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# A Proposed Pedagogical Approach for Preparing Teacher Candidates to Incorporate Academic Language in Mathematics Classrooms

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**Abstract**

The purpose of this article is to present issues related to prioritizing academic language in teaching performance assessments and to propose a pedagogical approach that prepares middle grades mathematics teacher candidates to teach academic language. Based on our experience with teacher candidates and our knowledge of edTPA standards involving academic language, we suggest several steps for effective implementation. Key concerns about academic language with edTPA are problematic aspects of emphasis on syntax, challenging perspectives of incorporating academic language for productive discourse, and lack of research on the role of language functions or syntax in teaching mathematics. Keeping these concerns in mind for an effective implementation, we propose ways to facilitate learning of preservice teachers to develop lesson plans that connect objectives and language functions, and recommend the need for professional development for faculty and administrators, curriculum review and alignment, and provision of resources.

**Keywords:** academic language, edTPA, performance-based assessment, mathematics teacher education

## 1. Context

The 2013 report of the Organisation for Economic Co-operation and Development (OECD) titled *Teachers for the 21st Century: Using Evaluation to Improve Teaching* reported that 22 of the 28 countries surveyed in 2011-2012 have policy frameworks to establish teacher appraisal systems at the state or national level. In reviewing the status of teacher appraisal in the United States, the report commented on the "increasing number of experiments taken up by local education agencies, charter schools, and state education agencies" and concluded that they can serve as a "laboratory for innovation in the field" because the U.S. has a "complex and decentralised system" of education (p. 46). One major experiment in performance-based teacher assessment in the U.S. is the edTPA. Formerly known as Teacher Performance Assessment (TPA), the edTPA aims to measure teacher candidates' readiness for teaching. About 20% (11) of the states in the U.S. have adopted a policy that requires all teacher candidates to pass the edTPA for initial certification (see http://edtpa.aacte.org/state-policy). General agreement exists in the field of education about the basic knowledge and skills essential for beginning teachers. Assuming that edTPA can successfully measure that knowledge and skills for beginning teachers, the assessment could be valuable in using the scores to understand candidate performance and inform curriculum and instruction in teacher preparation programs.

## 2. Purpose

In this article, we–mathematics teacher educators–introduce the brief history of the instrument and review the basics of edTPA with a particular interest in teaching middle grades mathematics. We then want to focus on *academic language*, an area of particular emphasis on the edTPA. In this case study of mathematics teacher candidates, we will share our practices for developing middle grades teacher candidates' knowledge and use of academic language within the framework of edTPA. This paper begins with a brief overview of edTPA framework on academic language and a discussion of the elements of language demand as operationalized in edTPA. All teacher educators are responsible for preparing teacher candidates to support their students' mathematics learning through these language demands. We propose a pedagogical approach that we have found to be useful based on our experience with teacher candidates in middle grades teacher education program course

work and our knowledge of edTPA academic language standards; however, we intend neither to claim our approach as the most effective pedagogical practice model, nor to theorize the process of in corporating academic language into instruction.

Beginning in 2012, this teacher preparation program in a southeastern state in the U.S. piloted the edTPA. This program's faculty members have developed extensive experience of scoring edTPA and fluency with edTPA's operational language on academic language. Program faculty has collaborated to develop an understanding of the assessment, focusing on the creation of curricular materials and strategies to improve preservice teachers' understanding of academic language throughout their teacher preparation programs. In developing shared understandings of academic language for teacher candidates, we asked ourselves: What learning outcomes related to academic language is emphasized in the edTPA rubrics? How do we address these learning outcomes in our methods courses and offer opportunities for teacher candidates to understand, identify, and support the importance of language demands associated with mathematics learning tasks for middle school students? How do we help candidates reflect on their instruction and identify appropriate evidence of their effectiveness? For the edTPA assessment, how do we develop teacher candidates' ability to describe the way the learning tasks and their support are instrumental for middle grades mathematics students to use language and develop content understanding through their appropriate use of the vocabulary, syntax, and discourse of mathematics? Ultimately, drawing upon our experience with edTPA during the pilot and extensive knowledge of edTPA rubrics and scoring process, we have developed an approach to the development of academic language. We present that approach, as well as issues related to the implementation by examining a list of focus questions relevant to different stakeholders in teacher preparation programs.

## 3. Brief History

The edTPA assessment was developed by researchers and teacher educators of the Stanford Center for Assessment, Learning, and Equity (SCALE) at Stanford University based on piloting and feedback from hundreds of teachers and teacher educators. SCALE is responsible for the content of the assessment and designs the scoring training. As edTPA rolled out nationally in 2013, SCALE partnered with Pearson, an international business focused on educational products and services, for operational service, including technology and logistics. Since 2009, American Association for Colleges of Teacher Education (AACTE) has teamed with edTPA to share information and support implementation by its member institutions of higher education. Currently, teacher preparation programs in 33 states and the District of Columbia are using edTPA to evaluate teacher candidates. Multiple states have policy or pending policy for its consequential use.

The edTPA is frequently compared to the certification under the National Board for Professional Teaching Standards (NBPTS). Both are multiple-measure, externally-reviewed, and performance-based assessments of teaching skills. Although the edTPA may well be another initiative without staying power, it has been carefully developed and refined based on 25 years of experience with the NBPTS and the Performance Assessment for California Teachers (PACT), as well as national standards such as the Interstate Teacher Assessment and Support Consortium Standards (InTASC).

## 4. Teacher Performance-Based Assessment Tools

In the U.S., each state develops its own teacher licensure standards and state licensure assessments are typically multiple-choice tests of basic pedagogical and content knowledge, which have not been successful in predicting effectiveness in the classroom teaching (Ferguson & Brown, 2000). Over time, policy makers have acknowledged the need for the use of multiple data sources to assess teachers' teaching knowledge and skills. The edTPA seems to fit nicely as an instrument to provide evaluative quantitative data (i.e., edTPA scores) on essential teaching skills (Boudett, City, & Murnane, 2013; Darling-Hammond, 2010). The edTPA has the potential to be a key performance component of a multiple-measure assessment system that evaluates and recognizes teaching effectiveness.

Agreement exists in the field that performance-based assessment tools can be instrumental in teacher quality initiatives since assessment data can be useful in the following ways (Darling-Hammond, 2010):

- Tracking progress of individual teacher candidates or teacher preparation programs
- Informing data-driven decisions on the accreditation process or recognizing effective teacher preparation providers
- Facilitating teacher mobility across states with access to the national data of teacher competency scores
- Linking teacher preparation programs, teacher quality, and student academic achievement

The validity of performance-based teaching assessment tools–such as a statistical model of teachers' average effect on their students' academic achievement–supports the use of performance scores to indicate teaching effectiveness. This view has necessitated research on the validity and reliability of the scoring to establish the relationship between the teacher candidates' assessment scores and their students' achievement. Based on two years of data and three years of implementation experience, Pecheone and Chung (2006) reported that the Performance Assessment for California Teachers (PACT) could be validated as a measure of individual teacher competence. Darling-Hammond, Newton, and Wei (2013) examined scores of teacher candidates ($n$ = 1870) on the PACT in 2006-2008. Their study found that teacher candidates' PACT scores were significant predictors of their later teaching effectiveness as demonstrated by their students' academic achievement gains in both English language arts and mathematics. The study also used surveys ($n$ = 305) completed by teacher candidates in 2005 and found that the candidates believed they gained knowledge and skills for teaching while completing the PACT process.

Few studies exist on edTPA perhaps because edTPA is a revised version of the PACT instrument, and it will take several years for researchers to study the revised assessment. Table 1 helps illustrate how edTPA has evolved from PACT to have the three domains of teaching: planning, instruction, and assessment. Nonetheless, before edTPA becomes fully accepted nationally for evaluating beginning teachers' teaching skills, it is necessary that further research on edTPA be conducted with more data gathered from teacher preparation programs.

Table 1. Comparison of tasks for PACT and edTPA

| PACT | edTPA |
|---|---|
| 1. Context for learning<br>2. Planning instruction and assessment | 1. Planning (PACT 1 and PACT 2) |
| 3. Instructing students and supporting learning | 2. Instruction (PACT 3 and PACT 5) |
| 4. Assessing student learning<br>5. Reflecting on teaching | 3. Assessment (PACT 4 and PACT 5) |

## 5. An Overview of the Assessment Tool

The edTPA portfolio comprises three tasks focused on planning, instruction, and assessment. Each task is based on five essential questions. Table 2 shows each task for middle grades mathematics teacher candidates and accompanying essential questions.

Overall, the Planning Task examines how well candidates write lesson plans that will meet the needs of all of their students and how well candidates justify their planning. Emphasis is on the effective alignment of learning objectives, use of academic language, and balanced support for student learning of procedures, concepts and student development of mathematical reasoning, and problem-solving. The Instruction Task requires candidates to videotape no more than 20 minutes of their instruction in order to demonstrate effective teacher questioning, student-centered instruction, and establishment of a positive learning environment. The task also includes reflection on teaching effectiveness. Lastly, the Assessment Task asks candidates to demonstrate their ability to analyze student assessment data, reflect on their instruction, and present ideas to improve their teaching, which is not limited to re-teaching, pacing, or classroom management. The candidate submits evidence in the form of lesson plans, video clips, assessments, student work, and written commentaries to external reviewers for assessment.

## 6. Elements of Academic Language as Framed by edTPA

One of the critical components of edTPA for teacher candidates to demonstrate during their student teaching is their skill in planning and delivering instruction in which their students have opportunities to develop and use academic language in classrooms. Academic language is the formalized language of school mathematics and is necessary for students for communicating about mathematics, defining and forming concepts, and constructing knowledge (Gottlieb & Ernst-Slavit, 2014; Kersaint, Thompson, & Petkova, 2009). According to World-Class Instructional Design and Assessment (WIDA, 2014), emphasis on academic language is particularly beneficial for linguistically diverse populations of students because academic language is "a vehicle for communicating and learning within sociocultural contexts; the interaction between different situations and people in the learning environment (WIDA, 2014, p. 4)."

The edTPA for middle school and secondary mathematics outlines four specific ways that mathematics learners will use academic language. Teacher candidates should demonstrate in the edTPA assessment how they create

opportunities for students to use academic language. According to edTPA, academic language consists of several components: vocabulary, language function, discourse, and syntax. *Vocabulary*, as operationalized in the edTPA, includes terms with definitions that are specific to the discipline of mathematics, such as *rhombus* and including words with mathematics-specific meanings that may be used extensively in general language or other subjects but have a precise meaning in mathematics such as *prime* or *factor* (for more see Thompson & Rubenstein, 2000). Teacher candidates are expected to describe how the structure of the learning task allows their students to learn and engage with vocabulary and provide opportunities for their students to use the vocabulary to represent their knowledge and to develop mathematical concepts (Thompson & Rubenstein, 2000). *Language function* (Hill-Bonnet & Lippincott, 2010) refers to the measurable verbs embedded in objectives and ways (e.g., classifying, describing, explaining, interpreting, and comparing) to engage students in both receptive (e.g., listening, reading) and productive language skills (e.g., speaking, writing) to increase mathematics understanding. In the edTPA support document titled, "Making Good Choices" (SCALE, 2013), language function is defined as "basically the PURPOSE or reason for using language in a learning task." The edTPA requires teacher candidates to specify the language function in a written objective or learning outcome. *Discourse* refers to classroom discussion within norms specific to mathematics (Moschkovich, 2007). Those norms are the accepted ways for students and the teacher to participate in mathematics discussions, for example, how to clarify ideas and have opportunities to explain their thinking and listen to the explanations of others. Finally, *syntax* refers to the mathematics-specific rules, special forms, conventions, and/or grammar associated with writing or speaking. Syntax is the set of conventions for expressing ideas, including symbols, words, and phrases (Kersaint, Thompson, & Petkova, 2009; Lim, Moseley, Son, & Seelke, 2014), including symbols, notations, expressions, and sentences. For example, the syntax for proposing a rational expression such as $1/(x - 5)$ requires a condition that $x \neq 5$.Another example of syntax is that students need to know the differences between $\sin(2x)$ and $2\sin(x)$ or $\sin^{-1}(x)$ and $1/\sin(x)$. Only with an understanding of the syntax of mathematics can a student make sense of the following sentence: $f(x) = 2x + 3$ is equivalent to $(y - 5) = 2(x - 1)$.

Table 2. Essential questions to understand Three Key Tasks of edTPA (*The essential questions are paraphrased from the edTPA handbook. The edTPA trademarks are owned by the Board of Trustees of the Leland Stanford Junior University.)

| Task | Essential Questions* |
|---|---|
| Planning | • How do the lessons build on each other and demonstrate a clear connection to mathematical procedures, key concepts, reasoning and problem-solving?<br>• How do candidates differentiate their instruction to facilitate learning for all students, including English language learners and special education students while considering adolescent development?<br>• How do candidates demonstrate culturally responsive pedagogy while addressing students' prior knowledge and background?<br>• How do candidates implement academic language (i.e., vocabulary/symbols, discourse, syntax, mathematical precision) in achieving appropriate language functions (e.g., explain, describe, analyze)?<br>• How do candidates use various methods to assess student learning, and how do candidate's assessments evaluate their students' procedural fluency, conceptual understanding, mathematical reasoning and problem-solving? |
| Instruction | • How do candidates establish and maintain a positive learning environment when they interact with middle grades learners in the classroom?<br>• How do candidates make use of content and pedagogy so that students can remain engaged in the learning of procedures, concepts, mathematical reasoning, and problem-solving?<br>• How do candidates demonstrate student-centered learning approaches, especially with effective teacher questioning to elicit meaningful and deep student responses and performance?<br>• How do candidates use and connect a variety of mathematical representations (graphs, manipulatives, tables, equations, etc.) to enhance students' understanding?<br>• How do candidates propose research-based strategies to improve instruction as demonstrated in the video clips while addressing the needs of the class as a whole and the individual students in the class? |

| | |
|---|---|
| Assessment | • How do candidates analyze assessment data and identify the patterns of (mis)understandings?<br>• How do candidates provide quality feedback (related to the learning objectives) on student work?<br>• How do candidates instruct students on using feedback to improve their work?<br>• How do candidates describe the ways they plan for academic language materializes in implementation?<br>• How do candidates propose ways to better support student learning after they analyze assessment data? |

## 7. A Proposed Pedagogical Approach: What We Did with Our Teacher Candidates

How can teacher candidates implement an activity in which students use academic language and language demands are addressed meaningfully? For edTPA, teacher candidates are asked to identify language functions as learning objectives in their lesson plans and ensure the lesson segment involves the intentional use of vocabulary, syntax, or discourse, as well as facilitates learning to achieve the objective. Our approach scaffolds candidates in recognizing the potential of instruction when they attend to the role of language in learning mathematics, making explicit the language-embedded pedagogy integrated into learning tasks in lesson planning, and considering effective ways to support students' language use (see Table 3).

Table 3. Summary of activities to prepare for edTPA's Academic Language

| The edTPA requires the teacher candidate to: | Our program provided learning opportunities for the teacher candidate to: |
|---|---|
| Understand the elements of academic language and their importance in effective instruction. | • Review communication as a process standard as established by the National Council of Teachers of Mathematics (NCTM)<br>• Review the elements of academic language as defined by edTPA and provide definitions, examples, or counter-examples.<br>• Read articles on academic language including language needs and classroom discourse. We recommend:<br>o Conceptualizing Academic Language (Solomon & Rhodes, 1995)<br>o "The Language of Mathematics": Towards a Critical Analysis of Mathematics Texts (Morgan, 1996)<br>o Learning Mathematics Vocabulary: Potential Pitfalls and Instructional Strategies (Thompson & Rubenstein, 2000)<br>o Word, Definitions, and Concepts in Discourses of Mathematics, Teaching, and Learning (Morgan, 2005)<br>o Examining Mathematical Discourse Practices (Moschkovich, 2007)<br>o Let's Talk: Promoting Mathematical Discourse in the Classroom (Stein, 2007)<br>o The Language and Grammar of Mathematics (pp.8-16) in The Princeton Companion to Mathematics (Gowers, Barrow-Green, & Leader, 2008)<br>o Unpacking the Language Purpose: Vocabulary, Structure, and Function (Fisher & Frey, 2010)<br>o The Academic Language of Mathematics (chapter 1) inthe SIOP Model for Teaching Mathematics to English Learners (Echevarria, Vogt, & Short, 2010) |

| | |
|---|---|
| Identify various language demands related to learning tasks and provide ways to support the use of academic language | • Focus on identifying and developing learning tasks in which students have opportunities to use academic language<br>• Write learning goals that explicitly describe ways (e.g., explain, compare, prove) students use academic language in the tasks<br>• Describe language needs demonstrated by individual students or groups and discuss ways to support their needs |
| Analyze and comment on their students' use of language to develop understanding | • Identify evidence of students' use of academic language<br>• Articulate how students use language and develop content understanding<br>• Reflect on case studies in which teachers provide rich opportunities for language use and attend to students' needs associated with language |

During the methods course, we provided multiple opportunities for teacher candidates to review learning objectives and identify those objectives that involved the use of language as key process. Additionally, we revisited the basics of writing effective learning objectives ("Learning Objectives," 2004) so that candidates were able to write an objective using a verb and a stem and expressing the desired product, process, or outcome in each objective. Then teacher candidates analyzed learning objectives (see Figure 1) in terms of language function (verbs) and content stem (stem + process + product).

To develop the awareness of teacher's role to *support* students use of language in achieving the learning objective, our approach (see Table 3) was to help teacher candidates select or design tasks that first enable their students to use language and second facilitate the learning (i.e., the doing) tied to the objective. The language demand is such that "the doing" should involve the use of language (vocabulary, syntax, and discourse). Teacher candidates in our program received instruction on academic language during their methods course and student teaching and were to apply that knowledge in their clinical yearlong placements.

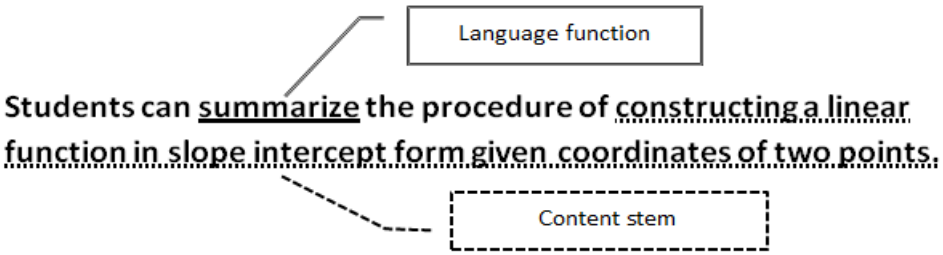


Figure 1. A sample learning objective with language function and content stem

## 8. Sharing Our Concerns about Academic Language with edTPA

Although we are committed to preparing our preservice teachers to be effective teachers and so they should succeed on any valid performance assessment, it is important to have a balanced perspective and make informed instructional decisions in teacher preparation programs. In particular, we have some concerns regarding the ways edTPA assesses academic language, particularly for the teaching of mathematics. First, the emphasis on syntax is more appropriate for writing mathematics often reserved for more advanced mathematics courses. In addition, candidates need to incorporate opportunities for students to speak, listen, read, and write about their own and their peers' work into classroom discourse. This need for classroom discourse should be carefully considered for developing any performance assessments. Second, although language and discourse facilitate learning, that learning is often the outcome of a carefully orchestrated classroom discourse, and it is challenging for beginning teachers who have little classroom experience to become skilled at the nuances of incorporating academic language for productive discourse. Moreover, students (who vary in many ways including knowledge of mathematics, academic language, linguistic backgrounds,) need differentiated language demands. More research on the value of these different language demands for learning mathematics should be conducted before a performance-based assessment that emphasizes academic language becomes consequential due to the interwoven

nature of colloquial and academic discourses. Third, the field's knowledge of the importance of (academic) language to develop mathematics understanding is limited particularly about how to incorporate language functions or syntax in lesson design frameworks. This limited knowledge, in turn, makes us question why edTPA, a high-stakes assessment tool, should so heavily prioritize academic language as an assessment standard in their instrument, particularly in mathematics.

## 9. Related Issues

Piloting the edTPA with our teacher candidates has raised a plethora of questions (See Table 4) regarding the implementation of the new assessment system. Each of the participants and stakeholders in the process will have issues to consider.

Table 4. Critical questions to consider for stake-holders in Teacher Preparation Programs

| Stake-holder | Questions |
|---|---|
| Policy-makers and administrators of teacher preparation programs | • Who is participating in edTPA?<br>• How are the scores reported?<br>• How are the criterion discrepancy (cut-off) scores decided, if any?<br>• Who pays edTPA cost and how much?<br>• How are edTPA data used for accreditation?<br>• Who is responsible for supporting long-term sustainability of edTPA?<br>• Which programs are leading in producing candidates with high scores?<br>• How can teacher preparation programs ensure confidentiality of key edTPA documents is maintained? |
| Teacher educators | • How do teacher educators help candidates prepare for the assessment?<br>• Will edTPA data be used to link teacher candidates' performance to teacher education programs? |
| Teacher candidates | • Who scores edTPA?<br>• Which content areas are available for edTPA?<br>• Will re-taking be allowed?<br>• What happens when candidates fail?<br>• Will higheredTPA scores help candidates find teaching positions? |
| Practicing teachers | • Will edTPA eventually be used to assess practicing teachers?<br>• How can mentor teachers help coach teacher candidates on the skills needed for success on edTPA without "teaching to the test"?<br>• How do we ensure that the appropriate amount of coaching is provided to the candidate? (The candidate must present his or her own work.) |
| Clinical supervisors | • What is the supervisor's role in the implementation of edTPA?<br>• Does edTPA replace supervisors' observations in the field?<br>• Will edTPA data be used to evaluate supervisor's effectiveness?<br>• How do we ensure that the appropriate amount of coaching is provided to the candidate? (The candidate must present his or her own work.) |

| | |
|---|---|
| Researchers | • Is the edTPA instrument valid and reliable?<br>• How the scores relate to student achievement?<br>• Do scores improve with intervention or meaningful support?<br>• How do teacher preparation programs respond to edTPA data?<br>• To what extent does the instrument address (or marginalize) the knowledge and skills to conduct a complex task of teaching?<br>• How does the edTPA address beginning teachers' ability to manage the classroom?<br>• How does the edTPA measure candidates' ability to conduct modification and accommodation for special education students?<br>• Is the instrument fair?<br>  o How does the edTPA prevent scorers' bias?<br>  o How does the edTPA ensure that candidates are evaluated without bias regardless of the levels of academic ability?<br>• How informative is edTPA data concerning beginning teachers' ability to teach? |

## 10. Next Steps for Teacher Educator Programs

Although teacher education programs and the school systems are distinctive, similar steps will be needed for effective edTPA implementation at each institution. The learning outcomes of the edTPA are not unfamiliar to teacher educators, but effective implementation will require an understanding of edTPA and intentional integration of edTPA learning goals into each program's assessment system. Ironically, professional development to ensure teacher educators and candidates understand the "academic language" of the edTPA assessment is also necessary. Effective implementation will depend on professional development for faculty and administrators, curriculum review and alignment, and provision of resources. To effectively implement edTPA, the initial step is to ensure faculty and key administrators thoroughly understand what is needed for their teacher candidates to be successful. This professional development may include encouraging some to become edTPA scorers (see http://edtpa.aacte.org/get-involved); making faculty aware of online resources, such as AACTE's Online Community; encouraging participation at edTPA conferences (http://edtpa.aacte.org/events); and providing professional development at the local campus level. Teacher education faculty, particularly in mathematics, will want to become more familiar with the concept of academic language. Faculty will also find useful the process of reviewing sample work in small groups so that they deepen their understanding of the rubrics and build a shared understanding within programs. Those who supervise teacher candidates in the field and P-12 mentor teachers should also be included, especially if on-campus professional development is provided. The implementation of edTPA may motivate programs to strengthen school partnerships and develop a cadre of mentor teachers who can support teacher candidates through the edTPA process.

Once faculty and administrators have developed an understanding of edTPA, a review of each initial certification program's curriculum is necessary to ensure that teacher candidates are prepared for success on the edTPA starting with courses early in the program. For example, program faculty should review each program and current assessments for potential ways to increase the emphasis on academic language and opportunities to write reflectively. Each program's current assessment system can also be reviewed for assessments that may be very similar to edTPA tasks so that redundancies can be removed. Discussions between program coordinators and faculty of different initial certification programs will strengthen the implementation as faculty share ideas and collaborate to review program and assessment data.

The need for institutional support and resources should be considered. Each teacher candidate will need access to video cameras and may need technical support to ensure they capture and upload good quality video and audio clips. Some of the major online portfolio systems (e.g., Chalk & Wire) provide support for the use of edTPA. Institutions will want to review their current assessment system technologies or explore changing to one that does support edTPA.

## 11. The Uncharted Path of edTPA

The variety of questions raised above demonstrates excitement and challenges involved in the implementation of edTPA. A number of benefits may be provided by an assessment such as the edTPA, but those must be balanced by the number of concerns that should be carefully considered. Rather than becoming cynical, those of us who have seen performance-based initiatives (e.g., state-level efforts, National Board Certification) emphasized and

then phased out should bring historical knowledge to this implementation to ensure we do not make the errors of the past. Concerns about the danger of using edTPA scores to rank teacher candidates or teacher preparation programs means that mathematics teacher educators should become more involved in the decision-making process to the extent that we can. Although many believe that teaching is too important and complex to be easily assessed, the edTPA may be the best designed performance assessment the field has yet seen.

If the edTPA is an effective predictive indicator of teacher effectiveness, U.S. children will ultimately benefit and teacher education programs will have nationally-recognized evidence to establish our value. Advocates of the edTPA are excited that this instrument has the potential to bring some clear feedback about the effective design and delivery of teacher preparation programs and open rich new areas of educational research.

## 12. Closing Words

In the short run, our future research goals will include reviewing edTPA scores of our future teacher candidates–our current data were not large enough to make meaningful analysis–and examine the effectiveness of our pedagogical approach.

In the long run, our field needs research that examines the supposition that academic language is an essential teaching skill to require for beginning teachers. With the aim of bridging the gap between standards and their implementation, the National Council of Teachers of Mathematics (2014) recently presented eight research-based mathematics teaching practices and recommendations in *Principles to Actions*. These practices reflect key practices for mathematics teachers to implement in classrooms. Some key ideas from these eight teaching practices include mathematics goals, reasoning, problem solving, mathematical representations, meaningful mathematical discourse, purposeful questions, procedural fluency, conceptual understanding, productive struggle, and evidence of student thinking. Therefore, future research should investigate the degree to which academic language contributes to the teacher's efforts to implement these key practices in classrooms.

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