The Interactive Journal of Global Leadership and Learning

Volume 1 | Issue 2 Article 3

2020

Predictive Measures of Teacher Effectiveness During Student Teaching

Kristen M. Carlson
St. Cloud State University, kristen.carlson@go.mnstate.edu

ISSN: 2692-3394

Predictive Measures of Teacher Effectiveness During Student Teaching

Abstract

The student teaching semester of a teacher candidates career is performative in the need to impress a university supervisor, cooperating teacher, and pass any licensure required assessments. Two data collection points during this semester are from a required performance assessment (edTPA) and a perception survey (CM Exit). This article reviews the predictive validity of the two tools based on three years worth of data from one mid-sized, Midwestern teacher preparation program.

Keywords

Teacher education, teacher effectiveness, education, performance assessment, perception survey

Author Bio

Dr. Kristen Carlson is an assistant professor of secondary education at St. Cloud State University with research interests in school performance improvement, assessments, and teacher candidate readiness.

Introduction

Teacher effectiveness has been a topic of interest for a wide variety of stakeholders from politicians, district administrators, teachers themselves, parents of students, and students. Everyone would like to have a teacher whom is effective; however, it is often unclear what teacher effectiveness means to differing stakeholders. Because of this dissonance there are several tools to measure teacher effectiveness. Measurement of effectiveness typically occurs in two areas: during a student teaching experience at the conclusion of a teacher preparation program (TPP) and during the classroom teaching experience through formal supervisory observations.

This publication uses data collected for and text revised from the researcher's dissertation, *Predicting and Perceiving Teacher Effectiveness of Novice Teachers* (Carlson, 2020) to review the alignment of teacher effectiveness criteria during student teaching in commonly used teacher candidate assessments for this article. The researcher analyzed a required performance assessment and a perception survey to determine if the tools were indeed useful for predicting if a teacher candidate would be an effective teacher within the scope of K-12 education.

Literature Review

Teacher effectiveness, teacher preparation program effectiveness, and accountability are all terms that have been used in a political movement to focus on teacher quality based on qualifications and credentials through nationwide policies (Cochran-Smith et al., 2018). The political movement happened in the late 1990s through early 2000s and is most often recognized by name, No Child Left Behind and Race to the Top (Cochran-Smith et al., 2018). However, more recently, the teacher quality shift has moved away from qualification and

credentialing. Today, the focus to measure teacher effectiveness is based on evaluation metrics.

Measurement of teacher effectiveness is determined differently throughout the United States. Particular states education boards utilize value-added means to determine if a classroom teacher is being effective at their job. For example, New York and Wisconsin officials utilized value-added metrics based on change in students' scores from annual standardized tests. These student test scores also reflect on the teacher preparation program that the teacher completed and putatively reflect a "value-added" measure of teacher effectiveness and teacher preparation program effectiveness. Cochran-Smith et al. (2018) noted numerous ways that value-added measures, and policies surrounding the measure, are hurtful for education as a system, teachers, students, and all involved.

Beyond value-added measures, there are several other initiatives that measure teacher preparation program effectiveness such as Title II Report on Teacher Preparation Data, a national accreditation from The Council for the Accreditation of Educator Preparation (CAEP) or the National Council for Teacher Quality (NCTQ), and the Educative Teacher Performance Assessment (edTPA). Through these initiatives, some states choose to focus less on value-added student output and more on the effectiveness of quality teacher preparation programs. This may include the use of licensure exams in a content and pedagogical area, performance assessments, successful field evaluations, and more as mandated by a state's education licensing board.

Traditionally, teachers are trained through teacher preparation programs by means of coursework, field experience, and mentoring by faculty and in-service teachers. Teacher preparation programs (TPP) provide teacher candidates with experiences that will help to

prepare them for the future classroom along with assisting in meeting the state's licensure requirements.

In Minnesota, where the researcher's study was conducted, the state licensing board has several requirements towards becoming an initial licensure candidate, and thus an effective educator. While teacher candidates have requirements for obtaining licensure, the TPP has similar requirements to remain accredited at the state level. Both the TPP and the teacher candidate must meet the Standards of Effective Practice (SEP) mandated through state legislation (Minn. R. 8710.200, 2016). These standards are most often met during coursework and through field experiences. Evidence of TPP effectiveness for meeting the standards is collected through key assessments throughout the program. Over time, TPPs can use these data to inform themselves and the accrediting body of program improvement needs. The teacher candidate receives feedback throughout their courses and field experiences from faculty who teach these standards of effective practice. Further, the SEPs are assessed via performance assessment during the student teaching experience.

Performance assessment. Teacher candidates complete the Educative Teacher Performance Assessment (edTPA) (SCALE, 2019) in Minnesota. At the time of this writing, there is no pass/fail threshold for candidates; however, the scores are used to determine if TPPs are effective in preparing teachers. In Minnesota, a TPP must have 70% of its candidates passing the edTPA on all three tasks to remain accredited. This requirement and passing threshold imply that the edTPA is in alignment with the state's SEPs.

The edTPA is a performance assessment for novice teachers to show they are ready to teach independently in a classroom environment. The edTPA was released as a pilot in 2013 and implemented in several states beginning with the 2014-2015 academic year (SCALE,

2019). The assessment was derived from the former Performance Assessment for California Teachers, but with slight modifications for nationwide usage (Cochran-Smith, 2018). Both the California assessment and the edTPA were developed to address the teacher accountability momentum that had been gaining traction since the early 2000s. The use of a performance assessment was meant to avoid the standardized test route and allow teacher candidates the opportunity to showcase their knowledge and ability to reflect as a teacher in a classroom. The assessment is comprised of three specific areas: lesson planning, teaching, and assessing student learning. The edTPA as described by Carlson (2020) in previous work:

> The first task, planning, asks teacher candidates to submit lesson plans for a learning segment (three to five lessons), a learning context to describe learners, curriculum requirements of the school and any other extenuating circumstances, instructional materials, and any assessments that may be given to students. Task two has teacher candidates submitting two video clips of their instruction, specifically focusing on student-centric activities and deepening student learning through questioning and academic language use. Alongside the video clips, teacher candidates write a commentary reflecting on their instruction. The third and final task looks at the teacher candidate's ability to assess students and make instructional decisions based on the data. Assessments, evaluation, feedback, and student work samples are all submitted. (p. 26-27)

The assessment is scored based on a five-point rubric with five rubrics per each task totaling a composite score of seventy-five. Teacher candidates are not expected to obtain the score of seventy-five. A ready-to-teach score is forty-five, or approximately three on all 15 rubrics (SCALE, 2019). States across the nation have adopted their own cut score thresholds for

teacher candidates to become licensed, or in the case of Minnesota, the passing scores TPPs must obtain to remain accredited. Beyond performance assessments like the edTPA and formal observations from cooperating teachers, mentors, or supervisors, there are survey tools that measure perceptions of effectiveness in the field of teaching.

Perception Surveys. Observation frameworks and performance assessments provide evidence of a teacher, however, another frequently utilized tool in measuring teacher effectiveness is the perception survey. The Tripod Student Survey is a tool that evaluates teacher effectiveness from a student-perspective (Tripod Education Partners, 2019). Another perception survey tool is produced by the Network for Excellence in Teaching (NExT) consortium. This consortium is a collaboration of fourteen TPPs that suggested beginning teachers have different needs when it comes to evaluation and feedback (NExT Work Group, 2018). Aligning to the Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching standards, NExT developed a tool for measuring novice teacher effectiveness based on teacher quality and teaching impact. The tool, Common Metrics (CM), has four domains: instructional practices, learning environment, diverse learners, and professionalism (NExT Work Group, 2018).

This survey, called the CM Exit Survey, is designed to collect the perception of teacher candidates whom are graduating from the TPP institution. Then, approximately a year later, the CM Transition to Teaching survey is sent to the same teacher candidates, who are now in their first year of teaching. The survey is the same, but the longitudinal time allows there to be reflection and growth within the teacher. At this same time, the survey is sent to the teacher's supervisor, titled the CM Supervisor survey. These surveys collect perception data across the four domains listed in the previous paragraph throughout different points

within a teacher's career. For this study, the edTPA scores received during the student teaching semester were reviewed alongside a second data point, the CM Exit Survey.

Statement of the Problem

What is effectiveness and how do we measure it are two broad questions that must be clearly defined before measurement of a person's ability can occur. "Teacher effectiveness is a highly debated topic related to the impact of teaching on student learning" (Carlson, 2020, p. 7). There are a number of factors that lead to student learning, and ultimately, determine if a teacher was effective with that student. Within this article, the researcher will aim to address the relationship, if any, between current teacher effectiveness perceptions and measurement criteria.

Method

This quantitative exploratory study analyzed previously collected data from two data points collected during the final semester for a teacher candidate, when they were student teaching. The participants were teacher candidates who completed their program between academic years 2015-2018. All participants were from the same, mid-sized Midwestern teacher preparation university from varying programs ranging from elementary, special education, early childhood, and secondary content areas. An IRB application was approved by the researcher's institution to utilize this previously collected institutional data.

Each data set was examined through extant factor-analysis. The first, the edTPA which is completed by teacher candidates during their student teaching semester. Submission typically occurs during week 12 of the 16-week semester. Scores on each of the rubrics and cumulative task scores are provided to the student and institution by Pearson after approximately three weeks. Completion of this data set is required to obtain a teaching license

in Minnesota; thus, students are motivated to accomplish the assessment. The edTPA assessment reports data on all fifteen rubrics, each on a five-point scale (AACTE, 2019). Two exceptions exist for this generalization: The World Languages edTPA only reports 13 rubrics, an edTPA can be considered complete if at least four of the five rubrics per task are scorable. Also, during the student teaching semester, teacher candidates are asked to complete the CM Exit Survey during their on-campus, professional development day. Since teacher candidates are in person and on the university's campus, a large number of the surveys are completed and returned. Prior to data analysis, a database was constructed to align a teacher candidate's edTPA rubric scores and CM Exit Survey responses. Once the database was constructed, all personal identifiers were removed, such as names and program areas.

Then, the extant rubrics of the edTPA were combined to produce three task scores that were utilized as factors in this study. Further, the items on the CM survey, varying from 7 to 22 extant items per domain were summed by domain. The data were correlated in a three-step process. First Cronbach's Alpha (1951) was reported for reliability. Then, a bivariate Pearson-Product Moment correlation and third, an ANOVA Linear Regression.

This study used the positivistic paradigm to better understand how to predict the effectiveness of novice teachers. The methodology included the use of performance assessments and a perception survey, both conducted at the conclusion of student teaching. Correlations were run to determine if there was predictive validity in the edTPA performance assessment and if the CM surveys could be criterion-referenced.

Research Question

To what extent can a teacher candidates' edTPA performance assessment predict the satisfaction in the perception, Common Metric Exit Survey completed during student-teaching?

Results

The results and analysis provided in this section were originally collected and reported in the dissertation *Predicting and Perceiving Teacher Effectiveness for Novice Teachers* (Carlson, 2020). First, internal consistency reliabilities (Cronbach, 1951) are provided for the starting data set from the mid-sized, Midwestern higher education institution, from which the CM Exit survey and edTPA data were sampled (labeled, "Cronbach's α A"). Second, the survey and edTPA data were concatenated which caused the size of the data set to decrease systematically in cases where a teacher candidate did not complete the CM *Exit Survey* or an incomplete edTPA score was reported (labeled, "Cronbach's α B").

Following the reliability data, bivariate Pearson-Product Moment Correlations are reported for the CM Exit survey to show if a relationship with the edTPA tasks exists. Then, multiple regression models are reported to determine the size of the relationship between CM survey scales and edTPA tasks. However, because multicollinearity is reported within the correlations, the regression model is reduced to a theoretical, linear ANOVA model.

Descriptive and Inferential Results

First, the CM Exit Survey themes were reviewed in relation to the edTPA tasks. Descriptive data and reliability estimates were collected as noted in Table 1. Two data sets were collected, first reported as (A) where the institution has a data set to note and a second data set (B) provides reliability where the teacher preparation candidate provided data for both

the edTPA and the Exit Survey theme simultaneously; in other words, the (B) section provides internal consistency reliability for the data sets analyzed here.

Table 1

Descriptive Data & Two[1] Reliability Estimates for the Exit Survey (Cronbach, 1951).

Variable	*N* (A)	Cronbach's α (A)	*N* (B)	Cronbach's α (B)	Mean	*SD*
Instructional Strategies (General)/ Summed/ values run from 3 to 16	319	.88	286	.88	12.7	2.5
					3.2	0.6
Planning Activities/ Summed/ values from 2 to 12	318	.82	284	.83	9.4	2.1
					3.1	0.7
Assessment Strategies/ Summed/ values run from 5 to 24	310	.92	284	.92	18.3	4.2
					3.0	0.7
Use of Technology & Curriculum / Summed/ values run from 6 to 28	308	.92	281	.92	20.8	4.7
					3.1	0.8
Diverse Learners/ Summed values run from 8 to 36	307	.95	281	.95	25.0	7.1
					2.8	0.8
Learning Environment/ Summed/ values run from 8 to 36	307	.94	281	.94	27.9	6.1
					3.1	0.7
Across Pertinent *Exit* Scale Items	305	.88	281	.94	113.7	23.5
					3.0	0.6
EdTPA Planning/ Five[2] rubrics, scores from 4 to 25	419	.78	278	.76	13.5	2.5
					2.7	0.5
EdTPA Instruction/ Five[2] rubrics, scores from 4 to 25	418	.72	283	.73	13.5	2.2
					2.7	0.4
EdTPA TOTAL/ 15 rubrics, scores from 12 to 75	389	.88	268	.88	39.2	7.3
					2.6	0.4

Note. [1]Reliabilities (columns three and five) are based on separate estimates. Column three reflects the entire TPP data set, while column five is made up of figures for the present study, i.e., wherein EdTPA and Exit data exist simultaneously (arranged by subject).

[2]Despite the fact that each EdTPA Task is made up of five rubrics, Minnesota rules affirm that four scores per Task make up a "complete" task. Tasks were calculated separately, as to completion. [3]Table 4 in Carlson, K. (2020).

Additionally, the teacher candidates' scale or task scores were summed prior to finding a mean. This allowed for a descriptive view of where the teacher candidate perceived

or scored within a range for a particular theme or task. Further, an item or rubric mean was provided below.

There were five particular areas in which correlations were likely to have appeared: edTPA Task 1 Planning with the CM Exit Survey theme Planning; edTPA Task 2 Instruction with the CM Exit Survey General Instruction; edTPA Task 2 Instruction again, with both the CM Exit Survey Technology in the Curriculum and with the CM Exit Survey Learning Environment; and finally, edTPA Task 3 Assessment with the CM Exit Survey Assessment. As shown in Table 2, none of the correlations proved to be significant.

Table 2

Bivariate Pearson-product-moment correlations between Exit and edTPA, using summed variables.

		edTPA Task 1: Planning	edTPA Task 2: Instruction	edTPA Task 3: Assessment	Exit General Instruction	Exit Planning	Exit Technology & Curriculum	Exit Assessment	Exit Diversity	Exit Learning Environment
edTPA	*r*	1	.578**	.563**	.036	.030	-.037	.008	-.023	.003
Task 1:	*P*		.000	.000	.538	.616	.529	.893	.699	.956
Planning	*N*	433	432	428	289	289	289	289	287	286
edTPA	*r*		1	.537**	.015	-.044	-.055	-.064	-.131*	-.067
Task 2:	*P*			.000	.806	.460	.355	.279	.026	.256
Instruction	*N*		435	428	289	289	289	289	287	286
edTPA	*r*			1	.048	.015	-.019	.023	-.031	.001
Task 3:	*P*				.419	.805	.750	.695	.599	.984
Assessment	*N*			429	287	287	287	287	285	284
Exit	*r*				1	.859**	.761**	.791**	.614**	.694**
General	*P*					.000	.000	.000	.000	.000
Instruction	*N*				312	312	312	312	310	309
Exit	*r*					1	.760**	.835**	.623**	.691**
Planning	*P*						.000	.000	.000	.000
	N					312	312	312	310	309

		edTPA Task 1: Planning	edTPA Task 2: Instruction	edTPA Task 3: Assessment	Exit General Instruction	Exit Planning	Exit Technology & Curriculum	Exit Assessment	Exit Diversity	Exit Learning Environment
Exit Technology & Curriculum	*r*						1	.816**	.665**	.725**
	P							.000	.000	.000
	N						312	312	310	309
Exit Assessment	*r*							1	.621**	.697**
	P								.000	.000
	N							312	310	309
Exit Diversity	*r*								1	.733**
	P									.000
	N								310	309
Exit Learning Environment	*r*									1
	P									
	N									309

Note. Table 5 in Carlson, K. (2020).

The correlation between edTPA Task 1 Planning and the CM Exit Survey theme Planning was $r(287) = .030, p = .616$, showing no correlation or validity. The correlation between edTPA Task 2 Instruction and the CM Exit Survey theme General Instruction was $r(287) = .015, p = 0.806$, showing no correlation or validity. The correlation between edTPA Task 2 Instruction and the CM Exit Survey theme Technology with Curriculum was $r(287) = -.055, p = .355$, showing no correlation or validity. The correlation between edTPA Task 2 Instruction and CM Exit Survey theme Learning Environment was $r(287) = .067, p = .256$, showing no correlation or validity. Finally, the correlation between edTPA Task 3 Assessment and the CM Exit Survey theme Assessment was $r(285) = .023, p = 0.695$, showing no correlation or validity.

Three multiple regression equations predicting each of the edTPA metrics via Exit Survey scales were conducted. Considerable multicollinearity between independent and

dependent variables (How2Stats, 2018) are shown in Table 2. Therefore, the researcher only included theoretically implied variables in the linear regression equation. In this case, edTPA Task 1 Planning and CM Exit Survey theme of Planning showed no visual evidence to suggest the existence of systematically non-linear relationships. Thus, the following model was tested utilizing summed measures:

Model A: $Y_{EdTPAplan} = b_{ExitPLAN} + c$, where a = the model constant (e.g., where the remainder of the model = 0, b = calculated beta weights for the specified model, and c = random error).

Model A Predicting edTPA Planning

The results produced a model for coefficient of determination, R^2, of X < .001, clearly nonsignificant. The Exit Planning scale did not significantly contribute to a model predicting edTPA planning, as can be seen in Table 3. A one-way ANOVA test for model significance yielded a mean square of $MS_{effect} = .67$, $MS_{residual} = 6.14$, $F = 0.58$, $p = .74$, confirming the non-significance of the model. In other words, the null hypothesis of no relationship between the two planning measures could not be rejected. In short, no systematic relationship was detected between the two planning indices. Descriptive data for the best least-squares regression model are shown below in Table 3.

Table 3

Linear Multiple Regression Coefficients for Model A.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	*β*	*t*	*p*
(Constant)	13.290	.675		19.688	.000
Exit Planning	.023	.070	.020	.334	.738

Note. Table 6 in Carlson, K. (2020).

Further inspection of Table 2 demonstrated considerable multicollinearity. Thus, the following model for predicting edTPA Task 2 Instruction, including *Exit Survey* data with most theoretical relationships with the EdTPA, namely Summed General Instruction was created:

Model B: $Y_{EdTPAInstruction} = b_{Gen\_instruction\_Exit} + c$, where a = the model constant (e.g., where the remainder of the model = 0, b = calculated beta weights for the specified model, and c = random error).

Model B predicting edTPA Instruction

As was true of model A, model B produced a non-significant model R^2 of $X < .001$. The Exit scale of Summed General Instruction did not significantly contribute to a model predicting EdTPA Task 2 Instruction, as can be seen in Table 7. A one-way ANOVA test for model B significance yielded a $MS_{effect} = .31$, $MS_{residual} = 5.18$, $F = 0.73$, $p = .79$ confirming the non-significance of the model. In short, no systematic relationship was detected between the two instruction measures, i.e., failure to reject the null hypothesis. Descriptive data for the best least-squares regression model are shown in Table 4.

Table 4

Linear Multiple Regression Coefficients for Model B.

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	*SE*	*β*	*t*	*p*
(Constant)	13.301	.680		19.566	.000
Exit General Instruction	.013	.053	.015	.246	.806

Note. Table 7 in Carlson, K. (2020).

Inspection of Table 2 also demonstrated considerable multicollinearity for edTPA Task 3 Assessment. Because of this, the following model was organized for predicting edTPA Task 3 assessment, including Exit Survey data with most theoretical relationships with the edTPA, namely Summed Assessment.

Model C: $Y_{edTPA\_Assessment} = b_{Assessment\ \_Exit} + c$, where a = the model constant (e.g., where the remainder of the model = 0, b = calculated beta weights for the specified model, and c = random error).

As was the case of models A, and B, the third Exit Survey model produced a non-significant model R^2 of .003. The Exit scale Summed Assessment did not significantly contribute to a model predicting edTPA Task 3 (assessment), as can be seen below in Table 8. A one-way ANOVA test for the model C showed significance yielded a $MS_{effect} = 1.67$, $MS_{residual} = 10.91$, $F = .15$, $p = .70$, confirming the non-significance of the prediction equation. In short, no systematic relationship was detected between the two assessment measures; similarly, to models A and B, the null hypothesis cannot be rejected. Descriptive data for the best least-squares regression model are shown in Table 5.

Table 5

Linear Multiple Regression Coefficients for Model C.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	*SE*	*β*	*t*	*p*
	(Constant)	12.116	.877		13.818	.000
	Exit Assessment	.018	.047	.023	.392	.695

Note. Table 8 in Carlson, K. (2020).

Discussion

This study compared the CM Exit Survey domains with the edTPA tasks, where both data points were collected at the same time during a teacher candidate's career, during the student teaching semester. In all three models, representing analysis of edTPA tasks 1-3, few systematic relationships were detected between the indices. Additionally, the null hypothesis of any relationship could not be rejected. Further, as evidenced by Table 2, considerable multicollinearity existed, meaning that there were multiple variables interconnected specifically in the CM Exit Survey scales. This makes it difficult to determine which survey scale is meaningful in showing correlations with specific edTPA tasks.

Typically, in regression analysis, independent variables are isolated to determine relational value to the dependent variable; however, in this study, isolation of the variables was difficult. Frost (2020) explains that "when multicollinearity exists between independent variables, a shift in one variable typically indicates a shift in another variable" (para 4). This leads to models that vary in conclusion, because the effect of each variable is difficult to trust.

The level of multicollinearity can be a factor, for example weak or moderate multicollinearity will not always be of concern, but in the case of the CM Exit Survey the multicollinearity is strong. This suggests that the scales are interwoven and cannot be utilized to provide output data at the scale level. A potential solution could include shortening the survey to encourage more authentic responses (Kost & Rosa, 2018). Multicollinearity, or intercorrelated data, can occur from participants continuously selecting the same level on a survey, such as selecting 3s throughout instead of analyzing the question before answering. Another possible solution would be to amend the survey to have clearer alignment to the

edTPA or Interstate New Teacher Assessment and Support Consortium's (InTASC) model core teaching and learning standards (Council of Chief State School Officers, 2013).

While both instruments utilized in this study, edTPA and CM Exit Survey, are aligned to the InTASC model core teaching and learning standards, there is not enough data to support or refute a correlation. Based on these limited findings, a recommendation would be to conduct a larger scale study with the same data from other institutions. With 14 TPPs utilizing the CM Exit Survey and the edTPA, a comparison study and future recommendations to the state educator's licensing board regarding use of performance assessments and perception surveys is crucial. This would provide the licensing board a response that could impact TPP accreditation and program review. This study does add to the literature regarding the use of performance assessments during the student teaching semester and the perceptions of graduating teacher candidates.

Conclusion

The edTPA is a requirement for teacher candidate recommendation for licensure and for TPP continued accreditation in Minnesota. The licensing board has discussed adopting the CM Exit Survey along with its partner, perception surveys (i.e., Transition-to-Teaching and Supervisor survey) as a requirement for TPP accreditation to ensure program improvement data are being collected; however, with no strong correlational findings to support predictive validity between the CM Exit Survey and the edTPA, adoption of the CM Exit Survey as a TPP requirement would not be in alignment with the rubric or task measurements on the edTPA.

Further study is recommended to expand the dataset across time and additional institutions in Minnesota prior to statewide TPP adoption of the surveys. This initial study of

teacher candidates' effectiveness and perception during student teaching is a preliminary step to a larger study to determine if edTPA scores could have predicative validity based on teacher and supervisor perceptions of teaching quality and teacher quality in the classroom. It is important that educational researchers and educators utilize the data from required assessments to advocate for appropriate teacher effectiveness measures as well as continue to seek out answers to better inform policymakers in regard to the classroom.

References

American Association of Colleges of Teacher Education (2019). What is edTPA? In *General Information*. Retrieved from http://edtpa.aacte.org/faq#51

Carlson, K. (2020). Predicting and Perceiving Teacher Effectiveness of Novice Teachers. *Dissertations, Theses, and Projects*. 396. https://red.mnstate.edu/thesis/396

Cochran-Smith, M., Carney, M., Keefe, E., Burton, S., Chang, W., Fernandez, M., Baker, M. (2018). *Reclaiming accountability in teacher education*. New York, NY: Teachers College Press.

Council of Chief School State Officers. (2013). InTASC model core teaching standards and learning progressions for teachers 1.0. Retrieved from https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*(3), 297 –334.

Frost, J. (2020). Multicollinearity in regression analysis: Problems, detections, and solutions. Retrieved from https://statisticsbyjim.com/regression/multicollinearity-in-regression-analysis/

Kost, R. G., & de Rosa, J. C. (2018). Impact of survey length and compensation on validity, reliability, and sample characteristics for ultrashort-, short-, and long-research participant perception surveys. *Journal of clinical and translational science*, *2*(1), 31–37. https://doi.org/10.1017/cts.2018.18

Minn. R. 8710.200. (2016). Standards of effective practice for teachers. Retrieved from https://www.revisor.mn.gov/rules/8710.2000/

NExT Teacher Effectiveness Work Group. (2018). *Preparing effective teachers: Multiple approaches to ensuring teaching quality and impact*. In M. Sato & R. M. Lloyd (Eds.). Minneapolis, MN: Network for Excellence in Teaching. Retrieved from nextdigitalhandbook.org.

Stanford Center for Assessment, Learning, and Equity. (2019). 2018 edTPA administrative report [PDF File]. Retrieved from https://secure.aacte.org/apps/rl/res_get.php?fid=4769&ref=edtpa