how to avoid these going forward. As Taczak and Robertson claim, "when cognition and metacognition are accessed together through reflection, students are able to assess themselves as writers, including their own understanding of these different types of knowledge, allowing them to adopt the active stance in their own learning advocated by the Framework" (Taczak and Robertson 212).

Creating a deliberate practice composition course

Because, as Kathleen Cassity pointed out, much of composition is aligned with deliberate practice, an introductory composition course is already similar to a course based on deliberate practice. Here, I will point out some differences and some things we might do to more thoroughly use deliberate practice, with the purpose of raising self-efficacy.

Deliberate practice is about breaking the target skill down into components, practicing them, improving practice based on feedback, and then automating these components so that long-term memory, rather than short-term memory, is used. The first step in creating a course, therefore, would be to break down the target skill—writing—into components. In this thesis, the components are the mental demands that writing makes.

Mental demands

In a deliberate practice course, students should learn the mental demands used in composition. What are those mental demands? For answers, I turn to the psychologists and other scientists dedicated to understanding cognition. In particular, two sources: "Cognitive Processes in Writing," published in 2014 by John Hayes and Virginia Berninger in *Writing Development in Children with Hearing Loss, Dyslexia, or Oral Language Problems* and Ronald Kellogg and Alison Whiteford. 2006 "Training Advanced Writing Skills: The Case for Deliberate Practice." In *Educational Psychologist.*

- Mental computation
- Cognitive processing
- Domain-general control processes
- Executive attention
    - Attention/maintain focus: Developing this "enables executive function control and may have an important impact on the writer's choice of writing strategy"
- Memory
    - Knowledge of facts and events

- Motor planning

- Control

- Execution skills

- Letter form access

- Letter form production skills

- society/culture influences

    - "How audiences are likely to respond to particular language"

    - Episodic knowledge: memory of interactions w social/physical world

- Demands on working memory

- Language

    - Vocabulary

    - Spelling

    - grammar/syntax

    - Discourse schema

        - Genres

        - Writing strategies

    - thesis statements

    - topic sentences

    - cohesive links within a paragraph

    - global organization of texts

- Thinking ability

- Rapid retrieval

- Domain-specific knowledge about the topic

- High degree of verbal ability

- Ability to think clearly about substantive matters

- Plan ideas

  o Setting goals for the writing activity

  o "Use writing schemas: "writer's beliefs about the properties that the text to be
    produced should have (genre knowledge) and also beliefs about how to go about
    producing that text (strategic knowledge)"

    ▪ "The writing schema, then, selects and organizes writing processes used to
      produce text and thus impacts the properties of the text that is written" 10

    ▪ "Instruction [in better schemas] resulted in a significant increase" of better
      schema use

    ▪ Eg writing strategies:

      • Flexible-focus: stream-of-consciousness

      • Fixed-topic: "every statement proposed must reference a single
        topic"

      • Topic-elaboration: focus on general topic, but can bring in
        subtopics

    ▪ Eg, editing strategies

      • Less experienced: revise locally, sentence by sentence

      • More experienced: revise globally: evaluate whole text and look at
        global features (organization, adequacy of intro/concl, etc)

- Generate text

  o Propose

    ▪ "Suggest a package of ideas for inclusion and pass that package on to the
      translator"

- Can take input from planner, task environment, long-term memory, reading (ie, text written so far)
  - Translate
    - Take ideas and "represents them as grammatical strings of language; that is, it translates nonverbal ideas into a verbal form of expression"
    - Also can translate language strings from long-term memory
    - Translator fluency "depends on the writer's linguistic experience and on the amount of verbal working memory that is available to the writer"
  - Transcribe
- Review ideas/text
  - Reading your writing as you go "may serve to promote construction of cohesive text"
  - Reading sources
  - Judge outputs
- Plan, generate, and review concurrently and in working memory
- Executive attention on the three representations of content: author's ideas, comprehension of what the text currently says, and the interpretations of an imagined reader
- Control and coordination of planning, generating, and reviewing
- Self-monitoring
- Initiate tasks (self or person who assigns the work)
- Manage Task environment
  - Collaborators
  - Critics

- Environment (eg background noise)
  - Task materials
  - Transcribing technology
    - Practice in a mode (handwriting, typing, oral dictation, etc) improves quality of the WRITING in that mode (not just the mode itself)
  - Text written so far
  - Physical space
    - Some background noises can reduce available working memory

That's a lot. Some of these are addressed before college and, therefore, do not need to be practiced in a first-year composition course. Most students have automated the mental demands associated with either handwriting or typing, for example.

Kellogg and Whiteford share several suggestions for teaching the mental demands above, basing their recommendations on a 2007 study, "A Meta-Analysis of Writing Instruction for Adolescent Students" by Steve Graham and Dolores Perin, which examined different types of writing instruction and analyzed the effectiveness. Based on the most effective methods of teaching the mental demands that writing makes, Kellog and Whiteford suggest we explicitly teach summarization, planning, revising, and editing strategies, practice sentence combining, study models of effective texts, use rewriting activities, include inquiry activities, give opportunities to collaborate to plan, draft, and revise, set explicit goals, and use a process writing approach (Kellogg and Whiteford 257-258). While most of these can go without comment, three need further explanation: summarization, collaboration, and sentence combining.

Summary skills. Kellog and Whiteford claim that summarizing helps writers find the main ideas and work on translating thoughts to concise language. They suggest teaching summarization to both high school and college students. This, I feel, is better suited for high school; most of my college students are already adept at summarization. I would, however, have them practice writing concisely. Summarization is certainly a method of doing so. So is requiring short, dense essays or assigning students to rewrite an essay with a smaller word count.

Collaboration. Graham and Perin, the source for Kellogg and Whiteford's recommendations, compared collaborative activities to individual activities and teacher instruction. The collaborative activities studied were: 1) students helping each other choose topics, 2) revise/edit each others' text, 3) draft, revise, and edit text, 4) giving feedback to each other, 5) composing together on a word processor, and 6) helping each other plan, draft, and revise text (Graham and Perin 357). All six of these activities showed a significant positive impact on writing (as opposed to teacher instruction or individual work).

Sentence combining practice. I hesitate the most on this one. Kellogg and Whiteford offer compelling evidence that this can help automate students' ability to form complex sentences: "sentence combining exercises help by reducing the attention and storage demands of generating syntactically complex sentences through repetition" (Kellogg and Whiteford 257). However, this sounds immensely boring, which I fear would undo any benefit the practice could provide. However, Kellogg and Whiteford, when acknowledging the tedium of such a practice, note, "Exercises can be drudgery and do seem unnatural. Yet, we would point out that these downsides also apply to practicing scales on a piano or imitating repetitively the dismount of an Olympic gymnast off say, a side horse. Pianists and gymnasts nevertheless undertake such exercises to master their skills" (Kellogg and Whiteford 254). Valid point. I would certainly tell my students

the purpose behind the exercise and try to provide sentences that are interesting, funny, or related to students' passions.

One problem with this list is that, while Kellogg and Whiteford suggest these are good things to teach high school and college students, a closer look at the data they are using from Graham and Perin shows that the data is based on teaching fourth through twelfth grade students. This "could be likely adapted to freshman composition courses," Kellogg and Whiteford say, offhand (257). However, I would like to see more data on first-year composition courses. A study like Graham and Perin's, but based on college instruction, would be fascinating and would provide better data to base a first-year composition course on.

To balance the data more in favor of first-year composition courses, I would also include suggestions from Kathleen Cassity. A further advantage of Cassity's work is that Cassity is a compositionist, whereas Kellogg, Whiteford, and Perin are psychologists, and Graham is a social scientist.

Cassity suggests that teaching mental demands of composition would be effective if it includes opportunities for students to write things they're interested in, things they already know something about, and things they have strong feelings about; low-stakes assignments to minimize anxiety (which drains executive attention); and warmups (24-30). She also encourages the core components of deliberate practice: approaching mental demands individually, a large quantity of writing opportunities, and feedback (30-31).

Though writing is a combination of all these mental demands, a key component of deliberate practice is to separate these and teach them individually. As Ericsson says, break them down

"into a series of steps that the student can master one at a time, building from one to the next to reach the ultimate objective…. This will involve teaching the skill step by step, with each step designed to keep students out of their comfort zone but not so far out that they cannot master that step. Then give plenty of repetition and feedback; the regular cycle of try, fail, get feedback, try again, and so on is how the students will build their mental representations" (Ericsson and Pool 251).

This, of course, overlaps with Doug Hesse's article, "We Know What Works in Teaching Composition," when he says, "Professors carefully sequence writing tasks. The idea is progressively to expand on students' existing abilities and experiences." Our goal is to help students practice the step, get feedback, improve, and continue to practice to automate the step.

Deliberate practice adds a simple focus to our teaching: action. Rather than designing a course around ideas a student should learn, deliberate practice focuses on what a student should learn to do. In our case, a student should learn and master the mental demands that writing makes on the mind. As Ericsson says, in the deliberate practice approach, there is an "emphasis placed on skills versus knowledge… Deliberate practice is all about the skills. You pick up the necessary knowledge in order to develop the skills" (Ericsson and Pool 250). But, in case anyone was worried about sacrificing knowledge to skill, Ericsson continues, "Nonetheless, deliberate practice results in students picking up quite a lot of knowledge along the way."

Part of the effectiveness of this method of learning is that it works with the brain, not against it. Ericsson reminds us of the strain that working against the brain puts on us: "if you teach a student facts, concepts, and rules, those things go into long-term memory as individual pieces, and if a student then wishes to do something with them….the limitations of attention and short-

term memory kick in. The student must keep all of these different, unconnected pieces in mind while working with them toward a solution." (Ericsson and Pool 250-251) Sounds like a typical way to teach composition: teach the facts, concepts, and rules. Who among us hasn't had direct grammar instruction?

In teaching composition, when we focus on developing students' skills rather than giving them a knowledge base of composition, they can not only master composition, but will also pick up a remarkable amount of knowledge about composition along the way. Ericsson describes how this happens: "if this information is assimilated as part of building mental representations aimed at doing something, the individual pieces become part of an interconnected pattern that provides context and meaning to the information, making it easier to work with.

Hard work is an important part of deliberate practice. Work should take students out of their comfort zone but not too far, otherwise the frustration from helplessness will likely overcome the benefits of practice.

Tasks we give students should be objective and measurable. A student needs to be able to tell when they've completed the task and when they've done well. Admittedly, there is an art to writing that is neither objective nor measurable, but so there is an art to many other fields that have successfully used deliberate practice.

Students should have five to ten opportunities to make an attempt with a single focus. Ericsson notes that high performers do this. For example, pro golfers will take several shots from one place as they examine the course before a game. One opportunity I would like to provide my students to do this would be to have them write an essay, then choose an element of the essay

they want to focus on, for example, the conclusion. Then I would have them look at conclusions from other essays and rewrite theirs several times.

Another application of deliberate practice is to give students the opportunity to figure out how to make changes or correct mistakes. We can provide these opportunities through frequent feedback, both from peers and the instructor.

Another potential way to approach deliberate practice in assignments is to make use of mentor texts, but in a deliberate way. Take a piece of writing, tell students what it will be about, and have them write on that topic, without reading the piece first. They then read the piece and observe their reactions to the piece, imagine reactions to their own work, and compare the piece to their own writing. As Ericsson says, "each time you can generate by yourself decisions, interactions, or speeches that match those of people who excel, you move one step closer to reaching the level of an expert performer" (Ericsson et al.).

A deliberate practice course to build self-efficacy should also include explicit instruction in neuroscience. Dirk Remley, in "Neural Implications for Narrative in Multimodal Persuasive Messages," argues for explicit instruction in neuroscience concepts related to writing, citing studies that note that, for complex topics like writing, teaching the associated neuroscience concepts helps students write better and transfer those skills elsewhere (135). For a deliberate practice course, teaching these neuroscience concepts—like the mental demands made by writing—helps students learn what the demands are, understand the weight they carry in the brain, and, with practice, automate those demands.

Conclusion

Self-efficacy has a strong effect on writing. Students can build self-efficacy through deliberate practice and the automation of writing tasks. A course based on these ideas would not only give students ample opportunities to practice, but would teach students the demands on the mind that writing makes. Such knowledge is a form of metacognition that can improve their self-efficacy. The next chapter looks at an application of these ideas in a first-year composition course taught at Texas Christian University.

Chapter 2: the course

Institutional Context

This course is designed as an introductory composition course at Texas Christian University, a private four-year university in Fort Worth, TX, where I teach, with about 10,000 undergraduate students ("TCU's Total"). Introductory Composition is the first of two composition courses required for all undergraduate students. The majority of students taking Introductory Composition are in their first or second semesters at TCU. In my experience, most Introductory Composition students are well-prepared for college writing. At the same time, significant numbers of students also believe they are not good writers.

I choose to use an introductory course to implement deliberate practice for several reasons. First, all students must take this course, which means that most students are not attending Introductory Composition by choice, increasing the likelihood of students with low self-efficacy. Second, because this class is the first of the two required composition classes and it usually is taken within the first year of attendance at TCU, this class has the largest number of students who feel like they can't write. Third, because this class comes so early in a college career, an increase of self-efficacy in this class can affect all other classes with writing assignments, setting them up for success in other writing courses they will take.

When developing a course, Ericsson reminds us to focus on the end first. Though he doesn't use the terminology, what he is suggesting is backwards design. At TCU, as with many universities, the "what exactly should a student learn in this course" question is defined in the university's learning outcomes, as described on the Core Curriculum website:

ENGL 10803 fulfills the TCU Core Essential Competency, Written
Communication 1. The learning outcomes listed below are the goals we are
working toward. By the end of ENGL 10803, students should demonstrate:

1. The ability to write in a range of genres, using appropriate rhetorical
    conventions, for example:

    - write multiple assignments in different academic genres.

    - write for different rhetorical situations (audience, purpose, genre).

    - produce texts with a controlling idea, appropriate support for their
      claims, and appropriate conventions of format and structure
      (including being able to create appropriate organizational
      structures in the absence of models).Write multiple assignments in
      several genres, expanding their repertoire beyond predictable
      forms (e.g. the 5-paragraph essay)

2.   Competency in reading, quoting and citing sources, as well as
competency in balancing their own voices with secondary sources, for
example:

    - critically read texts for main ideas and arguments, for use of genre
      conventions, for rhetorical strategy, and for the position of the
      author.

    - summarize, respond to, and critique texts.

    - find, evaluate, analyze, synthesize and cite appropriate sources to
      inform and situate their own claims. Find, evaluate, analyze, and
      synthesize appropriate primary and secondary sources to inform
      and situate one's own claims.

3. The ability to employ flexible strategies for generating and revising their writing, for example:

- receive feedback on their writing from peers and instructor.

- work both inductively and deductively to develop a focus, claim, or thesis.

- write multiple revisions, which might include substantive changes in ideas, structure, and supporting evidence.

- edit their texts according to the conventions of Edited American English.

As mentioned in the previous chapter, an important element of determining what students should learn to do includes a focus on action. Fortunately, the bullet points of TCU's learning outcomes for this course are actions: write in multiple genres, receive feedback from peers, critique texts, etc.

The typical syllabus for a first-year writing course at TCU is based on inquiry: writing as a means to learn, not merely to report on what is learned. TCU offers instructors a common syllabus they may teach from. The semester usually begins with an assignment to write a writing history letter detailing the student's engagement with and thoughts on writing thus far in their life. The majority of the semester grade is based on four large projects: a narrative inquiry, text-based analysis, an ethnographic essay, and a presentation. Grading for these four projects is based on a portfolio, including the project itself, an author's note explaining choices, drafts, and other smaller assignments meant to help the student develop the project. In addition to process work, rubric criteria include focus, support, structure, style, and editing and proofreading, ranked on a scale from "Not Satisfactory" to "Excellent."

The first project on the common syllabus is a narrative inquiry. To successfully write a narrative inquiry, students first need to take actions to generate writing. This includes finding their own interests within the assigned topic, understanding what inquiry-based writing is and how to ask a good question, brainstorming, creating a connection map, freewriting, and using the rubric to come up with ideas.

A connection map is a useful way to generate ideas. As an example, in the semesters I taught, the narrative inquiry asked students to answer the question, "What connects me to home and how does that connection affect me now?". For a connection map, students listed or drew several definitions of "home;" technologies, rituals, objects, and values associated with home; things they were interested in and cared about; and stories associated with home that they might include. Then students connected several of these items together. For example, a student may connect a definition of home as a place they feel comfortable with their interest in souped-up cars and the ritual of racing their cars down country back roads. Students made three such connections and discussed them in class.

Using the rubric to come up with ideas simply means to look at the grading rubric for the project and consider ideas to fulfill the requirements. For example, this narrative inquiry project required a student to include three stories. This prompts the student to consider what stories to include in the project.

Other actions students need to take to create a successful narrative inquiry include constructing a controlling idea, organizing and structuring their thoughts, considering style and formality, using stories as evidence to make a point, and choosing what to include and exclude from their paper.

Once written, students need to take actions to revise their writing, including giving feedback to themselves (by ensuring their writing meets the rubric requirements, reading out loud, and visiting the writing center), receiving and responding to instructor feedback (by attending a conference, reading draft comments, and reviewing comments on assignments—like the connection map—specifically directed to help students with their paper), receiving and responding to peer feedback (by giving feedback, understanding the value of peer feedback, and learning what to do with the feedback they receive), and editing and proofreading their paper.

The second project on the common syllabus is a text-based analysis. The actions to create a text-based analysis overlap those of the narrative inquiry—and this is by design. The repetition of tasks gives students the opportunity to improve their skills in these tasks. And, since the tasks are common tasks in many writing assignments, this repetition refines their writing ability.

Again, students will begin with strategies for generating writing, followed by producing a controlling idea, organizing and structuring their thoughts, considering style and formality, choosing what to include and exclude from their paper, and using text as evidence to make a point. This latter point includes specialized actions for the genre, including how to find and use text as evidence; learning how to quote, summarize, and paraphrase; balancing their own voice with secondary sources; and how to cite sources in text and on a works cited page.

Finally, students will take actions to revise their writing through responding to their own paper, instructor feedback, and peer feedback.

The third project on the common syllabus is an ethnographic inquiry paper. However, even though many students enjoy this project, I eliminated this from my course design to make room for teaching mental demands.

The final project on the common syllabus is a presentation. The actions for a presentation are similar to the other projects, including a section on style that covers presentation conventions, formality, and the creation of slides.

With this outline, it is easy to see the cyclical nature of the writing program at TCU and how it is set up perfectly for deliberate practice: within each genre are similar and repeated steps. Students have the opportunity to learn and reinforce the step every time they practice it, and they will practice it several times during the course. The cyclical nature of this setup is also designed to build students' belief in themselves: they take an action, get feedback, then do it again. Every time they are able to do a task better, they can see their improvement.

During my first semester teaching, I was extremely grateful for this common syllabus; it helped me feel like I was on track and kept me from being overwhelmed by my job. To develop a course based on deliberate practice, I started designing with the common syllabus as a base, adapting it for a deliberate practice approach, with the goal of increasing self-efficacy by automating aspects of the writing process to free up mental space for the cognitive demands that writing requires.

Changes to the common syllabus

The biggest change I started with is adding instruction on and readings about the mental demands made by writing. This will give students an understanding about these demands and jumpstart conversations about the individual demands and how to practice them. I also add instruction to teach relevant aspects of deliberate practice, namely the concept of automating the mental demands, and the benefit of freeing up short-term memory by doing so.

Taking advantage of the cyclical nature of the TCU common syllabus assignments, I would add more practice opportunities. For example, Ericsson suggests students have five to ten attempts at any one given skill. I would choose a few skills to emphasize for Project 1 and have them practice the skill with five attempts. For example, as the first project of the semester, the narrative inquiry is ideally situated to practice inquiry activities. Students could do four inquiry activities for several papers (none of which they would write), and then, finally, do a fifth inquiry activity for the actual narrative inquiry paper.

The common syllabus includes peer reviews for every paper, but knowing the effectiveness of collaboration in teaching the mental demands of writing, I would increase collaboration opportunities. For example, students would collaborate on developing topic ideas, introductions, and conclusions.

Several mentor texts are also included on the common syllabus, but my instruction using these was not in-depth. Knowing what I now know about deliberate practice, I would use mentor texts, including former students' papers, more thoroughly, explicitly teaching students how to see what is done effectively in the mentor texts. Afterwards, I would provide opportunities to practice. For example, if we are examining mentor texts to find effective transitions, I would immediately provide several opportunities to practice transitions, including opportunities to write imitations of mentor texts. For example, if we read a mentor text with a captivating introduction, I would ask students to write an introduction using some of the same methods the mentor author used.

I would also test out to see if Ericsson's suggestion on using writing models holds up in the composition field. Ericsson—a psychologist, not a composition scholar—suggested that students use the same method Benjamin Franklin used to improve his writing. Franklin turned to models.

He would read an article, noting the idea in each sentence, then, a few days later, rewrite it from memory. He compared his version to the original to see the differences between his writing and the professional version. Ericsson, praising this approach, said this is "the best way to help students develop their skills and mental representations in an area" (Ericsson and Pool 25). John Brogan, in praising Franklin's method, noted,

> writers understand, for example, that overused passive constructions weaken, that verbs vivify, and that ambiguity misleads. But too often these rules are only empty abstractions. The writers don't recognize how the rules apply to their own writing; they break the rules unawares.
>
> Herein lies the merit of Franklin's technique.... For it does not deal in abstractions. Rather than preach verbal rules, imitation and the accompanying critique form a rigorous instructive discipline that guides the imitator. (4)

My initial research on the viability of this method for composition courses yielded a few old results, like from 1946, suggesting its usefulness, but nothing recent or thoroughly vetted. Another method of using mentor texts that Ericsson suggests is, before asking students to read, tell students what the piece will be about, and have them write on that topic. Afterwards, give students the piece to read and observe their reactions to the piece, imagine reactions to their own work, and compare the piece to their own writing. This combines the use of mentor texts and feedback, which is essential for automating the work of writing.

To encourage metacognition, I include frequent opportunities for reflection. For example, I would assign a reflection piece asking students what was hard, where they got stuck, and what they felt the weakest part of their work was. To move beyond a negative focus, I would also

encourage self-efficacy by asking students to describe what they did well and what parts of the writing task went smoothly.

Cassity reminds us that low-stakes assignments are important to developing the mental demands used in writing. The common syllabus at TCU grades writing projects based on a portfolio, thus decreasing a grade's reliance on a paper alone, which is an excellent start to lowering the stakes (as opposed to the entirety of a student's grade based on three or four final drafts). I continue to decrease the stakes by including, after three major projects, several smaller essays and assignments. This means fewer points are going to the major projects, and the smaller assignments give students more opportunities to practice specific writing skills.

Another key aspect of learning and automating the mental demands of writing is the warm-up. One semester, I occasionally had students freewrite to warm up their writing muscles and to help focus them on the class, rather than whatever they had going on outside the classroom. It wasn't very effective. For example, very few students made it to the end of the five minutes. The next semester, I had students read and respond to "Freewriting" by Peter Elbow. This drastically improved the freewriting and its benefits in my classes. Students gave positive feedback, indicating that it was helpful for them. And, as I watched them write, many more students wrote the full length of time I gave them (five minutes daily). In this sense, freewriting is also a way to deliberately practice producing text. Even if a great deal of the text is nonsense—my freewrites often include lines like "blah blah blah i don't know what to write now oh look theres a butterfly…"—the act of producing a great deal of text and writing for long lengths of time is valuable practice. In this course, I would include Elbow's "Freewriting" and frame freewriting as an opportunity to practice producing text.

Sample Implementation of Tools and Strategies

While I have not yet taught a full course based on deliberate practice with the purpose of increasing self-efficacy, I used the principles discussed in this thesis to implement deliberate practice on a few assignments during Spring 2020, when classes changed radically during the COVID-19 pandemic.

Up to this point in the semester, my students had written two papers of about 1,000 words each. Based on my assessment of their work on these papers, I asked them what they felt they needed to improve. With the most common responses in hand, I created several short assignments utilizing the principles of deliberate practice to help them improve these aspects of their writing skills. broke each topic down into steps. The steps were the same across the topics: research, practice, and consider how to use this outside of class or how to further improve. I chose these steps based on deliberate practice principles of teaching the step, including repetition and feedback, and using models. The research section is intended to teach the step. The activity section of the assignment used models—poor models that students needed to improve, in the example below. The final section was intended as yet another repetition of the concept, as well as a way for students to give themselves feedback.

Below you will see one of the assignments on creating a clear controlling idea. First, students researched what this topic meant and responded to their research. Then they practiced this concept. Finally, they expanded on this topic, detailing either how they could further improve, or how they could use this topic outside of class. I created this—and the other assignments like it—using the principles of deliberate practice.

Sample Assignment

Clear Controlling Ideas (aka a clear thesis)

10 points: Research on the topic: 1-2 sites. Look to .edu sites first.

10 points: Respond to or summarize the research in the box below: 25-50 words (more is ok)

<div style="border:1px solid black; min-height:200px;"></div>
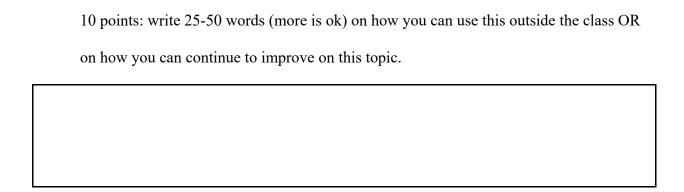
30 points: Activity to practice this skill

The paragraph in the box below does not have a clear controlling idea. Keeping in mind the research you just did, alter the paragraph to make it have a clear controlling idea.

Memorization is about remembering, not learning, so by itself is ineffective. Think of video games as a tool to learn in the same way you think of calculators as a tool to do math. No longer is it necessary to memorize what 7,394,273 times 83,394,294 is. A calculator will do that for you. Instead, it is important to understand the concepts.

Practice one more time. The paragraph in the box below also does not have a clear controlling idea. Keeping in mind the research you just did, alter the paragraph to make it have a clear controlling idea.

Games encourage players to think about relationships, not isolated events, facts, and skills. In a game like *Rise of Nations*, players need ot think how each action they take might impact on their future actions and the actions of the other players playing against them as they each move

their civilizations through the ages. Games encourage a distinctive view of intelligence. Games encourage players to explore thoroughly before moving on, to think laterally, not just linearly, and to use such exploration and lateral thinking to reconceive one's goals from time to time. Good ideas in a world of high-risk complex systems.

10 points: write 25-50 words (more is ok) on how you can use this outside the class OR on how you can continue to improve on this topic.

My students did remarkably well on this and other similar assignments. I expected to need leniency and understanding for less-than-stellar work because of the stress of living through a pandemic, but most of the analyses were well thought-out.

These assignments were also like feedback: they directed students' attention to specific aspects of their writing. The last section on the assignment was designed to help them consider how to implement the skill into their own writing: in this section, students shared a short reflective paragraph on how they could use this skill in the near future.

This small, simple application of deliberate practice into a writing course was backed by the research and principles discussed in this thesis, most particularly objective and measurable work, the opportunity to manipulate existing work, multiple attempts on the same topic, a chance to correct mistakes, and a chance to evaluate mental representations.

Critical Reflection

As we discussed earlier, I employed Ericsson's model of deliberate practice to craft a course to enhance student self-efficacy and teach the mental demands of writing, thus constructing a new model for basic writing instruction. This model trains writers to practice one cognitive demand of writing at a time, which then allows them to automate that aspect of writing. This utilizes abundant long-term memory for many writing tasks, while freeing up the extremely limited short-term memory for others. Both the improvement of writing and the understanding of the mental demands themselves improve self-efficacy, which then improves writing.

While I initially expected to create a course from scratch, I was pleasantly surprised, during this research, to find that Kathleen Cassity's words are true: composition does indeed use many concepts from deliberate practice to teach students to write well. Rather than a completely new course, I ended up pushing TCU's common syllabus a little further, to emphasize the ideas and principles that would help students the most. My initial test runs with mini assignments during the pandemic yielded positive results. Students reported learning and engaged with the work beyond what I expected.

This course, modeled on thorough research, is now ready to be responsibly implemented in a classroom. As I implement it, I will seek frequent feedback from students and watch out for pitfalls. For example, will some students be intimidated if I start talking about the mental demands that writing makes? Neuroscience sounds intimidating, and that's what mental demands are. To minimize the intimidating factor, I would use very little technical language, but I will still watch for signs of intimidation. The purpose is, after all, to increase self-efficacy, not decrease it with jargon-filled talk of neuroscience.

Another potential pitfall is one we all face as instructors focusing on students who have been left behind in the past: how to ensure students who excel aren't held back? I believe that the way I've designed this course will allow each student to work and improve from where they are, but will it really? Will advanced writers find the practice opportunities excessively boring? Or will they push themselves to continue to improve?

Further research would increase the audience for this course. At the moment, it is designed for TCU students, who generally come into writing classes well prepared. I need to continue research to discover what changes I should make for students who don't come to colleges prepared, such as students who are learning English as their second or third language. I believe this cognitive- and deliberate practice-based approach will still be helpful for less prepared students, but it should be enhanced with research on these types of students and what instruction is the most helpful.

Syllabus

Course Description

This course is a writing workshop in which you will practice writing in a range of genres, quoting and using sources, and generating and revising your writing.

Goals

In addition to reaching the goals set by TCU, my goal for this class is to build 1) your self-efficacy—your belief and confidence in your writing ability, and 2) your metacognitive awareness—the ability to see and understand the changes in your brain as you write.

Assignment Sequence

The assignments in this course are cyclical: while we explore different genres with each major assignment, we will use the same tools to invent, read, draft, revise, and edit our writing. Like building muscle, this repeated practice allows you to understand and refine your writing process.

Unique Features of this Course

This course is underlaid by concepts of neuroscience, allowing you to work *with* your brain, rather than against it. As the psychologist Anders Ericsson said, we will be "harnessing the adaptability of the human body and brain to create, step by step, the ability to do things that were previously not possible." These principles can help you to write well, whether or not you have been successful in writing classes before now.

Our class will structure its work around deliberate practice: setting specific goals, learning specific skills or subskills, receiving and giving feedback, and working hard. *Practice* is an operative word here: you will have many opportunities to practice aspects of writing in this class.

Week 1

- Deliberate practice and mental demands introduction
- Writing history letter
- Evaluate current mental representations through verbally recording thoughts as they write a short paper.

Week 2: Narrative Inquiry

- Narrative Inquiry introduction
    - Read 3 narrative inquiries and look for patterns
- Invention activities

Week 3: Narrative Inquiry

- Groups: each member presents on one of these topics: controlling idea, organization/structure, style, stories as evidence

- Write stories. Use collaboration to evaluate what to improve

Week 4: Narrative Inquiry

- Write a "terrible" first draft

- Review first draft

- Work on one aspect of the paper you want to improve

Week 5: Narrative Inquiry

- Practice revision

- Revise Narrative inquiry

- Reflection: What aspect of your writing do you want to focus on in the next unit?

Week 6: Text-based analysis: focus on writing and genre conventions

- Text-based analysis introduction

  - Read 3 mentor texts and look for patterns

- Practice writing: give students a thesis and list of evidence; they write a paper

Week 7: Text-based analysis

- Practice writing: give students a list of evidence; they write papers

- Compare these papers to mentor texts that use the same evidence

Week 8: Text-based analysis

- Practice writing: research (from a limited amount of sources) and write a paper

- Revise paper

- Reflection: Compare paper to one written in week 6. How have you improved?

Week 9: Text-based analysis, 2nd round: focus on research

- Library day: how to find sources

- Evaluating sources

Week 10: Text-based analysis, 2nd round

- Practice quoting, summarizing, and paraphrasing sources

- Practice balancing own voice with the source

- Paper due

Week 11: Text-based analysis, 2nd round

- Revise paper

- Practice citing sources

Week 12: Text-based analysis, 3rd round

- Research and write a paper

Week 13: Text-based analysis, 3rd round

- Finish researching and writing the paper

- Revise paper

Week 14: Presentation

- Genre conventions: see 3 mentor presentations and look for patterns

- Prepare a 1-minute presentation

    - Present to one person in the class

- Feedback

- Prepare a 2-minute presentation

  - Present to three people

  - feedback

Week 15: Finals week

- Presentations

This syllabus, indeed this entire thesis, is crafted with the hope that we can reach students who aren't excelling in the current modes of learning writing. By basing a teaching method on how the mind works, we can craft a writing course based on our understanding of those minds.

Specifically, Anders Ericsson's deliberate practice theory is a process that has helped many people become high achievers through understanding their minds. The instructor becomes a coach, focusing on giving students actionable, step-by-step tasks that take them out of their comfort zones—but not so far as to guarantee failure. Repetition, feedback, models, correcting mistakes, metacognitive awareness, and mental representations are all aspects of a writing course based on deliberate practice.

Future study potential

This thesis utilizes work from psychologists, especially Anders Ericsson. Further work can be done to integrate more research from psychology and cognitive science into the heavily cognitive work of writing. Simply informing composition instructors of the advances in the understanding of the brain would be a fantastic first step, and creating courses based on that research, as this thesis does, would be the next.

This thesis focuses heavily on deliberate practice. If I had time and resources to do classroom research on implementing deliberate practice, I would find instructors using deliberate practice in their writing classrooms, or doing something like it—perhaps under a different name. I would interview them and ask what works, what doesn't, and what changes they've made to Ericsson's base theory. I'd be particularly interested in the adaptations they make to fit Ericsson to composition. Why those changes?

I would study students themselves: collect narratives and questionnaire responses on their view of the effectiveness of deliberate practice. Perhaps a questionnaire in the beginning of the semester regarding their views on writing and another at the end, to compare, would be useful.

I would consider further questions on deliberate practice, like how does deliberate practice affect those for whom English is not their first language, yet are learning composition in English? And how might a writing center implement deliberate practice principles, and would doing so be beneficial to students?

Further study could also be done with Graham and Perin's research that Kellogg and Whiteford relied heavily on. I would love to recreate Graham and Perin's work, but base it on instructional methods for college students, not fourth through twelfth grade students.

Another focus of this thesis is on automation: practicing individual skills until they are automated. I mentioned early in this thesis that I believe the templates in *They Say, I Say* also utilizes the idea of automation, though not explicitly or consciously. Are there other methods of teaching composition that also work on automation? If so, what are they, and which are most effective? If not, can we do more with automation?

Finally, one of my main motivations for studying deliberate practice in a composition context is to make it easier for reluctant students to learn composition, as well as more efficient, in the sense that deliberate practice works with how the brain already functions, rather than against it in the way that past attempts at teaching composition have often done. If I could do further research, I would absolutely love to find more ways we could teach composition that align with how the brain and mind function. Flower and Hayes' work is already in this vein, of course. Just imagine if we continue to use neuroscience to help students write better. For example, in a recent article, David Badre, a professor of cognitive, linguistic and psychological sciences at Brown University, discussed productivity in terms of neuroscience. He focused on using our knowledge of neuroscience to do those hard tasks that we often procrastinate. Writing is most definitely one of those tasks.Badre's first suggestion is about the limitations of working memory, which this thesis has discussed, but Badre takes a different approach and discusses the "restart cost" associated with short-term memory: every time you switch tasks, your brain must work to bring the relevant information back into working memory. Badre suggests setting aside large blocks of

time for the difficult task, so we only have to load information into our working memory once. Setting aside large blocks of time to spare brains the effort of restart cost could be a useful tool to give our students as they write. Instead of spending mental effort on restarting, they could spend it on writing. This is what my dream theory would bring to the world (or, at least, the world of composition): helping people maximize their efforts and minimize waste.

Imagine what other scientific-based knowledge that touches on writing we could integrate into composition! For example, it is common to hear anecdotes of authors who come up with their best lines in the shower. Plenty of famous writers have talked about the essential nature of taking long walks. Is there scientific evidence of the effect of showers or walks on the writing process—or any problem-solving process? If so, what happens to the brain and mind during walks that makes this happen? How can we help students gain this same benefit?

And, if so, is there anything *different* when showers or walks are used to help someone write, as opposed to solving business or math problems? In other words, does the brain function the same, or does the fact that it's dealing with language alter its functions, perhaps use a different part of the brain? If there is, we could study and understand this difference, which would in turn allow us to adopt composition teaching to this newly-understood aspect of language and the brain.

Conclusion

This thesis has examined the idea that deliberate practice can be integrated into a composition course and it can benefit those students who have not yet been reached by other pedagogical methods—those who have "learned" that they are stupid or "just not writers."

Ericsson's work on deliberate practice, combined with teaching the mental demands of writing appears likely to be able to help these neglected students build self-efficacy and writing ability. Repeated practice with feedback gives opportunities to improve, and then automate, skills. Automation relies on long-term memory, rather than short-term memory, which decreases the cognitive load of writing. Writing will feel less difficult, as students both increase skill and rely less on the limited short-term memory. Thus, self-efficacy will grow, which also will increase writing ability.

If I turned to any person of my acquaintance, excluding my fellow English instructors, I will most likely talk to someone who feels they are a poor writer. And, yet, most of these people write well. Their low self-efficacy continues to weigh them down, even years after graduation. I hope to help students unshackle themselves from the chains of low-self efficacy, thus benefiting them for life.

Epilogue

For a thesis that's about how to make writing easier, this was incredibly hard to write. Beyond the normal difficulties associated with a thesis and a large, independent project in the midst of COVID, I had an almost-comical array of life challenges thrown my way, from my son's hospitalization for a week to my own severe depression.

Some of my challenges were ordinary: defining the scope of this project was particularly challenging. I initially wanted to write about the mind and language, because I noticed that, while rhetoric and composition always talk about the mind and its importance—even as far back as Aristotle—I wanted to create a source that talked about the mind in rhetoric and composition using our most current understanding of how the mind works. I created several resources to prepare to write the thesis, two of the most useful being https://languagemind.weebly.com/ (initially created for a class taught by Charlotte Hogg) and an enormous spreadsheet categorizing my research from about a hundred sources. The spreadsheet can be sorted by date, source, author, or tag. Of course, the more research I did, the bigger I realized that project would be— more than enough work for a lifetime of scholarship, far too much for a single Master's thesis.

In addition to exploring rhetoric and composition in terms of cognitive science, another idea I found intriguing was almost the opposite: can words tell us about how our minds work? I. A. Richards described this hope as, "with enough improvement in Rhetoric we may in time learn so much about words that they will tell us how our minds work" (136).

The mind-language connection is fascinating. In addition to studies, like Walter Ong's study on how literacy literally changed minds and how they function, there are legends and anecdotes about writing and the mind. For example, it is common to hear anecdotes of authors who come

up with their best lines in the shower. Plenty of famous writers have talked about the essential nature of taking long walks. Is there scientific evidence of the effect of showers or walks on the writing process—or any problem-solving process? If so, what happens to the brain and mind during walks that makes this happen? How can we help students gain this same benefit?

And, if so, is there anything different when showers or walks are used to help someone write, as opposed to solving business or math problems? In other words, does the brain function the same, or does the fact that it's dealing with language alter its functions, perhaps use a different part of the brain? If there is, we could study and understand this difference, which would in turn allow us to adopt composition teaching to this newly-understood aspect of language and the brain.

Clearly, adding the dimension of the body was too much for an already-too-large study.

And, yet, the body was one of the most vital influences on my interest in the brain and language. In fact, the body—my body—was something I hoped to help with a thesis studying the brain and language. Namely, could language change the brain? From anecdotes of multi-language speakers using different languages to think about the effect of language on epistemology, the field I could address was vast and fascinating.

And I was desperate for any evidence that language could change the brain because I desperately wish—and need—to alter my mind. For a decade now, I've struggled with disabling depression. At one point, I spent a year in bed, getting up for only four hours or so a day. While medication and counseling helped some, writing did, too. And, more than that, getting my mind active by becoming a graduate student is really what got me out of bed and into life again. I fought depression every step of the way, quite literally: depression exhausted me so much that it was difficult to walk from the parking lot to the building where my graduate classes took place. I shuffled along, shoulders hunched from the effort, but I did it. I came to class most days—

though I missed a few each semester from the pain I was in—and I participated as much as possible. I was driven by the dream of graduate school that I'd held onto for thirteen years. The more I worked with words, the more alive I felt, until I had a triumphant semester where I didn't miss any classes from depression. In the meantime, I was attending counseling sessions with mental health professionals, and I couldn't help but notice how much of the healing process was simply words: talk therapy, writing therapy, bibliotherapy, and an emphasis on the importance of self-talk. Words helped me through depression and towards recovery far more than medication did.

Would it be possible to combine the practical knowledge from psychology that psychologists and counselors have built with the knowledge from linguistics and rhetoric about language? Could this improve the help therapists provide for their clients? How much more will people be able to use their self-talk to help lessen mental challenges or to increase their academic abilities?

And could I use it to recover? To return to a full life where I was capable of handling the curveballs that kept coming my way? Where I wasn't cowering in pain?

While this thesis' focus on deliberate practice and self-efficacy might seem far from the purpose of healing my mind through words, I see it as one small step toward that long-term goal. The more I understand my mind, the more self-compassion and self-efficacy I have. My depression is not laziness or a character flow; it is a genetic medical condition that I treat with medicine and therapy. Like many medical conditions, I likely will never fully be free from depression, but I can be responsible about how I deal with it. Knowing all this increases my self-efficacy, just as I hope that knowing about the mental demands of writing will increase students' self-efficacy.

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