SECTION IV – EVIDENCE FOR MEETING STANDARDS

Assessment #5
edTPA rubric-level scores

a. **Description of the assessment**

Assessment 5 examines the candidates' impacts on student learning through the rubric-level edTPA scores. Beginning in Fall 2017, the State of New Jersey required all teacher candidates to submit complete edTPA portfolios. During the two-year phase-in period, candidates were required to submit complete portfolios, but did not require a certain score to pass. New Jersey has set a passing score of 37 for the Secondary Science edTPA net assessment, which is an average of 2.47 on the 15 rubrics. In particular, edTPA Secondary Science rubrics number 7, 8, 9, and 11 evaluate candidates' impacts on student learning most directly; they are collected, disaggregated, and analyzed by certification area (i.e. Biology, Chemistry, Physics).

- Rubric #7 evaluates candidates' ability to demonstrate that they have engaged students in analyzing and interpreting scientific data to construct evidence-based predictions and explanations.
- Rubric #8 measures how the candidate is able to elicit student responses to promote understanding of science concepts and practices during scientific inquiry.
- Rubric #9 assesses candidates' facilitation of data and evidence analysis by students.
- Rubric #11 examines the ability of candidates to analyze student learning related to scientific conceptual learning, inquiry practices, and explanations of phenomena.

b. **Alignment with NSTA Standards**

These edTPA rubrics evaluate candidates with respect to the following specific elements within NSTA standard 5. NSTA standard 5 overall is well-aligned with these 4 edTPA assessments, which standard 5a and 5c most strongly connected. Standard 5b is addressed somewhat by edTPA rubrics #8 & #9, however 5b. is also measured more directly by assessment #4 (student teaching). NSTA has issued a summary memorandum that supports this stated alignment between edTPA and NSTA standard 5:
https://www.nsta.org/preservice/docs/NSTAedTPAAlignmentChart.pdf

NSTA2012.5 Impact on Student Learning: Effective teachers of science provide evidence to show that P-12 students understanding of major science concepts, principles, theories, and laws have changed as a result of instruction by the candidate and that student knowledge is at a level of understanding beyond memorization. Candidates provide evidence for the diversity of students they teach.

NSTA2012.5a Collect, organize, analyze, and reflect on diagnostic, formative and summative evidence of a change in mental functioning demonstrating that scientific knowledge is gained and/or corrected.

NSTA2012.5b Provide data to show that P-12 students are able to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science.

NSTA2012.5c Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.

c. **Analysis of data**

Through spring 2019, 15 secondary science candidates from TCNJ have complete portfolios on record (7 Biology, 4 Chemistry, 4 Physics). The data in the table below are tabulated by content area, but there is no statistically significant difference apparent between the 3 content areas. Overall, our candidates were rated somewhat higher on rubrics #7 (3.07 mean) and #8 (3.20 mean), compared to rubrics #9 (2.53) and #10 (2.60). One candidate in each content area received a "1" rating in a single rubric. The student mean score on these specific rubrics is above the NJ benchmark passing score per rubric (2.47). Of the 15 completed portfolios 12 of the 15 candidates scored at or above the 37 net edTPA pass score (which will be required to complete certification beginning fall 2019). It will be beneficial for our programs to provide additional support as candidates design and document their lessons to ensure that they are providing good evidence for meeting rubrics, with special attention to demonstrating proficient data analysis by both students and candidates.

d. **Evidence of meeting standards**

Data from the edTPA rubric-level assessment demonstrate that our student teacher candidates are meeting NSTA standards for impacts on student learning (NSTA2012.5a & c.), and provides secondary support for meeting NSTA2012.5b. The data is particularly encouraging because a) faculty and staff were just learning to support student understanding and implementation of the edTPA assessment, and 2) candidates knew that these portfolio rubric scores would not affect their graduation or certification status. We expect that candidate score will continue to improve as both of the aforementioned factors will no longer be relevant constraints.

Data derived from the assessment

edTPA Rubric #		Rubric 7			Rubric 8			Rubric 9			Rubric 11		
2017-2019	n	**mean**	min	max	**mean**	min	max	**mean**	min	max	**mean**	min	max
Biology	7	**3.1**	2.0	4.0	**3.3**	2.0	4.0	**2.9**	2.0	4.0	**2.4**	1.0	4.0
Chemistry	4	**3.0**	3.0	3.0	**3.3**	3.0	4.0	**2.5**	1.0	3.0	**2.8**	2.0	3.0
Physics	4	**3.0**	3.0	3.0	**3.0**	3.0	4.0	**2.0**	1.0	3.0	**2.8**	2	4.0

Rubric 7: Engaging Students in Learning

How does the candidate actively engage students in analyzing and interpreting scientific data to construct evidence-based explanations of or predictions about a real-world phenomenon?

Level 1	Level 2	Level 3	Level 4	Level 5
Candidate **does not engage students in constructing an explanation of or predictions about the phenomenon**.	Candidate **engages** students in constructing explanations of or predictions about the phenomenon. **AND** **Students do not support an explanation or prediction with reference to acceptable science concepts OR evidence and/or data.**	Candidate **supports** students **in constructing evidence-based explanations of or predictions about the phenomenon.** **AND** Students **refer** to evidence and/or data **AND/OR** acceptable science concepts **but do not explain how they support an explanation or prediction**.	Candidate supports students in constructing evidence-based explanations of or predictions about the phenomenon. **AND** Students **explain** how evidence and/or data **AND** acceptable science concepts support an explanation or prediction.	Candidate supports students in constructing evidence-based explanations of or predictions about the phenomenon. **AND** Students use evidence and/or data and acceptable science concepts **to support or refute alternative explanations or predictions.**
There is **little or no evidence that the candidate links students' prior academic learning or personal, cultural, or community assets with new learning**.	Candidate makes **vague or superficial links** between prior academic learning and new learning.	Candidate **links** prior academic learning to new learning.	Candidate links **both** prior academic learning **and personal, cultural, or community assets** to new learning.	Candidate **prompts students to link** prior academic learning and personal, cultural, or community assets to new learning.

Rubric 8: Deepening Student Learning

How does the candidate elicit responses to promote thinking and understanding of science concepts and abilities to apply scientific practices during scientific inquiry?

Level 1	Level 2	Level 3	Level 4	Level 5
Candidate does most of the talking and students provide few responses. OR Candidate responses include **significant content inaccuracies** that will lead to student misunderstandings.	Candidate **primarily asks surface-level questions and** evaluates student responses as **correct or incorrect**.	Candidate **elicits student responses related to understanding** • science concepts, • scientific practices through inquiry, **AND/OR** • the phenomenon being investigated.	Candidate elicits **and builds on students' own ideas about** • science concepts, • scientific practices through inquiry, **AND/OR** • the phenomenon being investigated.	**Level 4 plus:** **Candidate facilitates interactions among students so they can evaluate their own** • **data collection,** • **procedures,** • **interpretations, OR** • **evidence-based explanations or predictions.**

Rubric 9: Subject-Specific Pedagogy: Analyzing Evidence and/or Data

How does the candidate facilitate students' analysis of the evidence and/or data based on scientific inquiry?

Level 1	Level 2	Level 3	Level 4	Level 5
Candidate **does not ask students to present or record their evidence and/or data**. **OR** There is **no analysis of data**.	Candidate **asks students to present or record evidence and/or data**. **AND** **Candidate takes the primary role in analyzing the data.**	Candidate asks students to present or record evidence and/or data **in tables, maps, diagrams, or other graphical or statistical displays**. **AND** **Candidate guides students to find patterns AND/OR inconsistencies in the data.**	Candidate asks students to present or record evidence and/or data in tables, maps, diagrams, or other graphical or statistical displays. **AND** Candidate **facilitates a data analysis discussion where students demonstrate the ability to find patterns AND/OR inconsistencies in the data**.	**Level 4 plus:** Candidate leads students to **consider limitations of the evidence and/or data, methods used to collect evidence and/or data, or analysis**.

Assessment Rubrics

Rubric 11: Analysis of Student Learning

How does the candidate analyze evidence of student learning related to conceptual understanding, the use of scientific practices during inquiry, and evidence-based explanations or reasonable predictions about a real-world phenomenon?

Level 1	Level 2	Level 3	Level 4	Level 5
The analysis **is superficial or not supported** by either student **work samples or the summary of student learning**. **OR** The evaluation criteria, learning objectives, and/or analysis are **not aligned with each other**.	The analysis **focuses on what students did right OR wrong**.	The analysis focuses on what students did right **AND** wrong. **AND** **Analysis includes some differences in whole class learning.**	Analysis uses **specific examples** from work samples to **demonstrate patterns of learning consistent with the summary**. **AND** **Patterns of learning are described for whole class.**	Analysis uses specific evidence from work samples to **demonstrate the connections between quantitative and qualitative patterns of learning for individuals or groups**.