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A Theory of Action for Teacher Learning

Heather Howell
Leslie Nabors Oláh

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Heather Howell and Leslie Nabors Oláh
Educational Testing Service, Princeton, New Jersey, United States

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Corresponding author: H. Howell, E-mail: hhowell@ets.org

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Abstract

This report provides a brief overview of teaching competency and why it matters and then presents the reader with a theory of action template for teacher learning intended for customization. The goal of this theory of action is to map the interrelated components associated with teacher learning, providing a useful starting structure for assessment and learning resource design. It is intended to be used, adapted, and completed with detail to fit a particular use case, teacher learning product, or service in order to help researchers, designers of learning opportunities, or others identify the components and relationships that require attention.

Keywords: teaching competency, teacher learning, theory of action

Problem Statement

For the past several decades, demands on teachers and schools have continuously grown. Curricular reform efforts in the 1990s and the standards-based movement of the early 2000s raised expectations for teachers' knowledge as they entered the classroom. The Common Core State Standards (in mathematics and English language arts) and the Next Generation Science Standards again modified expectations for student learning and engagement and therefore established the expectation that teachers should be adequately prepared to meet higher student-achievement expectations. At the same time, an increasingly diverse student population has forced educational systems and professional organizations to formally acknowledge the work that many educators had long been doing: facilitating productive home-school communication and providing students (and families) different amounts and kinds of learning support. The demands of preparing teachers to work with families and differentiate instruction within time-limited preparation programs exacerbates the pressure within those programs to prepare teachers for the first day of their professional work (see National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010; NGSS Lead States, 2013; Russ et al., 2016).

In addition, school disruptions caused by the COVID-19 pandemic have drawn social inequities into focus and made them more acute. This calls attention to an existing challenge and adds urgency to attending to the socio-emotional needs of the children and adults in schools. We need high-quality learning opportunities for teachers before they enter classrooms as well as investments in lifelong learning opportunities for teachers, who continue to need support to extend their learning once they enter classrooms.

The goal of this theory of action (TOA) is to map the interrelated components associated with supporting such lifelong learning, providing a useful starting structure for assessment and learning resource design. The TOA is intended to serve as a template that can be used, adapted, and completed with detail to fit a particular use case, teacher learning product, or service in order to help researchers, designers of learning opportunities, or others identify the components and relationships that require attention. In the remainder of this document, we discuss the following: First, we discuss why teacher learning is a critical focus and define

teaching competence. Second, we introduce the TOA (Figure 1) as an organizing framework. In the final sections, we discuss the components that make up the theory of action individually beginning with teaching competence (E), describe components of the teacher learning cycle that influence the development of teaching competence (D and arrows connecting it to teaching competence), explain how teaching competence supports student outcomes (I and J), and finish with a brief discussion of other contextual factors (K, L, and M) that influence or mediate teacher learning and its effect on student outcomes.

Why Focus on Teacher Learning?

As expectations of teachers and teaching change, so do the bodies of knowledge teachers need to learn as well as the structures needed to support such learning. In the 1980s, teacher learning consisted of acquiring content knowledge at an institution of higher education (e.g., mathematics) and a set of generalizable skills on the job (e.g., wait time; Russ et al., 2016). Research has recognized that knowledge and skills alone are inadequate to address a large proportion of students' learning needs. Teachers are now seen as thinkers and learners, at least in the research literature if not always from the perspectives of their employers (Spillane, 2002). As a result, teachers' experiences, beliefs, and visions around teaching are important in teacher learning, as mediators, moderators, and as outcomes in their own right. Conceptualizing teachers as lifelong learners, engaged in continual professional learning that begins in teacher preparation but extends well beyond it, is more critical than ever. That vision must consider not just the accumulation of knowledge, but also teachers' experiences, beliefs, and visions, both those they bring with them and those they acquire through professional learning. In other words, a focus on teacher learning demands that we conceptualize teachers as learners.

What Is Teaching Competence?

We take the Sykes and Wilson (2015) teaching competency model as a valuable starting point for a model connecting teacher learning and student opportunities to learn, as teaching competencies serve as the logical connection point between the two. Increased teaching competence is the desired outcome of teacher learning and defines the learning objectives of

teacher learning. At the same time, the warrant for valuing a particular area of competence is its potential to impact student outcomes, with some competencies theorized to be more tightly connected to particular outcomes than others. From this competency model, we adopt the explicit definition of competence as dependent on substantive, procedural, and conditional knowledge and as constituted of practices. We note in this definition that it is, therefore, reasonable to define either *knowledge* or *practice* as learning objectives around which to orient teacher learning.

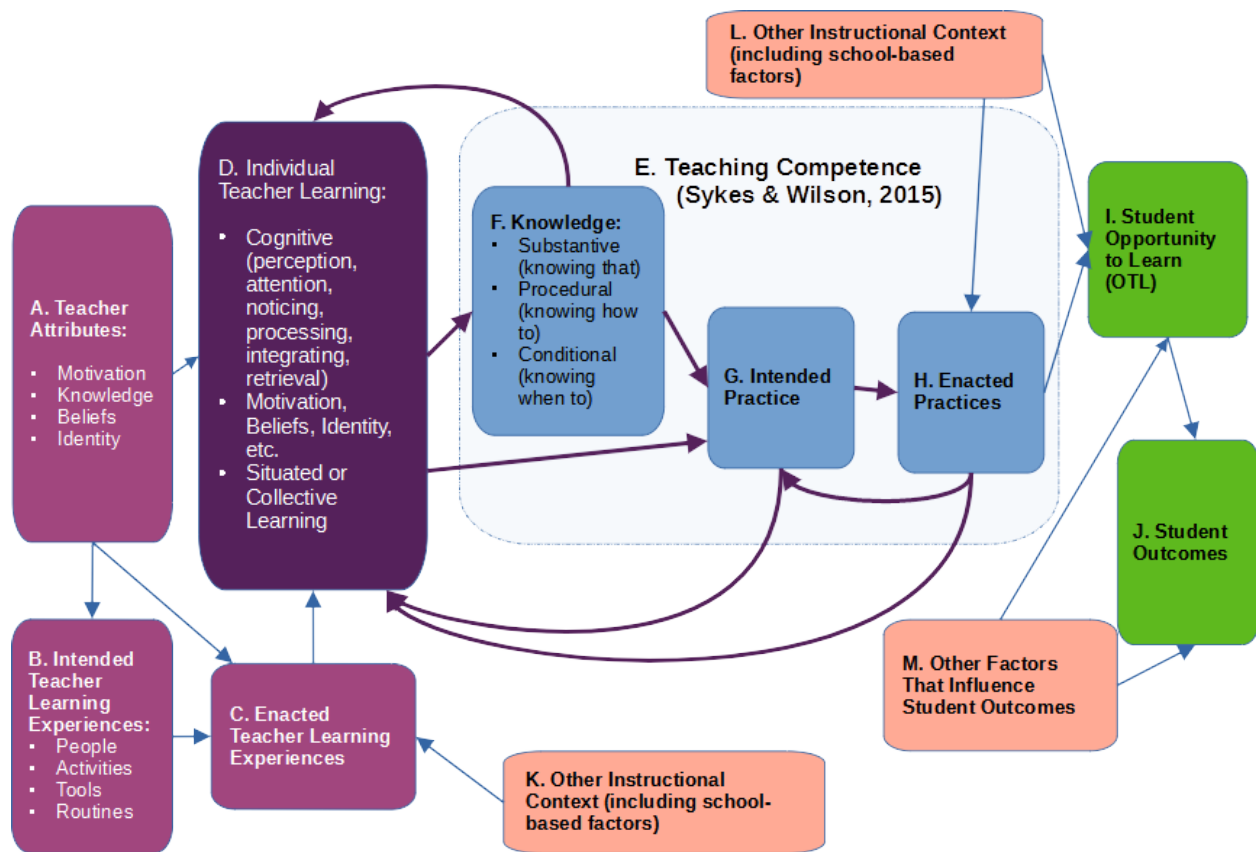
We diverge from the stance Sykes and Wilson (2015) took by including teacher attributes (A) in the TOA, acknowledging that while attributes such as teacher motivation, knowledge, beliefs, and identity in and of themselves may not be competencies, they mediate teacher learning in ways that make them important to account for and, in some cases, may themselves be learnable and, therefore, open to intentional development (Goldsmith et al., 2014).

In Figure 1, teaching competence (E) is shown in the box that surrounds knowledge (F), intended practice (G), and enacted practice (H). Thus, teaching competence accounts for both knowledge and practice, as mentioned previously, and directs attention to the critical interdependencies between knowledge and intended and enacted practice, or, in other words, between what teachers know, what they plan to do in the classroom, and what is observable in the classroom (Munby, 1982).

The TOA is intended to be used, adapted, and completed with detail to fit a particular use case. The user can start with the teaching competence area (E) and customize it to reflect a particular competence of interest (e.g., teaching mathematics for social justice, use of formative assessment). After this, the user can specify which of knowledge (F), intended practice (G), or enacted practice (H) is the direct target of change, keeping in mind that in many cases one can expect change in one to support change in the others, but that most professional learning opportunities are designed to provide direct support for one. The user can then map between the other components of the TOA and the competence of interest, adding detail and choosing which components to emphasize in the context of the use case. These components are described in more detail in the following sections. The arrows link components, including

straight arrows indicating effects of one component on another and curved arrows indicating feedback loops. A specified path detailing how individual teacher learning (D) leads to increased competence (E) represents a teacher learning cycle. A specified path through the TOA, including the relevant components, precursors, and outcomes represents a theory of action for a particular intervention, professional development effort, or other use case to which the TOA has been customized.

Figure 1. Elements of the Theory of Action (TOA) for Teacher Learning



Components of the Theory of Action

In the following sections we define each of the components shown in Figure 1, beginning with teaching competence (E) as defined previously, then describing the teacher learning cycle (D and the arrows connecting that to the components of teaching competence), how teaching competence affects student outcomes (I and J) and other factors that influence

both the teacher learning cycle and the effect of competence on student outcomes (A, B, C, K, L, and M). These sections are in the order we believe the user of the TOA would address them when applying the template to a particular competence of interest.

Teaching Competence (E)

We begin with teaching competence (E), defined by Sykes and Wilson (2015), outlined in the center of Figure 1, and including three components: knowledge (F), intended practice (G), and enacted practice (H). Increased teaching competence is the goal of teacher learning, and increased teaching competence is the means by which teaching is theorized to impact student learning. There are three types of knowledge (F): Substantive or propositional knowledge is “knowing that,” procedural knowledge or skill is “knowing how to,” and conditional knowledge is “knowing when to, the exercise of judgment in the application of knowledge and skill” (Sykes & Wilson, 2015, p. 6). Knowledge is drawn on and used in the planning and enactment of instructional practices. However, Sykes and Wilson noted that the enactment of such practices is always influenced by the contexts in which they take place. In other words, what teachers plan and intend to do is not always how things play out in the classroom. This definition suggests that any of the three components of teaching competence (knowledge, intended practice, or enacted practice) can be considered the immediate goals of teacher learning.

Knowledge (F)

Many professional learning efforts and much of initial teacher preparation focus on changing teachers’ knowledge. Learning the content of instruction comprises a relatively large portion of teacher preparation. For example, collegiate content courses are expected to support a prospective mathematics teacher in learning mathematical ideas such as knowing that linear functions represent continuous relationships between two variables (substantive) and mathematical processes such as how to solve a linear equation (procedural). Collegiate methods courses are also expected to support learning forms of pedagogical knowledge such as knowing how students construct new understandings from their existing knowledge structures (substantive) and knowing when to introduce ideas to challenge those structures and support that construction (conditional).

For an intervention targeting knowledge, the most critical step in applying the TOA is specifying clearly what knowledge it is that is expected to change as a result of teacher learning. The terms *substantive*, *procedural*, and *conditional* can be helpful in clearly specifying a knowledge target, but the distinction between knowledge types is less critical than having a clear specification of the knowledge itself. For example, a user of the TOA might be designing a workshop for teachers focused on “attending to and promoting student social and emotional needs and learning,” one of Sykes and Wilson’s (2015, p. 41) subdomains of teaching, with a goal of helping teachers learn about concrete strategies for noticing key things students do and say that indicate they need support. The immediate goal of teacher learning might be knowledge, in this case conditional knowledge (e.g., knowing how and why attending to social and emotional learning [SEL] is important), and procedural knowledge (e.g., concrete actions teachers can take to notice the need for SEL support). In this case, in the knowledge area (F), the user might focus on conditional and procedural knowledge and pay most attention to the feedback loops that start and end in the knowledge area (F).

Intended Practice (G)

Intended teaching practice, or what teachers plan to do in the classroom, is also a frequent target of efforts to improve teaching competence. For preservice teachers in particular, a great deal of learning about practice focuses on intended practice because preservice teachers are not yet teachers of record, having limited opportunities to enact practice. One can think of intended practice as the last domain of teaching competence that can be developed or measured absent the impact of school context. Using the prior example, one can imagine a different teacher workshop focused on changing how teachers plan instruction to support student SEL. In this case, the user of the TOA might specify that a teacher planning for instruction in a way that accounts for the individual needs of their students and utilizes the strategies learned for doing so is the goal, and the most critical feedback loops to attend to would be those starting or ending in the intended practice area (G).

Enacted Practice (H)

Enacted teaching practice is what actually happens in teaching, in real settings and subject to contextual factors such as individual student differences, employment-related pressures, and local politics. Enacted practice is critically important as it is the moment in which interchange happens between teachers and students and is the mechanism by which teachers' knowledge and intention come to influence student learning opportunities. It is widely recognized in the field that practice is not always enacted as intended. Enacted practice is "real teaching," which has implications for measurement. Enacted practice is harder to measure than intended practice as it is influenced by context and because multiple practices are layered together in instruction. It is also considered more credible as a target of measurement because it is closer to influencing student outcomes. Enacted practice is often used to provide teachers feedback as part of cycles of teacher learning, such as when teachers participate in lesson study (e.g., Doig & Groves, 2011) or receive feedback from coaches or mentors, or to evaluate the efficacy of teacher learning (McNerney et al., 2006). Using the prior example, peer observations of instruction might follow the teacher workshop focused on student SEL, with feedback informing future feedback loops to deepen knowledge (F), improve planning (intended practice, G), or support teachers in implementation of the plan (enacted practice, H). Alternately, one could imagine a different use case in which enacted practice is, itself, a target of a professional learning opportunity and could involve in-classroom coaching or peer teaching.

The Teacher Learning Cycle

The teacher learning cycle consists of the individual teacher learning component (D) along with the feedback loops from each of the components of teaching competence (F, G, and H). Individual teacher learning (D) is envisioned as including change in or through cognitive processes; shifts in motivation, beliefs, and identity; and as situated within social context.

Cognitive Learning Processes

The cognitive processes through which individual learning is theorized to occur include perception, attention, noticing, processing, integrating, and retrieving new knowledge. For example, scholarship has highlighted the role of noticing as playing a fundamental role in

teacher learning and also an entry point for professional learning. Noticing is not passive but involves attending to and making sense of events in instructional settings (Sherin et al., 2011). In particular, noticing guides teachers' assessment practice by helping them attend to student thinking, decide how to respond to such thinking, and also support collaborative discussions in mathematics. Teacher noticing as a prerequisite to supporting rigorous mathematics instruction does not happen automatically but needs structured opportunities to develop (Dindyal et al., 2021). A user of the TOA, having specified a competence of interest and the knowledge type or type of practice that is the focus, could then specify an individual cognitive learning process that might be most relevant to the effort. Following the prior example of student SEL, if we imagine the feedback loop from enacted to intended practice had demonstrated that a teacher was not noticing when students' individual responses signaled the need for modification to the lesson plan, the next cycle of teacher learning might focus more squarely on conditional knowledge and ask teachers to practice watching videos of instruction and noticing the relevant moments.

Beliefs, Motivation, and Identity

As teachers engage in the cognitive aspects of learning, their beliefs, professional identity, and motivations may also change. In our example, teachers may begin their careers uncertain whether student SEL is an important part of the core work of content instruction. As their teaching skills improve and they observe the success of students in the classroom, this uncertainty may shift to a stance that student SEL is intertwined with content instruction and that learning cannot take place without attention to it, a shift in belief that might also increase motivation to learn techniques for supporting SEL. A user of the TOA focusing on shifting beliefs and motivation might design supports to help teachers recognize how instruction that attends to student SEL is more effective than instruction that does not do so.

Situated or Collective Learning

We note that while this TOA focuses on individual teacher learning, learning is not a solely individual endeavor, and many professional learning opportunities are structured within group settings. Because most teachers' work occurs in multilayered organizations as well as

within and across communities, teacher learning is “social and intellectual collaboration” (Lampert, 2010, p. 22) within a historical context. This type of teacher learning takes time, and teachers are expected to continue to develop their practice as they interact with content, curriculum, and students (Sherin, 2002). In fact, *how* teachers learn can be expected to change across their careers; for example, novice teachers may need to emphasize developing new specialized knowledge while experienced teachers may need to readjust and even “unlearn” prior knowledge and practices (Russ et al., 2016).

The teacher learning cycle connects to many other components of the TOA. For example, learning may consist of shifts in knowledge, beliefs, motivation, and identity but also is impacted by *prior* knowledge, beliefs, motivation, and identity (Cobb & Jackson, 2012). Teacher learning impacts and is impacted by intended and enacted practice, resulting in the feedback loops described within the learning cycle. Teacher learning experiences can also lead to greater teacher learning, particularly if they are extended, emphasize active learning, and focus on challenging content (Desimone et al., 2013; Garet et al., 2001; Hill & Ball, 2004).

Impact of Teaching Competence on Student Learning (I and J)

Student outcomes are the ultimate reason we care about teaching and the quality of teacher learning. This template provides a space to consider both the elements that contribute to student outcomes through the intended path (enacted practice, H, affects student opportunity to learn, I, which affects student outcomes, J) and the elements that might contribute to unintended outcomes (K, L, and M). Because such impacts can be positive or negative, the arrows in the diagram should be interpreted as representing *any* impact, positive, negative, or neutral, although we hope that the impacts of improved teaching competence are generally positive.

Student Opportunity to Learn (I)

The primary goal of instruction is to improve student opportunities to learn. Titles I, III, VI, and IX of the Every Student Succeeds Act (2015) stipulate that all students have access to “a fair, equitable, and high-quality education...” There are many conceptualizations of student opportunity to learn (OTL), but in this model, we focus on classroom-based OTL, or the

opportunities that teachers provide students to achieve specific outcomes. In mathematics, for example, this includes providing students ways to engage in mathematical problem-solving and facilitating meaningful and equitable mathematical discussions (Nabors Oláh & Foster, 2022). To achieve equitable OTL, students must be able to draw from their own funds of knowledge in the classroom (Moll et al., 1992).

Student Outcomes (J)

The Every Student Succeeds Act (2015) sets forth a goal of having students perform at a high-level of proficiency in academic subjects, graduation from high school, and also that “achievement gaps” close (Sec 1001). The law also mentions possible outcomes such as student attendance, safety, and other positive behaviors. Specific learning standards are determined by the states as performance targets, so in a literal sense, student academic outcomes in the TOA are heavily influenced by state standards. Because states are charged with measuring student performance, results from these assessments become a de facto outcome not only for practitioners but also for researchers and evaluators of educational programs. In practicality, local educational organizations, communities, families, and students often have additional goals for student learning. As one example, SEL has become an increasingly important outcome in U.S. public education (Collaborative for Academic, Social, and Emotional Learning, 2021), and in prior sections we have suggested ways that users of the TOA might customize it to describe teacher learning that would support this outcome. Of note, student outcomes are relatively distant in the causal chain from the cycle of teacher learning. In other words, teacher learning does not directly improve student outcomes, but does so through a set of more proximal effects of teacher learning. The TOA thus illustrates one of the challenges of measuring impact of teacher learning: that student outcomes are often too distal to capture evidence of impact. The TOA, however, also makes visible a number of more proximal outcomes that might be more suitable measures of impact in particular cases. The user of the TOA should specify the student outcomes that the teacher learning is intended to support because the ultimate goal of every teaching improvement effort is improved student outcomes, but the user should also exercise caution in using student outcomes as sole or proximal evaluation measures.

Additional Factors Influencing Teacher Learning and its Effect on Student Outcomes

Several other factors are represented in the TOA even though they are not part of the teacher learning cycle. These factors are theorized to influence or mediate the ways that teachers learn or the ways in which teacher learning and competence affect student outcomes.

Teacher Attributes (A)

As noted previously, teacher attributes, or attributes prior to the start of the learning cycle, can influence teacher learning and are important for those designing teacher learning experiences to keep in mind. These include motivation (e.g., whether professional learning is mandated, whether it is perceived to be relevant), knowledge (e.g., pre-existing conceptions about teaching from being a student or from seeing other teaching), beliefs (e.g., about students, subject matter, and what teaching is and should be), and teacher identity (e.g., personal and professional identity).

Intended and Enacted Design of Teacher Learning Experiences (B and C)

Just as teachers' instruction of students may be enacted very differently than intended, planned learning experiences for teachers may be enacted differently than intended. For example, professional development may be delivered on a different schedule than intended, completed independently when it was designed to be facilitated, or moved online when it was not designed to utilize this format. Professional learning communities may meet less frequently than intended or may not focus on the topics they were designed to focus on. It is particularly important in the design of evaluation to ensure that both intended and enacted practice are attended to adequately.

Other Instructional Context (Including School-Based Factors, K, L, and M)

It is also critical to note that both teacher professional learning and student learning take place within larger contexts, which include many factors that influence both teacher and student opportunity to learn. Put simply, teachers' enacted practice directly impacts student opportunity to learn, but it is hardly the only influence. Factors such as availability of school support staff, class size and configuration, or allocation of resources such as curriculum and technology and school climate, for example, can mediate both how practice is enacted and

what opportunity to learn is available as a result (e.g., Wang & Degol, 2016). School commitment to the intended teaching practice and the extent to which it is valued and teachers are held accountable for its enactment are also powerful school-based influences on teacher enactment of practice (Leithwood et al., 2020). For example, if a professional learning experience suggests the use of a teaching approach that is incompatible with state or locally mandated curriculum, the professional learning is unlikely to be implemented meaningfully.

Likewise, the TOA illustrates that many factors outside the education system affect OTL and student outcomes. Socio-economic status (SES) of students' families is perhaps the most widely known because students from lower-SES families in the United States have consistently scored lower on large-scale academic assessments than their peers with higher SES over the last 50 years (Hanushek et al., 2019). Families who have been kept from acquiring intergenerational wealth due to slavery and racism experience additional negative impacts on child development (National Academies of Sciences, Engineering, and Medicine, 2019). Out-of-school factors that positively impact student outcomes include parental (and adult) involvement, stable housing, healthy physical environments, access to health care and nutrition, among others. Unfortunately, these benefits can be absent or inconsistent for families with low SES, and occasionally school systems can work to provide some compensation (e.g., the National School Lunch Program).

Conclusion

In this memo, we sought to describe why teacher learning is of critical importance in the current educational landscape and to provide a TOA template that calls attention to essential considerations in designing learning opportunities for teachers. In the first section, we described that educational landscape and documented how expectations for teachers' knowledge and skill have increased over time. It is this increase in demands that makes teacher learning more critical than ever to understand, as teachers need more or different types of learning opportunities to meet the demand. We then described components of the TOA, provided in Figure 1. The resulting TOA is a working model that can be customized and adapted to different use cases and intervention designs and that supports designers and researchers in identifying mediating factors and appropriate outcomes for measurement. The resulting

customized TOA can then serve as a critical first step to support later formative and summative evaluations of a learning product. For example, such products could be evaluated not only on their relationship to teaching competence and student outcomes, but also on their ability to leverage supportive and/or mitigate distracting contextual factors. It is also intended to illustrate the complexity of teaching competence and how it underlies student opportunity to learn and, ultimately, student learning.

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