DEANS FOR IMPACT

PRACTICE WITH PURPOSE

The Emerging Science of Teacher Expertise

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About
PRACTICE WITH PURPOSE

The goal of this document is to connect the principles of deliberate practice to their practical implications for teacher preparation and professional development. These principles are the result of research in the science of expertise: the systematic study of individuals who excel in a given field. Deliberate practice is practice that is purposeful and designed to maximize improvement. This type of practice has proven useful in improving performance across a range of fields, and several of its principles can help inform how teacher-preparation programs should prepare future educators. The phrase "deliberate practice" is used to refer to activities meant to improve teaching that are based in principles derived from research and outlined in this document.

Beginning (or preservice) teacher preparation cannot produce experts immediately. In fact, developing true expertise likely takes more hours than any teacher-preparation program can possibly provide. But novice teachers who have had the opportunity to practice deliberately are on the path to being ready to teach as they begin their careers, and to develop deeper expertise over time. Our hope is that this document will serve as a useful starting point for leaders in teacher education – including deans, teacher-educators, and others – to analyze the design of their programs in relationship to deliberate-practice principles.

Practice with Purpose explores an area of research that is still developing, and has only recently been applied to teaching. Moreover, deliberate practice is only one of many critical features of effective teacher preparation. And we recognize that other groups and organizations, such as TeachingWorks and the Core Practice Consortium, are leading efforts to identify specific competencies as well as pedagogies of teacher education that draw upon deliberate-practice principles. Deans for Impact believes deliberate practice should play a central role in preparing future educators for the challenging work ahead of them.

Practice with Purpose was developed by member deans of Deans for Impact in close collaboration with Anders Ericsson, professor of psychology and researcher of expertise at Florida State University; Sarah Scott Frank, teacher-educator and founder of Open Literacy; Dylan Kane, high school math teacher in Leadville, Colorado; and Kristine Schutz, literacy researcher and teacher-educator at the University of Illinois at Chicago.

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NOTE ON TERMINOLOGY

Although deliberate practice can be used by any educator to improve their skills, the focus of this document is on novice teachers. We use "novice" and "novice teacher" to refer to both preservice teachers and early-career teachers. We use "teacher-candidate" to refer specifically to individuals in teacher-preparation programs who are not yet licensed to teach. We use "teacher-educator" to refer to full-time faculty of teacher-preparation programs, and "cooperating teacher" to refer to practicing classroom teachers who serve as mentors to teacher-candidates. We use "student" to refer to K-12 students taught in classrooms of teachers or teacher-candidates.

Quality > Quantity

Although calls for a focus on practice in teacher preparation in recent years have led to new clinical opportunities, we need to strengthen the *quality* of these experiences rather than solely focus on the *quantity* of time novice teachers spend in classrooms.[1] Experience is easily conflated with expertise, yet evidence across a range of fields suggests that experience alone does not improve performance,[2] and the typical approaches to teacher preparation and professional development have produced inconsistent teacher effectiveness.[3]

The science of expertise reveals seven key principles that are features of deliberate practice, and are used in fields that have highly developed training techniques, such as learning to play the violin or training to become a grandmaster in chess. This document examines five of these principles that are particularly relevant to developing teacher skill:[4]

THE FIVE PRINCIPLES OF DELIBERATE PRACTICE

- **PUSH BEYOND** one's comfort zone
- Work toward well-defined, **SPECIFIC GOALS**
- **FOCUS** intently on practice activities
- Receive and respond to **HIGH-QUALITY FEEDBACK**
- Develop a **MENTAL MODEL** of expertise

These principles can shape the design of clinical experiences, student teaching, and ongoing professional development to maximize the growth of teachers. There are a number of factors that influence the effectiveness of a novice teacher, and deliberate practice is not the only method for preparing teachers. But deliberate practice is one aspect of teacher preparation that programs have control over, and it can be the starting point for programmatic redesign.

The following pages examine how the principles of deliberate practice can be applied to develop teaching skill. Each principle is (1) mapped to a set of practical implications for teacher-preparation programs; (2) illustrated in the context of a teacher-preparation program; and (3) tied to a set of questions for programs to use to evaluate whether teacher-candidates are practicing deliberately.

[1] Grossman, Compton, Igra, Ronfeldt, Shahan, & Williamson, 2009; Zeichner, 2012

[2] Ericsson, Krampe, & Tesch-Römer, 1993

[3] Birman et al., 2007; Rivkin, Hanushek & Kain, 2005

[4] Ericsson & Pool, 2016

Push Beyond Comfort

PRINCIPLE
OF DELIBERATE PRACTICE

Deliberate practice requires presenting challenges that push novices just beyond their current abilities.[5]

PRACTICAL IMPLICATIONS
FOR TEACHER DEVELOPMENT

- Teaching is challenging work; novice teachers face significant challenges early in their teaching and are unlikely to learn the skills necessary to overcome these challenges if their learning is left to chance.[6]

- Programs can design practice experiences so that novice teachers are challenged through a purposeful trajectory throughout their preparation, with specific goals for what a beginning teacher should know and be able to do, and provide the support necessary to work through those challenges.[7]

[5] Ericsson & Pool, 2016
[6] Ball & Forzani, 2009
[7] Ericsson & Pool, 2016

Push Beyond Comfort

ILLUSTRATION
OF THIS PRINCIPLE IN PRACTICE

Desmond, a novice teacher, meets with Lea, a teacher-educator, after Lea has observed Desmond's teaching. Desmond is working to improve his questioning of students in order to elicit their thinking. He plans his questions carefully, yet often elicits student thinking that appears superficial and underdeveloped. Desmond struggles to extend the discussion after students respond.

Lea and Desmond begin by discussing the questions he had planned for his lesson and how students responded. Lea notes that Desmond's questions were effective in generating student thinking, but that he often failed to connect that thinking to the larger discussion.

Lea wants Desmond to improve at orienting students to one another's thinking. She suggests that he try revoicing a student's response and ask other students if they agree, disagree, or can add on an idea to support students in expanding their thinking. With Lea's help, Desmond plans several key moments in his next lesson where orienting student thinking will be important, and they plan for specific responses that Desmond will address using the revoicing strategy. While Desmond is initially nervous about this strategy, Lea notices that he improves in the following week. Soon, he begins orienting students to one another's thinking more naturally, and the quality of student responses increases.

ARE YOU **PRACTICING WITH PURPOSE**?

- Are teacher-educators prepared to support novice teachers with challenges they will struggle with early in their teaching?
- Are novice teachers challenged to work on a variety of discrete skills that are difficult to master?
- Are cooperating teachers supported by teacher-educators in jointly creating challenges that will push novice teachers outside their comfort zones?
- Do teacher-educators have an understanding of how candidates learn to teach in a developmental trajectory?

Define Specific Goals

PRINCIPLE
OF DELIBERATE PRACTICE

Deliberate practice requires setting goals that are well-defined, specific, and measurable.[8]

PRACTICAL IMPLICATIONS
FOR TEACHER DEVELOPMENT

- Practice activities should focus on improving a particular aspect of teaching rather than working toward broad, general improvement.[9]
- Goals should be sequenced, starting with basic skills and progressing to more sophisticated ones.[10]
- Goals should be measurable where possible, and these measures should inform the choice of future goals. [11]

[8] Ericsson, 2006
[9] Ericsson, 2006
[10] Ericsson & Pool, 2016
[11] Ericsson & Pool, 2016

Define Specific Goals

ILLUSTRATION
OF THIS PRINCIPLE IN PRACTICE

Two teacher-candidates have two very different experiences in their teaching placements. Bruna spends half a year teaching math under the supervision of a cooperating teacher. Bruna gradually takes on more responsibility in the classroom until she is planning and teaching entirely on her own. She is observed by both her cooperating teacher and supervising teacher-educator, and receives feedback based on those observations. When she encounters challenges in her teaching, she decides whether to approach her cooperating teacher or her supervising teacher-educator to discuss possible solutions.

Hazel spends the same amount of time student teaching that Bruna does. However, Hazel's program focuses on ten essential skills, such as setting a clear purpose for a lesson, eliciting student thinking, and explaining and representing mathematical ideas. These goals are sequenced from foundational skills – such as setting up effective transitions between activities – to more ambitious ones, such as adjusting a lesson in response to student thinking.

As Hazel continues her student teaching, her cooperating teacher and supervising teacher-educator communicate to select appropriate goals. For instance, her cooperating teacher notices early on that Hazel struggles to identify student misconceptions when responding to student thinking. They videotape Hazel in the classroom, and Hazel and other teacher-candidates examine several examples of student misconceptions, discuss possible reasons for them, and practice different responses. Hazel then receives feedback from her cooperating teacher around her responses to misconceptions in class the next week.

Unlike Bruna, Hazel is learning to teach through deliberate practice.

ARE YOU **PRACTICING WITH PURPOSE**?

- Are clear and specific goals established and agreed upon by all parties – including *all* cooperating teachers and teacher-educators – who are involved in designing a novice teacher's opportunities for practice?
- Can clear measures be established to track progress against these goals?
- Do cooperating teachers and teacher-educators provide specific, actionable feedback related to these goals?

Intensify the Focus

PRINCIPLE
OF DELIBERATE PRACTICE

Deliberate practice requires a significant level of focus; the practice involves conscious effort on the part of the novice in order to improve.[12]

PRACTICAL IMPLICATIONS
FOR TEACHER DEVELOPMENT

- Opportunities to focus intently on practice may effectively occur outside of typical student teaching opportunities; two mechanisms for this type of practice are decompositions and approximations of teaching.[13]
- A decomposition of teaching isolates a specific element of classroom practice for a novice teacher to practice, such as focusing on transitions between activities within a lesson.[14]
- An approximation of teaching imitates a classroom situation and provides opportunities for practice similar to actual teaching experiences – but with lower stakes.[15]

[12] Ericsson, Krampe, & Tesch-Römer, 1993
[13] Grossman et al., 2009
[14] Grossman et al., 2009
[15] Grossman et al., 2009

Intensify the Focus

ILLUSTRATION
OF THIS PRINCIPLE IN PRACTICE

Vivienne is a teacher-candidate taking an elementary methods class where the teacher-candidates are learning to enact a high-quality, interactive storybook read aloud with the book *Freedom Summer* by Deborah Wiles. All teacher-candidates will have a common experience teaching the same text to second-grade students. Roi, their teacher-educator, wants the teacher-candidates to make an age-appropriate connection to a historically important turning point in the Civil Rights movement as part of their text introduction.

Before their lessons, Vivienne and her classmates rehearse their read aloud together in small groups, and practice how they will introduce the text to their students. Then, Vivienne publicly rehearses her read-aloud text introduction. But when first explaining what led to Freedom Summer, Vivienne states that it happened in the summer of 1964. Roi pauses Vivienne's rehearsal and explains that her second-grade students will have difficulty connecting with that piece of background knowledge. Roi and the class of teacher-candidates discuss ways to connect the book to the historical context in an age-appropriate manner. This rehearsal leads Vivienne to modify her approach to her planned read aloud of *Freedom Summer*.[16]

ARE YOU **PRACTICING WITH PURPOSE**?

- Are teacher-educators prepared to provide practice outside of K-12 classrooms for additional opportunities to focus on specific elements of teaching?
- Are there opportunities to focus on key aspects of practice that novice teachers often struggle with?
- Are teaching opportunities designed to focus on specific elements of instruction that have been broken down into their constituent parts?

[16] Kazemi, Ghousseini, Cunard, & Turrou, 2015; Lampert et al., 2013

Respond to Feedback

PRINCIPLE
OF DELIBERATE PRACTICE

Deliberate practice requires providing high-quality feedback to the novice and adjustment by the novice in response to that feedback.[17]

PRACTICAL IMPLICATIONS
FOR TEACHER DEVELOPMENT

- Feedback should occur immediately or as soon as possible after practicing a specific skill.[18]
- Feedback should focus on specific features of a teacher's work relative to a task or goal.[19]
- After feedback is given, there should be opportunities to attempt a similar task involving the same skill again – and with adjustment by the novice based on that feedback.[20]

[17] Ericsson, Krampe, & Tesch-Römer, 1993
[18] Shute, 2008
[19] Shute, 2008
[20] Ericsson, Krampe, & Tesch-Römer, 1993

Respond to Feedback

ILLUSTRATION
OF THIS PRINCIPLE IN PRACTICE

Susan, a cooperating teacher working with a university-based teacher-preparation program, has been mentoring teacher-candidates for 20 years. She typically gave feedback to teacher-candidates based on goals the candidates individually identified, or those that came up during their student-teaching experiences.

The program Susan works with is revamping their approach to feedback. Susan meets with teacher-educators in the program to learn the goals they have for teacher-candidates, such as leading a whole-group discussion and managing group work. Susan agrees to share feedback she gives relative to these goals with teacher-educators at the university so that all parties know the areas that teacher-candidates are working to improve.

Susan then meets with Pascal, a teacher-candidate she is mentoring, to set a schedule of regular feedback meetings and make a concrete plan for how Pascal will implement Susan's feedback on specific skills. To better focus her feedback, Susan begins videotaping sections of Pascal's lessons relevant to his goals so that they can watch the video in meetings after class and talk about how he can improve. Teacher-educators at the university use what they learn from Susan's feedback to Pascal to inform areas they focus on in their courses, and provide additional opportunities to practice through simulations with other novice teachers.

ARE YOU **PRACTICING WITH PURPOSE**?

- Do *all* parties involved in a teacher-preparation program – including the cooperating teachers and teacher-educators – agree on common language and structures for feedback?
- Is there a concrete plan for providing feedback that includes set dates for meeting?
- Is feedback focused on specific goals that teachers can work on improving over time, and with repeated opportunities to improve?

Develop a Mental Model

PRINCIPLE
OF DELIBERATE PRACTICE

Deliberate practice both produces and relies on mental models and mental representations to guide decisions.[21] These models allow practitioners to self-monitor performance to improve their performance.[22]

PRACTICAL IMPLICATIONS
FOR TEACHER DEVELOPMENT

- Novice teachers and teacher-educators should have a clear understanding of how students learn that is based in part on principles of cognitive science.[23]
- This knowledge should include how students understand new ideas, retain information, solve problems, transfer their knowledge to new situations, and find motivation to learn.[24]
- Novice teachers and teacher-educators should have a clear idea of how they will know students are learning, and compare evidence of student performance with their mental model of student learning.[25]

[21] Ericsson & Pool, 2016
[22] Ericsson & Pool, 2016
[23] Deans for Impact, 2015
[24] Deans for Impact, 2015
[25] Black & Wiliam, 1998

Develop a Mental Model

ILLUSTRATION
OF THIS PRINCIPLE IN PRACTICE

Reggie is a teacher-educator who wants to ensure teacher-candidates in his program have a clear understanding of how students learn science. He asks teacher-candidates to reflect in detail on misconceptions that students have about the motion of the sun, earth, and moon. They identify, with Reggie's guidance, the most important misconceptions to address in their lessons. They then plan an activity to elicit student thinking at the beginning of their lessons so that teacher-candidates can compare their students' knowledge with the image they had of how students learned celestial motion.

Next, Reggie asks teacher-candidates to plan how they will ensure students will retain this knowledge and be able to apply it in new contexts in the future. They make a plan for how they will push students to think about the structure of celestial motion beyond its surface features, and design an assessment that requires students to apply what they know to a hypothetical solar system different than our own. They evaluate the results of this assessment to determine the extent to which students understand the deep structure of celestial motion and plan for how students will retrieve this knowledge in the future.

ARE YOU **PRACTICING WITH PURPOSE**?

- Can the parties involved in a teacher-preparation program identify agreed-upon cognitive principles about how students learn?
- Is there a process in place for novice teachers to self-monitor whether their teaching has resulted in student learning?
- Can novice teachers articulate how they will compare their ideas of student learning with evidence of student learning?

Making a deliberate commitment to improving teacher preparation

The five principles of deliberate practice outlined in this document can help individual programs improve the coherence and effectiveness of the experiences they provide to teacher-candidates. An area for collective action in the field of teacher preparation is to develop the prerequisites for two additional principles of deliberate practice. These principles are essential to fields with well-developed methods of improvement.

Deliberate practice requires the use of established, effective training techniques, overseen by someone who is knowledgeable in that field.[26]

- Teaching has not reached the consensus on effective training techniques that are required for deliberate practice.[27]
- The development of a common language for practice-based teacher preparation is an important area of focus for teacher-educators.[28]

Deliberate practice builds skills in a carefully chosen order, ensuring that fundamental skills are learned correctly early on, and that elements of practice that teachers choose to improve build on each other.[29]

- Teaching has not reached consensus on specific foundational skills for novice teachers to learn early in their development, but this work is underway and early efforts can be used to improve practice.[30]

CALL TO ACTION

A practice-based approach to teacher preparation requires teacher-educators to work differently, linking theory and practice and creating coherent candidate experiences anchored in a vision of ambitious instruction. Some readers will argue that a practice-based approach is possible only in a small number of programs and only under certain circumstances. We disagree. There are a growing number of teacher-education programs – within both traditional colleges of education and in less traditional organizations, in large programs and in small, within the membership of Deans for Impact and beyond our membership – that are pioneering a practice-based approach. But they are few in number and wide-ranging in their application of deliberate-practice principles.

The principles of deliberate practice have the promise to improve the quality of teacher education. There will inevitably be challenges with this work: for teacher-educators learning new techniques; for institutions that need to change incentive structures in order to encourage faculty to own collectively the success of every teacher-candidate; and for teacher-candidates and novice teachers who will be pushed beyond their comfort zones. This work will not be easy, but we believe that it is both possible and necessary if we are to advance the field of teacher preparation and prepare effective teachers to serve every student.

[26] Ericsson & Pool, 2016
[27] Ball & Forzani, 2009
[28] McDonald, Kazemi & Kavanagh, 2013; Grossman & McDonald, 2008
[29] Ericsson, Krampe, & Tesch-Römer, 1993
[30] Ball & Forzani, 2011

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About
DEANS FOR IMPACT

Founded in 2015, Deans for Impact is a national nonprofit organization representing leaders in educator preparation who are committed to transforming educator preparation and elevating the teaching profession. The organization is guided by four key principles:

- Data-informed improvement;
- Common outcomes measures;
- Empirical validation of effectiveness; and
- Transparency and accountability for results.

More information on the organization and its members can be found on the Deans for Impact website.

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