



**Teaching Practicum**  
**Doherty Memorial High School**  
**Spring 2016**

An Interactive Qualifying Project Report  
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**Abstract**

This IQP Report is written for the completion of my teaching practicum. I completed the practicum in the Spring 2016 semester and have written this report in A-Term, 2016. The report can be broken down into four major sections. The first is Chapter 1: background information on the Massachusetts education system. The second is Chapters 2-7, which argue for my proficiency in what the Massachusetts DoE calls the “essential elements” of teaching. The third is Chapters 8 and 9, which discuss my WPI education and the demographics of my classes. The last major section is the Appendix. The twofold purpose of the report is (a) to argue for my proficiency in the essential elements and (b) to demonstrate readiness for a Massachusetts teaching certification. Chapters 2-7 satisfy the first purpose; the rest of the report satisfies the latter.

## Table of Contents

|  |           |
|--|-----------|
| <b>Chapter 1: Background.....</b>                      | <b>5</b>  |
| 1.1: The Education Reform Act.....                     | 5         |
| 1.2: Massachusetts' Academic Performance.....          | 6         |
| 1.3: Overview of Worcester Public Schools.....         | 7         |
| 1.4: Doherty High School.....                          | 8         |
| <b>Chapter 2: Well-Structured Lessons.....</b>         | <b>11</b> |
| 2.1: The case for my proficiency in element 1.A.4..... | 11        |
| 2.2: Evidence supporting my case.....                  | 12        |
| 2.3: Concluding remarks.....                           | 18        |
| <b>Chapter 3: Adjustment to Practice.....</b>          | <b>19</b> |
| Example 1: AP Homework Policies.....                   | 19        |
| Example 2: Applied Paper Airplane Contest.....         | 20        |
| Example 3: Real-time Adjustments.....                  | 20        |
| Concluding Remarks.....                                | 21        |
| <b>Chapter 4: Meeting Diverse Needs.....</b>           | <b>22</b> |
| Example 1: AP Homework and Applied Worksheets.....     | 22        |
| Example 2: All Labs.....                               | 23        |
| Example 3: <i>What If?</i> .....                       | 23        |
| Concluding Remarks.....                                | 24        |
| <b>Chapter 5: Safe Learning Environment.....</b>       | <b>25</b> |
| Example 1: Supervisor's Comments.....                  | 25        |
| Example 2: In-Class Work.....                          | 26        |
| Example 3: Student Feedback.....                       | 26        |
| Concluding Remarks.....                                | 26        |
| <b>Chapter 6: High Expectations.....</b>               | <b>27</b> |
| Example 1: Supervisor's Observations.....              | 27        |
| Example 2: AP Homework.....                            | 28        |
| Example 3: Applied In-Class Worksheets.....            | 28        |
| Concluding Remarks.....                                | 28        |
| <b>Chapter 7: Reflective Practice.....</b>             | <b>30</b> |
| Example 1: Reflection Homework.....                    | 30        |
| Example 2: AP Homework Evolution.....                  | 30        |
| Example 3: Applied Labs.....                           | 31        |
| Concluding Remarks.....                                | 31        |

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|   |           |
|---|-----------|
| <b>Chapter 8: My WPI Education.....</b>   | <b>32</b> |
| Development of a Lexicon.....   | 32        |
| Content Knowledge.....  | 32        |
| Content Applicability.....  | 32        |
| Teaching Practice.....  | 33        |
| Reflective Practice.....  | 33        |
| Concluding Remarks.....   | 33        |
| <br>  |           |
| <b>Chapter 9: My Classes.....</b>   | <b>34</b> |
| Class Demographics.....   | 34        |
| Noteworthy Students.....  | 35        |
| <br>  |           |
| <b>Concluding Remarks.....</b>  | <b>36</b> |
| <br>  |           |
| <b>Appendix B:<sup>1</sup> Candidate Self-Assessment and Goal Setting.....</b>  | <b>37</b> |
| <b>Appendix D: Observation Forms and Model Protocol.....</b>                    | <b>43</b> |
| <b>Appendix F: Crosswalk for Essential Elements of CAP and PST Guidelines..</b> | <b>50</b> |
| <b>Appendix G: Works Cited.....</b>   | <b>52</b> |
| <b>Appendix H: Example of Weekly Reflection Sheet.....</b>                      | <b>54</b> |

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<sup>1</sup> The documents for Appendices A, C, and E were not available at the time of submission. Any reader curious about the status of these documents should contact either myself or my advisor.

## Chapter 1: Background

This chapter is broken into four sections:

1. Summarizing the Education Reform Act of 1993 and its effects on Massachusetts
2. Summarizing MA's academic performance as a whole
3. A brief overview of Worcester Public Schools
4. A section on Doherty high school, which includes statistics on
  - a. Socio-economic demographics
  - b. Academic performance
  - c. The classes which I personally taught

### *Section 1.1: The Education Reform Act*

The Education Reform Act of 1993 has set the tone for Massachusetts education over the past two decades. It brought about a series of reforms, so for the sake of simplicity, each major reform will be listed, followed by a brief summary of its impact. Information is taken from a letter<sup>2</sup> to the Massachusetts Board of Elementary and Secondary Education, written by Commissioner Mitchell Chester.

The first listed reform was in school finance. Before the Act, many schools were found to be in a “state of emergency due to a grossly inadequate financial support” (page 5 of the pdf). Education was supported by property taxed, but many local communities were unable to provide resources (5). The Act laid out a state budget which would account for each district's needs (6).

The second listed reform was in academic standards. The Act “directed the state Board and Commissioner to develop academic standards in core subjects” (9). Subject-specific curricula were adopted over the following decade, and in that time “Massachusetts [has] earned recognition for developing and maintaining a set of frameworks ranked among the very best in the country” (9).

The third listed reform was in assessments. The Act stipulated that all students educated by public funds should be tested, students' knowledge of material covered by Massachusetts curriculum frameworks should be measured, and that student, school, and district performance should be reported; to satisfy these requirements, the Board of Education adopted the Massachusetts Comprehensive Assessment System (MCAS) (11). The commissioner goes on to list the details of how Massachusetts successfully implemented the Act's stipulations in a variety of programs, noting their overall success. For the purposes here, these details need not be covered.

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<sup>2</sup> <http://www.doe.mass.edu/commissioner/BuildingOnReform.pdf>

The fourth listed reform was the Act's authorization of charter schools. According to the commissioner, the "Act originally authorized the awarding of up to 25 charters statewide... Since 1993, the charter school sector of public education has grown significantly" (14). He credits its growth to "parental support, significant waiting lists, strong academic performance in many charter schools, and an active advocacy community" (9), all of which speak to the success of the charter school system.

The fifth and final listed reform was in accountability and assistance. This was needed for the Acts finance, assessment, and standards systems to get off the ground (15). The success of the accountability and assistance aspects can therefore be measured by the overall success of the Act's other reforms, which have been summarized.

The commissioner ends his letter on a hopeful note. He acknowledges a "next generation of challenges... that are inherent in a highly decentralized, standards-based education system" (23). However, the overall success of the Massachusetts education system in recent years bolsters the notion that recent reforms have gone in the right direction.

### *Section 1.2: Massachusetts' Academic Performance*

The data selected for this discussion was taken from the most recent census.<sup>3</sup> For simplicity, I have selected facts about Massachusetts which are strikingly different from other states. Namely, Massachusetts has:

- A higher percentage of whites (82.6%) than national average (77.4%)
- A lower percentage of Hispanics/ Latinos (10.8%) and blacks (8.3%) than national averages (17.4% and 13.2%, respectively)
- Higher percentages of high school graduates (89.4%) than the national average (86%)
- Higher percentage of awarded bachelors' degrees (39.4%) than the national average (28.8%)
- Less people below the poverty level (11.4%) than the national average (15.4%)

TIMSS refers to the Trends in International Mathematics and Science Study. It "has measured trends in mathematics and science achievement at the fourth and eighth grades" and "has been conducted on a regular 4-year cycle since 1995."<sup>4</sup>

As an aside, an article in the NY Times mentions that "if Massachusetts were a country, its eighth graders would rank second in the world in science, behind only Singapore, according to TIMSS."<sup>5</sup> This speaks to the high quality of public education in the state.

<sup>3</sup> <http://quickfacts.census.gov/qfd/states/25000.html>

<sup>4</sup> [http://timssandpirls.bc.edu/home/pdf/TP\\_About.pdf](http://timssandpirls.bc.edu/home/pdf/TP_About.pdf)

<sup>5</sup> <http://www.nytimes.com/2013/09/03/science/expecting-the-best-yields-results-in-massachusetts.html?pagewanted=all& r=2>

*Section 1.3: Overview of Worcester Public Schools*

The following enrollment data is taken from the Department of Education<sup>6</sup>:

| Worcester Public Schools Gender Demographics<br>(2015/16) |        |
|---|--------|
| Male  | 12,885 |
| Female  | 12,191 |

| Enrollment by Race/ Ethnicity (2015/16) |                     |                  |
|---|---------------------|------------------|
| Race                                    | Percent of District | Percent of State |
| African American                        | 14.9                | 8.8              |
| Asian                                   | 7.5                 | 6.5              |
| Hispanic                                | 40.8                | 18.6             |
| White                                   | 32.5                | 62.7             |

<sup>6</sup> <http://profiles.doe.mass.edu/profiles/general.aspx?topNavId=1&orgcode=03480000&orgtypecode=5&>

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### *Section 1.4: Doherty High School*

#### Demographics:

The following information about Doherty High School was taken from the US Department of Education but put together nicely by the editors of startclass.com.<sup>7</sup>

Doherty's ethnic distribution is as follows: 46.3% white, 27.2% Hispanic, 13.7% black, 10.2% Asian, and about 2% two-races. There's also a couple Pacific Islander students.

The gender distribution is 49.4% male, 50.6% female.

Socioeconomic details were measured by free lunch eligibility. According to the website, students are eligible for free lunch if their families are "at or below 130% of the poverty level... those with incomes between 130% and 185% of the poverty level are eligible for reduced-priced meals, for which students can be charged no more than 40 cents." These numbers are used by the Department of Education." At Doherty, 52.8% of students are eligible for free lunch, 6% for reduced lunch, and 41.2% are ineligible for free or reduced lunches.

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<sup>7</sup> <http://public-schools.startclass.com/l/43212/Doherty-Memorial-High>



MCAS Profile:

Information for Doherty's MCAS profile can be found on the Department of Education's website.<sup>8</sup>

The following chart illustrates the percent of Doherty students at each achievement level, according to the spring 2015 MCAS tests:

| Grade and Subject                              | Proficient or Higher |       | Advanced |       | Proficient |       | Needs Improvement |       | Warning/ Failing |       | Included | CPI  | SGP  | Included in SGP |
|--|----------------------|-------|----------|-------|------------|-------|-------------------|-------|------------------|-------|----------|------|------|-----------------|
|  | SCHOOL               | STATE | SCHOOL   | STATE | SCHOOL     | STATE | SCHOOL            | STATE | SCHOOL           | STATE |          |      |      |                 |
| GRADE 10 - ENGLISH LANGUAGE ARTS               | 84                   | 91    | 39       | 49    | 46         | 42    | 12                | 6     | 4                | 3     | 302      | 93.3 | 47.0 | 244             |
| GRADE 10 - MATHEMATICS                         | 73                   | 79    | 49       | 53    | 23         | 25    | 16                | 13    | 12               | 8     | 302      | 85.3 | 51.0 | 243             |
| GRADE 10 - SCIENCE AND TECH/ENG                | 60                   | 72    | 18       | 27    | 42         | 44    | 31                | 23    | 9                | 5     | 254      | 80.9 | N/A  | N/A             |
| ALL HIGH SCHOOL GRADES - ENGLISH LANGUAGE ARTS | 84                   | 92    | 39       | 49    | 46         | 43    | 12                | 6     | 4                | 2     | 302      | 93.3 | 47.0 | 244             |
| ALL HIGH SCHOOL GRADES - MATHEMATICS           | 73                   | 79    | 49       | 53    | 23         | 26    | 16                | 14    | 12               | 7     | 302      | 85.3 | 51.0 | 243             |
| ALL HIGH SCHOOL GRADES - SCIENCE AND TECH/ENG  | 60                   | 72    | 18       | 28    | 42         | 44    | 31                | 23    | 9                | 5     | 254      | 80.9 | N/A  | N/A             |

Doherty's average graduation rate was higher than the US average but lower than the MA average. Dropout rates were summarized in k12.niche.com:<sup>9</sup>

| Average Graduation Rates |       |
|--------------------------|-------|
| Doherty High School      | 83.0% |
| United States            | 82.2% |
| Massachusetts            | 85.1% |

<sup>8</sup> [http://profiles.doe.mass.edu/mcas/achievement\\_level.aspx?linkid=32&orgcode=03480512&orgtypecode=6&](http://profiles.doe.mass.edu/mcas/achievement_level.aspx?linkid=32&orgcode=03480512&orgtypecode=6&)

<sup>9</sup> <https://k12.niche.com/doherty-memorial-high-school-worcester-ma/>

My Courses:

At Doherty, I taught two sections of applied physics and one section of AP Physics. Most of my students were seniors. In the AP class, there were a couple of juniors. The applied classes were about 50/50 juniors and seniors. The demographics will be fleshed out in a later section, so there is no need for elaboration here.

## Chapter 2: Well-Structured Lessons

The Massachusetts Department of Education measures teacher readiness with six “essential elements.”<sup>10</sup> My goal is to demonstrate proficiency in each of these elements. Proficiency requirements are summarized on page 10 of the document “Guidelines for the Candidate Assessment of Performance,” which can be found at the DOE’s website.<sup>11</sup>

The first element (1.A.4) is well-structured lessons. According to the Guidelines, a teacher is proficient in element 1.A.4 if he or she “develops well-structured lessons with challenging, measurable objectives and appropriate student engagement strategies, pacing, sequence, activities, materials, resources, technologies, and grouping.”<sup>12</sup>

To demonstrate proficiency, I will divide this chapter into three sections. The first section will summarize the case for my competence. The second will consist of evidence supporting my case. The third will be a concluding statement illustrating how the evidence demonstrates proficiency.

### *Section 2.1: The case for my proficiency in element 1.A.4*

I taught two very different courses: AP Physics and Applied Physics. Because student abilities and goals were so different, lessons had to be structured differently. In other words, a “well-structured” AP lesson will look different from a “well-structured” Applied lesson. Furthermore, there were multiple kinds of lessons. Some days were focused on presenting new content, others were devoted to applying knowledge in a laboratory experience.

For simplicity, I will talk about the four primary “kinds” of lessons which I taught. The four kinds of lessons were:

- AP Lectures
- AP Labs
- Applied Lecture
- Applied Labs

In other words, if you were to observe an AP class at random, it is likely that we would be doing a lecture or a lab. Some days we did exams or quizzes, and others were a mix of lecture and lab, but this binary nomenclature of “lecture vs lab” best captures the average lesson. The same could be said of the applied lessons.

To make the case for my proficiency, I will take an example of each kind of lesson and show that it fits the DOE’s definition of a well-structured lesson. While this will not show that my lessons were

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<sup>10</sup> <http://www.doe.mass.edu/news/news.aspx?id=21180>

<sup>11</sup> Ibid, Cap Rubrics

<sup>12</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

consistently well-structured - in other words, one or two examples of a well-structured AP Lecture is not evidence that all AP Lectures were well-structured - it will demonstrate that I know what a well-structured AP Lecture looks like. Rather than take many examples of AP Lectures, I decided to take a few examples from each kind. This will demonstrate a versatility in element 1.A.4. In other words, it will demonstrate that I can put together a well-structured lesson even when the lesson goals and content are very different from other well-structured lessons.

### *Section 2.2: Evidence supporting my case*

Evidence is taken from two primary sources:

- Lesson Plans
- Observations

AP Lecture examples:

#### Example 1: Simple DC Circuits Lecture

##### **Learning Activities:**

- Class Logistics
- Do-now: debate the effect of temperature on resistance, in pairs
- Define series vs. parallel in circuits
- Go back to definition of resistivity ( $R = \rho L/A$ ); work out expressions for resistance in series, parallel from it
- Let students compare series/ parallel in their notes
- Analyzing combinations of series/ parallel in same circuit
- Examples

The above image is the section of my lesson plan summarizing the learning activities.

The question is whether this lesson fits the DOE's definition of a well structured lesson. Namely, does it:

- Provide "challenging, measurable objectives?"
  - Yes: by the end of the lecture, students, should be able to define series and parallel elements in circuits and perform basic net resistance calculations from resistors in series and parallel
- Provide "appropriate student engagement strategies?"
  - Yes: one part of the lesson was having students debate the effects of temperature on resistance; another part was having students work through example problems
- Provide "pacing," "sequence" and "activities?"
  - Yes: students are debating, listening to a lecture, comparing notes, and working on examples, so there is never a dull moment
- Involve "materials, resources, [and] technologies?"

- Implicitly: we later did a lab on simple DC circuits which involved resistors and breadboards
- Provide a “grouping” experience?
  - Yes: students had the chance to discuss and compare notes

Conclusion: this lesson fits the definition of a “well-structured lesson.”

### Example 2: Magnetic Fields and Point Charges Lecture

#### **Learning Activities:**

Do-now pertaining to right-hand rule and its physical interpretation

Some Lorentz Force examples (flesh out the meaning of  $\sin(\theta)$ )

Presentation on causes of magnetic fields

----- Break between periods 2 & 3 |-----

Presentation on magnetic dipoles and their behavior

Reading from *What If?* or some other fun activity

Extra time can be spent on homework

The above image is the section of my lesson plan summarizing the learning activities.

The question is whether this lesson fits the DOE’s definition of a well-structured lesson.

Namely, does it:

- Provide “challenging, measurable objectives?”
  - Yes: by the end of the lecture, students should be comfortable applying the Lorentz Force equation and defining magnetic dipoles and summarizing their properties
- Provide “appropriate student engagement strategies?”
  - Yes: Every Friday (and this lecture happened to be on a Friday), I would read a chapter from the book *What If?* This book takes silly questions (e.g., what would happen if I threw a baseball at 90% the speed of light? Can we light up the moon by shining lasers at it?) and answers them scientifically. I try to find examples which pertain to the class material. Also, students were able to spend some time on homework, so they could ask myself or each other questions, giving them a personalized learning experience.
- Provide “pacing,” “sequence” and “activities?”
  - Yes: the lesson included a “right-hand-rule” activity, lecture presentations, a fun read, and working on examples
- Involve “materials, resources, [and] technologies?”
  - N/A: this was a discussion on point charges, so there’s not many “hands on” activities we can do. However, these principles were emphasized in the lab activities we did later.

- Provide a “grouping” experience?
  - Yes: students got to work together on their homework during the class period.

Conclusion: this lesson fits the definition of a “well-structured lesson.”

### AP Labs example:

AP Physics  
Simple DC Circuits Lab  
3/3/2016

Name:

Background:

For this lab you are given a battery and some lightbulbs. The bulbs act as resistors, which dissipate power. Some of this waste energy comes off as photons, which we can see, so this experiment will help you “see” the amount of current going through each bulb.

Control:

Make the simplest circuit you can (one battery connected to one bulb) to make sure your bulb and battery are working. Repeat this process for every bulb you use to make sure it isn't broken.

Calculations:

1. If you took three of the bulbs (3.5 Ohms each) and put them in series, what would be the net resistance of that configuration? Draw a diagram to help.
2. If you took three bulbs and put them in parallel, what would be the net resistance? Draw a diagram to help.
3. If you put one bulb in series with two other bulbs in parallel, what would be the net resistance of that circuit? Draw a diagram to help.

Experiment:

1. Put three of your bulbs in series and connect them to the battery. Draw a picture (not an idealized diagram) of what it looks like. Note their brightness: are they as bright as the single bulb?
2. Put three of your bulbs in parallel and connect them to the battery. Draw a sketch of your circuit, and note their brightness compared to the previous circuit.
3. Which circuit gives brighter bulbs? What is your initial explanation for this?

Trust me, I'm an engineer:

1. Put three of your bulbs in series (do not connect them with the battery), and unscrew one of the bulbs. Then connect your system to the battery. Do the bulbs turn on?
2. Put three bulbs in parallel (again, don't connect them to the battery yet!), and unscrew one of the bulbs. Then connect them to the battery. Do the bulbs turn on?
3. What is your explanation for this? With your idea, can you better explain the different brightness between series and parallel bulbs?

The above images illustrate the lab sheet my students were given.

The question is whether this lesson fits the DOE's definition of a well structured lesson. Namely, does it:

- Provide “challenging, measurable objectives?”
  - Yes: students should be comfortable building and analyzing basic DC circuits. This was measured by the provided worksheet.

- Provide “appropriate student engagement strategies?”
  - Yes: it was a laboratory experience which was building off previous lectures.
- Provide “pacing,” “sequence” and “activities?”
  - Yes: the lab involves controls, calculations, and experiments.
- Involve “materials, resources, [and] technologies?”
  - Yes: students were using batteries and lightbulbs.
- Provide a “grouping” experience?
  - Yes: students worked in groups of 3-4.

The above image is the section of my lesson plan summarizing the learning activities.

Conclusion: this lesson fits the definition of a “well-structured lesson.”

Applied Lecture-Worksheet Examples:

Example 1: Free-Body Diagrams and Newton’s First Law

**Learning Activities:**  
 Force Diagram presentation  
 Example problems on force diagrams (some teacher-worked problems, then some student-worked problems)  
 Newton’s First Law presentation  
 Example problems on applying Newton’s First Law

The above image is the section of my lesson plan summarizing the learning activities.

The question is whether this lesson fits the DOE’s definition of a well-structured lesson. Namely, does it:

- Provide “challenging, measurable objectives?”
  - Yes: by the end, students should be comfortable making simple force diagrams and applying Newton’s First Law, which was measured by a worksheet I gave them.
- Provide “appropriate student engagement strategies?”
  - Yes: students were working on examples together.
- Provide “pacing,” “sequence” and “activities?”
  - Yes: the overall structure was lecture, examples, lecture, and examples. The examples were given in a worksheet which I had them fill out.
- Involve “materials, resources, [and] technologies?”
  - N/A: this lesson involved drawing force diagrams, so all they students needed were pencils and paper (which were provided).
- Provide a “grouping” experience?
  - Yes: students worked on examples together.

Conclusion: this lesson fits the definition of a “well-structured lesson.”

## Applied Labs Example:

## Example 1: Paper Airplane Competition

Applied Physics  
Paper Airplane Worksheet

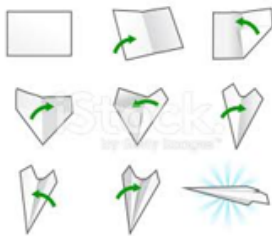
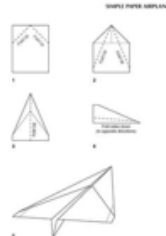
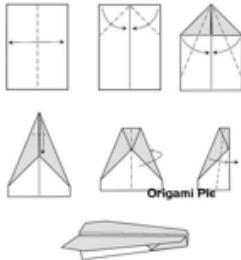
Name:

**Instructions:**

You will be making 4 airplanes:

1. Short, sharp-nose
2. Long, sharp-nose
3. Long, blunt nose
4. Short, blunt-nose

Instructions for each model:

**Short, Sharp****Long, Sharp****Long, Blunt****Short, Blunt**

Same as short, sharp, but with a folded nose

Questions (answer these to get your paper):

1. Draw a side view of each airplane
2. Which one do you think will fly the worst? Why?
3. Which one do you think will fly the best? Why?

Experiment: make each type of airplane and test them. Write down how they fly.

The above images illustrate the handout my students were given for the activity.



The question is whether this lesson fits the DOE’s definition of a well-structured lesson. Namely, does it:

- Provide “challenging, measurable objectives?”
  - Yes: it asks students to compare designs to try and figure out which design best fits the engineering goals (in this case, it was the ability to fly straight and far).
- Provide “appropriate student engagement strategies?”
  - Yes: students were building paper airplanes, which they seemed to enjoy.
- Provide “pacing,” “sequence” and “activities?”
  - Yes: students were building several kinds of airplanes, testing them, and writing down the results.
- Involve “materials, resources, [and] technologies?”
  - Yes: paper and instructions were provided.
- Provide a “grouping” experience?
  - Yes: some students had experience building airplanes before, so they were able to help students who were less experienced.

#### Evidence from Announced Observation 1:

The above examples illustrate that I can develop well-structured lessons on my own, but it’s worth noting what my supervisors had to say. In this case, they observed an AP Physics lesson where I used a slinky to demonstrate the differences between transverse vs longitudinal and travelling vs standing waves.

This quote is taken from the form they filled out:

| Element | Evidence  |
|---------|---|
| 1.A.4   | The candidate designed a lesson plan that engaged students in analyzing demonstrations and observing physical phenomena. During the lesson, the candidate provided content material (notes) via a lecture format. This was followed with demonstrations using a long slinky that allowed students to produce the various wave categories. The candidate, using student volunteers, prompted students to produce the various waves being discussed during the lecture. These included standing and travelling waves, and transverse and longitudinal waves, which were the focus or objective of the lesson. During these demonstrations, which were numerous and followed a specific topic introduced in the lecture, the candidate utilized academic vocabulary in the descriptions and explanations. When students can engage, both academically and physically, with the curriculum, they are more likely to recall the content at later points in the unit. |

To put it in the lexicon of the DOE, it seems clear that the lesson includes “challenging, measurable objectives and appropriate student engagement strategies, pacing, sequence, activities, materials, resources, technologies, and grouping.”

*Section 2.3: Concluding remarks*

I provided examples of six well-structured lessons spanning AP lectures, AP labs, Applied lectures, and Applied labs. While these six examples do not demonstrate consistency in developing well-structured lessons, they do demonstrate versatility. In other words, given a variety of lesson objectives, I am capable of thinking creatively to create a well-structured lesson. This means I have the skill of lesson development, which demonstrates proficiency in essential element 1.A.4.

### Chapter 3: Adjustment to Practice

The second element is adjustment to practice (element 1.B.2). A teacher is proficient in element 1.B.2 if he or she “Organizes and analyzes results from a variety of assessments to determine progress toward intended outcomes and uses these findings to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for students.”<sup>13</sup>

I will demonstrate proficiency in element 1.B.2 by giving several examples of proficiency. While a few examples will not be enough to demonstrate consistency in adjusting to practice, it will demonstrate proficiency.

#### *Example 1: AP Homework Policies*

Rather than have several assignments spread throughout the course of the unit, my AP students preferred to have large packets which were due at the end of the unit. This caused grading issues: students weren’t able to get performance feedback until the end of the unit.

We wanted to keep the homework policy but give students ample feedback before their exams. To make it work, two policies were implemented. First, homework would be graded in class by the students before the exam. To prevent cheating, they were asked to clear their desks (except for their homework papers) and were given red pens to correct with. Second, at the end of most classes, students had about ten minutes to work on their homework. This allowed them to ask myself or their peers direct, personalized questions about their performance.

The question is whether this is an example of proficient adjustment to practice. Namely, does it:

- Organize and analyze “results from a variety of assessments to determine progress toward intended outcomes?”
  - Yes: the intended outcomes were balancing student feedback with a flexible homework schedule. Since the problem statement was simple, the only assessments required were student oral confirmations that they wanted the flexible schedule and better feedback.
- And use these findings “to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for students?”
  - Yes: the policies were implemented and used for the rest of the semester.

Conclusion: this was an example of proficiency in element 1.B.2.

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<sup>13</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

### *Example 2: Applied Paper Airplane Contest*

The Applied class usually went back and forth between labs and lectures. Towards the middle/end of the semester, they were expressing disinterest in the lab structure. Lab worksheets often came with tables to input data, and they found it tedious. While it's important for science students to become comfortable with data tables, I found it worthwhile to have a more relaxed lab towards the end of the year. I decided on a paper airplane contest which would teach students the engineering design principles. Students were given instructions on how to build different kinds of paper airplanes, observed their performance, and tried to figure out what goes into a good paper plane.

The question is whether this is an example of proficient adjustment to practice. Namely, does it:

- Organize and analyze “results from a variety of assessments to determine progress toward intended outcomes?”
  - Yes: the outcome was student interest in a lab which also had academic value. The problem was formulated after informally gauging student interests throughout the semester.
- And use these findings “to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for students?”
  - Yes: a different lab structure was tried, and the students were very much into it.

Conclusion: this was an example of proficiency in element 1.B.2.

### *Example 3: Real-time Adjustments*

My AP slinky lesson was an announced observation. My supervisor had this to say regarding element 1.B.2:

“The candidate, throughout the formal observation and within informal observations made by the supervising practitioner, adjusts the flow of the lesson based on social cues made by students. If the candidate perceives that students are confused still by a particular point, he adjusts and attempts to re-teach that concept. This was prevalent during a recent lecture on wave interference behaviors. When candidates pay attention to the behaviors, mannerisms and cues that students present during lessons, this formative information can be used to increase the level of comprehension of the curricular material.”

In other words, I analyze “results from a variety of assessments to determine progress toward intended outcomes” and use these results “to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for students.” While this isn't a case of policy intervention, it is still an example of proficiency in element 1.B.2.

*Concluding Remarks*

I have given three examples of proficiency in element 1.B.2. It's worth noting the scope of proficiency: one was a case of class policy change, another involved trying a different activity, and the third involved real-time teaching adjustments. This demonstrates that I am capable of successfully adjusting to practice in a variety of scenarios, which demonstrates proficiency in element 1.B.2.

## Chapter 4: Meeting Diverse Needs

The third element is meeting diverse needs (element 2.A.3). A teacher is proficient in element 2.A.3 if he or she “uses appropriate practices, including tiered instruction and scaffolds, to accommodate differences in learning styles, needs, interests, and levels of readiness, including those of students with disabilities and English language learners.”<sup>14</sup>

I will demonstrate proficiency in element 2.A.3 by giving several examples of proficiency. While a few examples will not be enough to demonstrate consistency in adjusting to practice, it will demonstrate proficiency. It’s worth noting that each lesson does not need all of the components of 2.A.3 proficiency. For example, an entire lesson can be geared towards one learning style, and proficiency in 2.A.3 involves catering to the other learning styles in later lessons. So proficiency will not be demonstrated by several lessons with every component satisfied; rather, proficiency will be demonstrated by satisfying every component over several lessons.

### *Example 1: AP Homework and Applied Worksheets*

In both my AP and Applied classes, students spent time in class working on problems. In AP, they got to work on their homework problems; the Applied class did worksheets. In both cases, these typically happened on lecture days.

The question is whether this approach was an example of meeting diverse needs:

| 2.A.3 Component                            | Included in Lesson? | Rationale if So   |
|--|---------------------|---|
| Tiered Instruction                         | Yes                 | Students were able to go at their own pace and ask personalized questions.  |
| Scaffolds                                  | Yes                 | When students ask questions, I would never just give them the answer. Rather, I would give hints or ask more specific questions to get them thinking. |
| Accommodates Different Styles              |                     |   |
| Accommodates Different Needs               | Yes                 | Students are able to go at their own pace and get personalized help.  |
| Accommodates Different Interests           |                     |   |
| Accommodates Different Levels of Readiness | Yes                 | When working on problems in class, I would go around asking if they needed help. They would also ask their peers                                      |

<sup>14</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

|  |  |  |
|--|--|--|
|  |  | questions. This allowed them to have a personalized learning experience. |
|--|--|--|

### Example 2: All Labs

Every lab in both the AP and Applied classes came with a worksheet. The prompts on the worksheet (a) guided them through the lab and (b) gave problems which were related to the lecture content. The goal was that the combination of theory and practice would give purpose to the theory and clarity in understanding the experimental results. Thus labs catered to both theory-inclined minds as well as hands-on learners with the goal of getting each to think like the other.

The question is whether a lab worksheet with prompts and problems is an example of meeting diverse needs:

| 2.A.3 Component                            | Included in Lesson? | Rationale if So   |
|--|---------------------|---|
| Tiered Instruction                         |                     |   |
| Scaffolds                                  | Yes                 | When a more difficult calculation was being performed, it was often broken into several smaller questions to help students out. |
| Accommodates Different Styles              | Yes                 | Both hands-on and mathematical types of thinking were required to complete the labs.  |
| Accommodates Different Needs               |                     |   |
| Accommodates Different Interests           | Yes                 | Labs had a more “hands-on” feel than the lectures.  |
| Accommodates Different Levels of Readiness | Yes                 | Difficult calculations were broken up into smaller questions to help students who were struggling with the theory.              |

### Example 3: What If?

Every Friday, I would take ten minutes to read a chapter from a book called *What If?* It was written by a NASA engineer-turned-comic book writer Randall Munroe, and – according to its title page – seeks “serious scientific answers to absurd hypothetical questions.” These hypothetical questions include: what would happen if you threw a baseball at 90% the speed of light? What if you had a mole of moles? What would a Richter 15 earthquake look like? And so on. The goal of reading this was

twofold: one, to break up the schedule a bit and do something fun; two: to get students thinking creatively about solving problems which have never been solved before.

The question is whether this is an example of meeting diverse needs:

| 2.A.3 Component                            | Included in Lesson? | Rationale if So   |
|--|---------------------|---|
| Tiered Instruction                         |                     |   |
| Scaffolds                                  | Yes                 | Each chapter walked you through the scientist's thought process when encountering new problems.   |
| Accommodates Different Styles              | Yes                 | Each question required a unique approach, so different chapters were more intuitive for different students.   |
| Accommodates Different Needs               | Yes                 | AP Physics can seem very abstract, so solving more "down and dirty" problems - ones without an exact answer - can help students see the more practical side of physics. |
| Accommodates Different Interests           | Yes                 | All students looked forward to the weekly reading, regardless of academic interest.   |
| Accommodates Different Levels of Readiness |                     |   |

### *Concluding Remarks*

Between homework, in-class worksheets, labs, and special activities, my schedule regularly fulfilled all the components of element 2.A.3. Unlike previous chapters, I have been talking about my average activities. Thus the evidence not only points to proficiency in meeting diverse needs, but consistency in doing so.



## Chapter 5: Safe Learning Environment

The fourth element is providing a safe learning environment (element 2.B.1). A teacher is proficient in element 2.B.1 if he or she “uses rituals, routines, and appropriate responses that create and maintain a safe physical and intellectual environment where students take academic risks and most behaviors that interfere with learning are prevented.”<sup>15</sup>

This element concerns student’s perceptions rather than performance, so the evidence is harder to quantify. The evidence will come from three main sources: my supervisor’s observations, conditions facilitating safe learning environments, and student feedback. The first two pieces of evidence will not show that a safe environment was created - it will only show that I was attempting to create one. The student feedback will help measure the success of my attempts.

### *Example 1: Supervisor’s Comments*

After observing my AP slinky demonstrations, my supervisor had this to say:

“The candidate employs techniques that maintain a safe learning environment. Within the observed class (an Advanced Placement level course), the candidate is learning students’ names and their strengths and needs in order to develop positive relationships with them. In other classes, the candidate has taken the initiative to begin working with the students.”<sup>16</sup>

After an unannounced observation, my supervising practitioner said this:

“The teacher candidate utilizes pedagogical techniques and routines to establish a safe learning environment for all students. The teacher candidate incorporates humor and personal stories, appropriate to the conversation, to make the content and class objective seem accessible and relatable to the students... The teacher candidate has worked to learn student names, and realizes the importance as a management technique to use student names as much as possible. As students work in groups, or-as during this observation example-as students complete laboratory activities, the teacher candidate is aware of how his proximity, or physical location with respect to the students, helps to maintain attention and focus. When students feel comfortable participating in class discussions and activities due to the environment created and promoted by the educator.”<sup>17</sup>

Learning names and developing positive relationships with the students is an important part of maintaining a safe learning environment. When students are comfortable with the teacher, they are comfortable asking questions and taking academic risks without feeling “dumb.”

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<sup>15</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

<sup>16</sup> See Appendix (Announced Observation 1)

<sup>17</sup> Also see appendix (Unannounced Observation 1)

*Example 2: In-Class Work*

In both my AP and Applied classes, students spent time doing problems in class. Two things are worth noting.

First, students were comfortable talking with myself and each other. The classroom environment was a bustling atmosphere filled with students' chatter. Students were comfortable talking with myself and each other, which meant they weren't afraid to ask questions out of fear of looking "dumb."

Second, the students were almost always on-task. In the case of exceptions, I was often able to address student concerns and acknowledge the non-physics problems students were having. This helped gain their respect and trust, so even the non-physics chatter could be turned into an asset when minimized.

In short, the in-class work time was an example of a routine where students take academic risks and "most behaviors that interfere with learning are prevented." It was thus an example of a safe learning environment.

*Example 3: Student Feedback*

I was able to gauge student's thoughts on my teaching environment by formal and informal surveys.

Formally, students completed a form at the end of the year. The results were overall very positive, and some even wrote comments included "your teaching was very good, and enjoyable," "keep doing you," and "he's great!" One even commented that I was the "best student teacher I ever had." None of the comments were negative, and some were even personalized messages.

Informally, students were able to tell me their thoughts on the class structure and my approach. I used this informal sort of survey to inform my homework and classwork policies. As in the formal surveys, students were generally positive about their experiences and my approach.

*Concluding Remarks*

The question is whether I "uses rituals, routines, and appropriate responses that create and maintain a safe physical and intellectual environment where students take academic risks and most behaviors that interfere with learning are prevented."

From the examples, it seems clear that the lesson structures were conducive to academic productivity and risk taking, implying my proficiency in element 2.B.1.

## Chapter 6: High Expectations

The fifth element is high expectations (element 2.D.2). A teacher is proficient in element 2.D.2 if he or she “effectively models and reinforces ways that students can master challenging material through effective effort, rather than having to depend on innate ability.”<sup>18</sup>

Like the previous element, this one is hard to demonstrate through classroom policy. The goal is to challenge students without overwhelming them; since different students are at different academic levels, it’s difficult to make a “one size fits all” classroom policy. Therefore the evidence will come largely from pedagogy techniques and feedback. Specifically, the evidence will come from supervisors’ observations, AP homework and Applied worksheets.

### *Example 1: Supervisor's Observations*

After my first announced observation, my supervisor commented that  
“The candidate planned learning opportunities that engaged students and provided success in working with the curriculum. During the lesson, the candidate asked for student volunteers to demonstrate wave behaviors using equipment. The candidate, realizing that some students are quicker to volunteer than others, prompted other students to become involved. Most students, by the end of the lesson, had participated in the demonstrations. In addition, the candidate announced that ‘by the end of the class, we should be able to fill in this table.’ This simple task served as a summary of the content knowledge and observed phenomena. This simple task gives students confidence and a sense of purpose and accomplishment within the lesson.”<sup>19</sup>

And after my first unannounced observation, my supervising practitioner said  
“The teacher candidate creates learning opportunities where students need to integrate content knowledge, follow directions, make predictions and practice discourse. During this observation, students were given laboratory equipment and a set of directions intended to guide them to observe and explain phenomena. The teacher candidate, as he monitored student progress, promoted and modeled effective discourse utilizing appropriate academic vocabulary. When educators promote a culture of high expectations, then students will have opportunities to operate at the higher levels of Bloom’s taxonomy.”<sup>20</sup>

In both cases, I was leading students through new content in a systematic manner, modeling how knowledge can be acquired with systematic diligence rather than mere talent. Thus these examples illustrate proficiency in element 2.D.2.

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<sup>18</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

<sup>19</sup> Announced Observation 1

<sup>20</sup> Unannounced Observation 1

### *Example 2: AP Homework*

I decided to structure the AP homework assignments like my AP physics teacher structured his: give a few difficult problems rather than many easy ones. It was a successful model for my classmates and I, and I wanted to try it with my students.

My AP students typically received ten questions per week for homework. To define my terms, I consider an “easy” physics problem to be one in which the solution is obtained by rearranging an equation presented in class or whose application to a scenario is apparent. A “difficult” problem consists of equation derivations or the combination of multiple equations to compute a desired property of a system. Generally, the homework packets had two or three “easy” problems and seven or eight “hard” problems.

From my experience, I would recommend this for physics courses but not mathematics. Physics teachers are looking for students to consider a system and, with an understanding of physics principles, analyze it creatively. Thus the focus is on deep conceptual understanding rather than strict methodology, so “hard” problems are more effective here. In contrast, my best math courses gave mostly “easy” problems for homework. The goal in high school mathematics is a breadth in method applications; in other words, students should learn a bunch of different methodologies for different mathematical scenarios. In this case, easy problems are more effective because they are good at drilling methodologies.

To put it another way, giving students “hard” problems in a physics course is a way of setting high expectations. The expectation is an understanding of how to apply physical laws to different scenarios, which requires students to think deeply and creatively rather than methodologically. Thus giving difficult problems is an instance of the teacher setting this expectation.

### *Example 3: Applied In-Class Worksheets*

My Applied class often did worksheets in class. These worksheets got students to apply lecture concepts.

These worksheets helped me set high expectations for the class in two ways. First, they helped me keep the students on-task. The Applied students - unlike the AP students - had a difficult time staying focused on lectures. Therefore lectures had to be broken up with worksheet time. In other words, it helped me maintain the expectation of “effective effort” as stated in element 2.D.2. Second, my students tended to struggle with new material and the worksheets. But rather than feed them the answers, I often took student struggles as an opportunity to ask leading questions and scaffold - taking them from what they do know to what they don’t. Individualized attention like this would be impossible in a lecture setting, so the worksheets helped me “master challenging material through effective effort.” Thus the worksheets were examples of setting high expectations.

### *Concluding Remarks*

I provided two examples of how I systematically set high expectations via my class structure and a couple of observations from my supervisors confirming that this translated into the class atmosphere.

This is ample evidence that I “effectively model and reinforce ways that students can master challenging material through effective effort,” confirming my proficiency in element 2.D.2.

## Chapter 7: Reflective Practice

The sixth element is reflective practice (element 4.A.1). A teacher is proficient in element 4.A.1 if he or she “Regularly reflects on the effectiveness of lessons, units, and interactions with students, both individually and with colleagues, and uses insights gained to improve practice and student learning.”<sup>21</sup>

To clarify, proficiency in 4.A.1 involves regular reflection and improvement of practice; this does not imply that every reflection should result in a classroom policy change. Therefore when providing evidence for proficiency, it is enough to demonstrate regular reflection and point to a couple policy changes as evidence that reflection paid off.

To provide evidence that I was reflecting regularly, I will cite my seminar reflections. Evidence of policy change will simply list a policy change along with my rationale, showing that reflective practice played a role in my actions.

### *Example 1: Reflection Homework*

I participated in a seminar which corresponded to my teaching experience. Every week, we had a “reflection” sheet to fill out and submit. The sheet consisted of the following prompts:

- Highlights of my week
- Challenge of my week and what I learned about myself, learning or teaching through it
- One goal I have for next week
- Self-Evaluation (did I achieve the goal I set last week?)
- Journal Question of the week

The last prompt was different every week. One example of a question was “How effective are your formal and informal assessment strategies in documenting student learning? How do these assessments show growth and change over time?” Another was “How are you using student performance to inform your planning and teaching?”

These obviously forced me to reflect on my teaching practice and think about how I could improve my technique. An example of a completed form will be provided in the appendix.

### *Example 2: AP Homework Evolution*

I mentioned before that I wanted to give the AP students a few difficult problems rather than many easy ones. In college and in my own AP class, I often have bigger homework assignments that are due weekly rather than smaller ones due every couple days. This model is intuitive for the homework model I used for my AP students, so I decided to run it by them to see how they thought about it. They rather liked the flexibility coming with weekly assignments, so we decided to try it out.

We quickly ran into problems. The first unit we tried it on, students handed in the homework a day or two before the exam. The obvious problem is feedback: students didn’t know if they knew the material until the day before (when they got feedback on homework). Because of this, several changes

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<sup>21</sup> <http://www.doe.mass.edu/edprep/cap/guidelines.pdf>

were made. First, we decided to use a “red pen” correction method. The day the assignments were due, students cleared their desks except for a red pen, which was provided. I then went over every question, and they corrected their own homework. This allowed them to see where they went wrong (the red pens made sure they didn’t appear to have all the right answers the first time around). This helped, but it still didn’t solve the problem of students getting more regular feedback: waiting until the last couple days before the exam to see if you understand what’s going on can be stressful. Because of this, I regularly set aside time at the end of class for students to work on homework. This allowed them to ask personalized questions and get ahead on their work. I also tried sprinkling in more assessments throughout the unit: I incorporated relevant problems into lab worksheets, and I had students work on more problems in-class.

This is an example of how proficiency in element 4.A.1 worked to improve my AP students’ learning experience.

### *Example 3: Applied Labs*

One of the biggest problems in my Applied class was student motivation. When doing labs or worksheets, several students wouldn’t do anything unless I walked up to them and talked directly to them; most of the others simply got off-task for little or no reason.

During non-lecture times - such as when they were doing worksheets or labs - I decided to ask them what they wanted to see in lab experiences. The feedback was generally along the lines of “more building, less filling out tables.”

In light of this data, I decided to have a paper airplane competition as the last lab. Rather than teach students about data management and analysis, I decided to teach them about engineering methodology. For the first day or two, students built and tested different kinds of airplanes. On the last day, we had a competition: students would make two airplanes and take three throws with each. The students whose six flights summed to the highest distance won.

Students were extremely invested in this lab: students who usually didn’t put effort into the labs wanted to win the competition, so they were interested in designing better planes than everyone else. This friendly competition was a success, and students even build better planes than I did (and I’ve been doing it for a while).

This is an example of how reflective practice was used to teach the importance of prototyping and testing in the engineering design process.

### *Concluding Remarks:*

The examples demonstrate that I was regularly reflecting, and this reflection translated into successful classroom policies. This demonstrates proficiency in element 4.A.1.

## Chapter 8: My WPI Education

It's worth noting how my WPI education helped me navigate my teaching experience. In this chapter I will outline five ways that WPI's coursework and seminars helped me: developing a lexicon, content knowledge, content applicability, teaching practice, and reflection.

### *Development of a Lexicon*

There is a vocabulary to every trade, and it's important for the tradesmen to learn it. Imagine you take your car to the mechanic for a tire replacement. "I think a tread belt is broken," you tell him. He seems confused until you show him your tire. Once he sees it, he knows what to do with it; he knows how to fix your tire, but uses phrases like "strings" and "big metal part" instead of "tread belt" and "rim." If that were to happen, you would question his competence and experience in the field. It's likewise important for baseball players to know words like "balk" and "lead," or for musicians to understand "minor third" and "mixolydian."

WPI's courses helped me develop a teacher's vocabulary. Phrases like "ELL," "MTEL," intrinsic vs extrinsic motivation, "CAP," and "reflective practice" became a part of my daily routine. I credit the development of this lexicon to my coursework: ID 3100, Sheltered English Immersion, Education Psychology, and my seminar. I would not have developed that vocabulary without the classes, so they played an important role in my day-to-day teaching experiences.

### *Content Knowledge*

It goes without saying that a teacher should understand the material he or she is presenting. I taught physics courses, so it was critical that I could do physics.

WPI's undergraduate requirements exposed me to classical mechanics, Maxwell's Equations, quantum mechanics, thermodynamics, relativity, and more. This was ample knowledge for teaching high school physics; if anything, the hard part was holding back information from my students.

### *Content Applicability*

Taking courses in physics and engineering gave me a sense of how the content applies to engineers and scientists. Specifically, I realized that it's not about having all the answers: it's about navigating problems that you've never seen before. WPI's courses gave me the toolkits needed to do that, which gave me an appreciation for the "theory" part of "theory and practice."

This gave me an edge in the classroom in several ways. For one, it helped me anticipate and answer the age-old question "who cares?" The answer to which I outlined above: "you're not getting hired to solve problems which have been solved before; the better you understand the fundamentals - the theory - the better equipped you'll be to solve new problems." Second, WPI's courses gave me a sense of how theory is applied in different fields. In other words, I could cater a lesson to aspiring doctors; another to future aerospace majors. Lastly, it gave me something to be enthusiastic about. I remember struggling with physics in high school, but taking advanced courses helped me see how everything fit



together - helped me see where these seemingly random equations were in “physics space.” This excitement was often the difference between a proof and a eureka, and enthusiasm is a quality that students appreciate.

### *Teaching Practice*

I took pedagogy courses before the practicum, and these courses were important in preparing me for the classroom. ID 3100 helped me anticipate disruptive students, the importance of lesson planning, what it was like to deliver content and to deal with exceptional students. My SEI course prepared me for low-ELL students, which I ended up encountering during my practicum.

In a sentence, my WPI coursework was the difference between going in cold and going in with a toolkit and a game plan. I wouldn't say any coursework is comparable to the actual classroom experience, but it was important to have a plan - a sense of what “going through the motions” would entail - even if I couldn't experience it firsthand.

### *Reflective Practice*

During my practicum seminar, we filled out weekly “reflection” worksheets. I mentioned them before, so I will keep this section brief. The worksheets challenged us to set short-term goals, achieve them, and make self-evaluation a part of our daily routine.

### *Concluding Remarks*

Between my pedagogy, SEI, and content coursework, I felt that WPI prepared me for teaching experience to the extent that it could. Again, nothing is quite like coming in day after day, trying to get through one lesson after another. However, it was nice to reflect on and practice scenarios ahead of time, as it gave me a toolbox for dealing with different situations and a game plan for resolving them.

## Chapter 9: My Classes

This chapter is designed to provide insight into my classes. Specifically, the demographics will be fleshed out and a couple students will be discussed in detail.

### *My AP Class*

Total Number of Students: 16

Male: 8

Female: 8

EPL 6: 3

EPL 5: 2

Seniors: 11

Juniors: 5

Free or Reduced Lunch: 4

### *My Period 1 Applied Class*

Total Number of Students: 11

Male: 5

Female: 6

EPL 5: 1

EPL 4: 1

EPL 3: 1

EPL 2: 3

Seniors: 5

Juniors: 5

Sophomores: 1

Free or Reduced Lunch: 4

### *My Period 6 Applied Class*

Total Number of Students: 16

Male: 11

Female: 5

EPL 6: 1

EPL 5: 3

EPL 4: 1

EPL 3: 3

EPL 2: 2

Seniors: 12

Juniors: 3

Sophomores: 1

Free or Reduced Lunch: 7

*Noteworthy Students*

Here I will discuss two challenging students and what I did to address them. Both of the students will be selected from my applied classes since none of my AP students gave me any trouble.

Student A often missed class or came in late; when he was in, he had a hard time focusing. Even when he wasn't talking to his peers, he was usually sitting at his desk, staring blankly at his worksheet. To address him, I would tell him what the next step was, go and help other students, and come back to see if he figured it out. He had to be personally guided on each problem, and to some extent I was able to guide him without giving him the answers. There were some days where I had to help other students with their worksheets more than usual, in which case I wasn't able to give him as much attention. One day I heard him opening up about personal struggles, and I was able to acknowledge them; he respected that and was more motivated to do work after.

Student B had a girlfriend in the class and wanted to be a rapper, so applied physics was on the bottom of his to-do list. I tried asking a variety of things to connect with him - being interested in his interests, telling him more bluntly to get working, telling him less bluntly to get working - but nothing seemed to work. He got really into the paper airplane lab, probably because it was competitive.

I was able to get around to Student A to some extent; not so much for Student B. I tried a few techniques, but it was difficult to address their motivation problems over the course of seven weeks of teaching.

## **Concluding Remarks**

It's worth summarizing that I achieved competence in the professional standards. The first was well-structured lessons, which was demonstrated by a series of examples. Adjustment to practice, meeting diverse needs, and reflective practice were also demonstrated through examples. The standards of safe learning environment and high expectations could not be quantified as simply, so I used supervisor comments, student feedback, and examples of my efforts as evidence.

## Appendix B: Candidate Self-Assessment and Goal Setting

### Candidate Self-Assessment Form

Directions: Independently, reflect on your performance in each dimension of an element. Use the performance descriptors from the CAP Rubric to help ground your assessment. Authenticity is encouraged. Consider the following in rating your current level of performance (as applicable):

- Skills acquired in coursework
- Experiences in pre-practicum
- Targeted feedback you have received about your practice
- Evidence of impact with students
- Reflection on performance in Announced Observation #1

| I.A.4: Well-Structure Lessons  |   |  |  |   |
|--------------------------------|---|--|--|---|
|                                | Unsatisfactory  | Needs Improvement  | Proficient   | Exemplary   |
| I-A-4. Well-Structured Lessons | Develops lessons with inappropriate student engagement strategies, pacing, sequence, activities, materials, resources, and/or grouping for the intended outcome or for the students in the class. | Develops lessons with only some elements of appropriate student engagement strategies, pacing, sequence, activities, materials, resources, and grouping. | Develops well-structured lessons with challenging, measurable objectives and appropriate student engagement strategies, pacing, sequence, activities, materials, resources, technologies, and grouping.  | Develops well-structured and highly engaging lessons with challenging, measurable objectives and appropriate student engagement strategies, pacing, sequence, activities, materials, resources, technologies, and grouping to attend to every student's needs. Is able to model this element.                                 |
| Quality                        |   |  | *  |   |
| Scope                          |   |  | *  |   |
| Consistency                    |   |  | *  |   |
|                                |   |  |  |   |
| I.B.2: Adjustment to Practice  |   |  |  |   |
|                                | Unsatisfactory  | Needs Improvement  | Proficient   | Exemplary   |
| I-B-2. Adjustment to Practice  | Makes few adjustments to practice based on formal and informal assessments.   | May organize and analyze some assessment results but only occasionally adjusts practice or modifies future instruction based on the findings.            | Organizes and analyzes results from a variety of assessments to determine progress toward intended outcomes and uses these findings to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for students. | Organizes and analyzes results from a comprehensive system of assessments to determine progress toward intended outcomes and frequently uses these findings to adjust practice and identify and/or implement appropriate differentiated interventions and enhancements for individuals and groups of students and appropriate |

|             |  |  |   |  |
|-------------|--|--|---|--|
|             |  |  |   | modifications of lessons and units. Is able to model this element. |
| Quality     |  |  | * |  |
| Scope       |  |  | * |  |
| Consistency |  |  | * |  |

| II.A.3: Meeting Diverse Needs    |   |   |   |  |
|----------------------------------|---|---|---|--|
|                                  | Unsatisfactory  | Needs Improvement   | Proficient  | Exemplary  |
| II-A-3.<br>Meeting Diverse Needs | Uses limited and/or inappropriate practices to accommodate differences. | May use some appropriate practices to accommodate differences, but fails to address an adequate range of differences. | Uses appropriate practices, including tiered instruction and scaffolds, to accommodate differences in learning styles, needs, interests, and levels of readiness, including those of students with disabilities and English learners. | Uses a varied repertoire of practices to create structured opportunities for each student to meet or exceed state standards/local curriculum and behavioral expectations. Is able to model this element. |
| Quality                          |   |   | *   |  |
| Scope                            |   |   | *   |  |
| Consistency                      |   | *   |   |  |

| II.B.1: Safe Learning Environment    |  |   |   |   |
|--------------------------------------|--|---|---|---|
| II-B-1.<br>Safe Learning Environment | Unsatisfactory   | Needs Improvement   | Proficient  | Exemplary   |
|                                      | Maintains a physical environment that is unsafe or does not support student learning. Uses inappropriate or ineffective rituals, routines, and/or responses to reinforce positive behavior or respond to behaviors that interfere with students' learning. | May create and maintain a safe physical environment but inconsistently maintains rituals, routines, and responses needed to prevent and/or stop behaviors that interfere with all students' learning. | Uses rituals, routines, and appropriate responses that create and maintain a safe physical and intellectual environment where students take academic risks and most behaviors that interfere with learning are prevented. | Uses rituals, routines, and proactive responses that create and maintain a safe physical and intellectual environment where students take academic risks and play an active role—individually and collectively—in preventing behaviors that interfere with learning. Is able to model this element. |
| Quality                              |  |   | *   |   |
| Scope                                |  |   | *   |   |
| Consistency                          |  |   |   | *   |

| II.D.2: High Expectations    |   |  |  |   |
|------------------------------|---|--|--|---|
| II-D-2.<br>High Expectations | Unsatisfactory  | Needs Improvement  | Proficient   | Exemplary   |
|                              | Gives up on some students or communicates that some cannot master challenging material. | May tell students that the subject or assignment is challenging and that they need to work hard but does little to counteract student misconceptions about innate ability. | Effectively models and reinforces ways that students can master challenging material through effective effort, rather than having to depend on innate ability. | Effectively models and reinforces ways that students can consistently master challenging material through effective effort. Successfully challenges students' misconceptions about innate ability. Is able to model this element. |
| Quality                      |   |  | *  |   |
| Scope                        |   |  | *  |   |
| Consistency                  |   |  | *  |   |

| IV.A.1: Reflective Practice       |  |   |  |   |
|-----------------------------------|--|---|--|---|
| IV-A-1.<br>Reflective<br>Practice | Unsatisfactory   | Needs Improvement   | Proficient   | Exemplary   |
|                                   | Demonstrates limited reflection on practice and/or use of insights gained to improve practice. | May reflect on the effectiveness of lessons/units and interactions with students but not with colleagues and/or rarely uses insights to improve practice. | Regularly reflects on the effectiveness of lessons, units, and interactions with students, both individually and with colleagues, and uses insights gained to improve practice and student learning. | Regularly reflects on the effectiveness of lessons, units, and interactions with students, both individually and with colleagues; and uses and shares with colleagues, insights gained to improve practice and student learning. Is able to model this element. |
| Quality                           |  |   | *  |   |
| Scope                             |  |   | *  |   |
| Consistency                       |  |   | *  |   |

Candidate Self-Assessment: Summary Sheet

|       |              |       |           |
|-------|--------------|-------|-----------|
| Name: | Stephen Olis | Date: | 3/18/2016 |
|-------|--------------|-------|-----------|

Directions: In the table below, please record the rating for each element. Use the following key: *Exemplary (E)*, *Proficient (P)*, *Needs Improvement (NI)*, *Unsatisfactory (U)*

| Self-Assessment Summary          |         |             |       |
|----------------------------------|---------|-------------|-------|
| Element                          | Quality | Consistency | Scope |
| 1.A.4: Well-Structured Lessons   | P       | P           | P     |
| 1.B.2: Adjustment to Practice    | P       | P           | P     |
| 2.A.3: Meeting Diverse Needs     | P       | NI          | P     |
| 2.B.1: Safe Learning Environment | P       | E           | P     |
| 2.D.2: High Expectations         | P       | P           | P     |
| 4.A.1: Reflective Practice       | P       | P           | P     |



Based on your Self-Assessment, briefly summarize your areas of strength and high-priority areas for growth.

| Area(s) of Strength                             | Evidence/Rationale   | Element/Dimension |
|---|--|-------------------|
| Challenging students, setting high expectations | Students engaged during lectures<br>Range of grades on assignments, not just high grades | 2.D.2             |
| Safe learning environment                       | Students seem comfortable talking, asking questions                                      | 2.B.1             |

| Area(s) for Growth      | Evidence/Rationale   | Element/Dimension |
|-------------------------|--|-------------------|
| Well-structured lessons | Neither myself nor the students have been getting much feedback on students' performance during the unit   | 1.A.4             |
| Meeting diverse needs   | AP physics not a very diverse class except for mathematics background, which is not an issue for the topics covered; will need practice in this area | 2.A.3             |

*Please share your Self-Assessment Summary as well as the Goal Setting & Plan Development Forms with your Program Supervisor and Supervising Practitioner at least three days in advance of the initial Three-Way Meeting, or earlier upon request.* Preliminary Goal-Setting & Plan Development

|       |              |       |           |
|-------|--------------|-------|-----------|
| Name: | Stephen Olis | Date: | 3/18/2016 |
|-------|--------------|-------|-----------|

|  |
|--|
| <b>Prompt: Identify/Clarify a Focus or Goal Topic (Essential Element, See Self-Assessment Form)</b>                  |
| Meeting diverse needs: planning activities for and improving the overall performance of a diverse group of students. |

|   |
|---|
| <b>Strategic Prompt: Why is this topic/focus area important?</b>  |
| Not every student learns the same way; students have a range of learning abilities, disabilities and background knowledge. Reacting effectively to a range of student needs is a trait that successful teachers must develop. |

|                   |   |
|-------------------|---|
| <b>Objective:</b> | Improving student classwork and homework scores in the period 6 Applied Physics course. |
|-------------------|---|

|  |
|--|
| <i>Specific, Rigorous, Results-Focused Prompt: <b>What</b> skills, knowledge, or practice will I acquire or develop through achieving this goal?</i> |
| Preparing and executing lesson plans which meet diverse needs.<br>Expanding my repertoire of instructional strategies.                               |

|   |
|---|
| <i>Realistic, Timed Prompt: <b>When</b> will I achieve this goal?</i> |
| Over the next 3-4 weeks we hope to see the desired results.           |

|  |
|--|
| <i>Action-Oriented, Tracked Prompt: <b>How</b> will I demonstrate progress toward this goal?</i> |
| Track averages of classwork and homework assignments while varying homework/ classwork styles.   |


|  |
|--|
| <i>Measured Prompt: <b>How</b> will I know the goal has been achieved?</i>                                 |
| The goal will be achieved if, after 4 weeks, the average classwork/ homework grades have increased by 10%. |

|  |   |
|--|---|
| <b>Draft Professional Practice Goal:</b> | Between March and May of 2016, the teacher candidate will increase the average student classwork/ homework scores by 10%. |
|--|---|

| What actions will you take to achieve the goal?   | What actions/supports/resources will you need from your Program Supervisor and Supervising Practitioner? |
|---|--|
| <ul style="list-style-type: none"> <li>• Give assignments at the beginning of the time period and measure scores</li> <li>• Give similarly formatted assignments later and measure the scores</li> <li>• Repeat this cycle over the course of late March and April</li> <li>• In early May, compare the classwork/ homework scores from March/ April</li> </ul> | <ul style="list-style-type: none"> <li>• Suggestions for alternate assessment formats</li> </ul>         |

# Appendix D: Observation Forms and Model Protocol

## Announced Observation 1



Candidate Assessment of Performance (CAP): Observation Form

**What:** **Observation # 1** **How:** **Announced**

**Who:** John Goulet (Program Supervisor) & John Staley (Supervising Practitioner)

**Focus Elements:** 1.A.4 Well-Structured Lessons; 2.D.2 High Expectations  
 Note: As this is the first observation, assessors should attempt to collect evidence for all elements in order to provide a baseline for future observations  
 CAP Observation Form: Announced Observation #1

*Pre-Observation Conference*

**Date:** 2/3/16 **Time (start/end):** 9:45 – 9:58

**Observation Details**


**Date:** 2/4/16 **Time (start/end):** 8:09 – 8:51

**Content Topic/Lesson Objective:** Transverse, longitudinal, travelling, and standing descriptions of waves. How do physicists categorize mechanical waves? How are waves in different categories similar? How are they different?

Whole Group    
  Small Group    
  One-on-One    
  Other

*Active Evidence Collection occurred during the observation and is synthesized and categorized below.*

| Element* | Evidence**  |
|----------|---|
| 1.A.4*   | The candidate designed a lesson plan that engaged students in analyzing demonstrations and observing physical phenomena. During the lesson, the candidate provided content material (notes) via a lecture format. This was followed with demonstrations using a long slinky that allowed students to view and experience wave categories. The candidate, using student volunteers, prompted students to produce the various waves being discussed during the lecture. These included standing and travelling waves, and transverse and longitudinal waves, which were the focus or objective of the lesson. During these demonstrations, which were numerous and followed a specific topic introduced in the lecture, the candidate utilized academic vocabulary in the descriptions and explanations. When students can engage, both academically and physically, with the curriculum, they are more likely to recall the content at later points in the unit. |
| 1.B.2    | The candidate, throughout the formal observation and within informal observations made by the supervising practitioner, adjusts the flow of the lesson based on social cues made by students. If the candidate perceives that students are confused still by a particular point, he adjusts and attempts to reteach that concept. This was prevalent during a recent lecture on wave interference behaviors. When candidates pay attention to the behaviors, mannerisms and cues that students present during lessons, this formative information can be used to increase the level of comprehension of the curricular material.  |
| 2.A.3    | The candidate uses several pedagogical techniques that allow students to be engaged in the lesson. A desk is available at the front of the room for students to independently move to if they need to   |



Candidate Assessment of Performance

2



## Candidate Assessment of Performance (CAP): Observation Form

be closer to the board. The candidate provided information orally and in writing, as well as demonstrated the physical phenomena with laboratory equipment.

2.B.1

The candidate employs techniques that maintain a safe learning environment. Within the observed class (an Advanced Placement level course), the candidate is learning the students' names and their strengths and needs in order to develop positive relationships with them. In other classes, the candidate has taken the initiative to begin working with the students.

2.D.2\*

The candidate planned learning opportunities that engaged students and provided success in working with the curriculum. During the lesson, the candidate asked for student volunteers to demonstrate wave behaviors using equipment. The candidate, realizing that some students are quicker to volunteer than others, prompted other students to become involved. Most students, by the end of the lesson, had participated in the demonstrations. In addition, the candidate announced "by the end of this class, we should be able to fill in this table." The table served as a summary of the content knowledge and observed phenomena. This simple task gives students confidence and a sense of purpose and accomplishment within the lesson.

4.A.1

#### Focused Feedback

Reinforcement Area/Action:  
(strengths)

1.A.4

Continue to plan lessons with defined, achievable objectives. The lesson demonstrated during this observation employed a range of techniques, appropriately engaged students, and ended with a summarizer to provide closure and purpose to the lesson.

1.B.2

During every lesson, the candidate should ensure that he is accurately gaining formative information through questioning or through other means. The candidate asked "any questions on that?" but this does not mean all students comprehend the lesson so far. Many students are hesitant to ask questions. The candidate, through purposefully designed questions/learning tasks/discussion prompts/etc., can gain accurate information as to the students' current level of comprehension.

Refinement Area/Action:  
(areas for improvement)

As you proceed into your practicum, be mindful of the students' current level of knowledge and skill. If you are picking up cues of student confusion, it can be attributed to the difficulty of the content material. It can also be attributed to the knowledge gap between the students and the candidate. Consider pedagogical research that states students make gains when content knowledge is provided at a conceptual and practical level slightly higher or more advanced than their current abilities. Realize that you, a college student majoring within this content area, bring a greater awareness of the content knowledge as well as the relationships between topics of physics. Be mindful of the body of knowledge





### Candidate Assessment of Performance (CAP): Observation Form

of the students within the class.

#### 2.A.3

While not necessarily observable in one observation, ensure that opportunities throughout a unit of study are purposefully planned for students to engage in the 4 domains of learning (speaking, reading, listening, writing) within the curriculum.



## Unannounced Observation 1

CAP Observation Form: Unannounced Observation #1 Stephen Olis, WPI

|  |  |                                     |                                |
|--|--|-------------------------------------|--------------------------------|
| What:  | Observation # 1  | How:                                | Unannounced                    |
| Who:   | John Staley, Supervising Practitioner  |                                     |                                |
| Focus Elements:  | 1.A.4: Well Structured Lessons; 2.B.1: Safe Learning Environment   |                                     |                                |
| <b>Observation Details</b>   |  |                                     |                                |
| Date:  | 2/26/2016  | Time (start/end):                   | 8:09 – 9:14                    |
| Content Topic/Lesson Objective:  | Electrostatics Lab. Students will be able to operate an electroscope and interpret the observations in light of electrostatics.  |                                     |                                |
| <input type="checkbox"/> Whole Group   | <input checked="" type="checkbox"/> Small Group  | <input type="checkbox"/> One-on-One | <input type="checkbox"/> Other |
| Active Evidence Collection occurred during the observation and is synthesized and categorized below. |  |                                     |                                |
| <b>Element*</b>  | <b>Evidence**</b>  |                                     |                                |
| 1.A.4*   | The teacher candidate prepares daily lessons that, when taken as a unit off study, provide varied opportunities for students to engage with the curriculum. The lessons include opportunities for students to self-reflect and self-correct, to practice discourse, to work collaboratively in groups, and to view content through lecture, readings, and video analysis. In this observation, students were working with standard science equipment (electroscope, electrostatics equipment) to make predictions and observe and explain phenomena. When educators purposefully plan lessons that engage students, the educator will have maximized instructional learning time.  |                                     |                                |
| 1.B.2  | The teacher candidate has demonstrated the ability to use data and student results to adjust instructional and assessment practices. After receiving and reviewing the first few homework assignments, the teacher candidate adjusted how he reviewed the work with students, using a different colored pen to distinguish between the original and the corrected work. This provides better, more accurate information for his planning. The teacher candidate has solicited verbal feedback from students about how they like or dislike certain practices and the teacher candidate takes this information into account. When educators incorporate student feedback, students feel valued and become more receptive and engaged in the class.  |                                     |                                |
| 2.A.3  |  |                                     |                                |
| 2.B.1*   | The teacher candidate utilizes pedagogical techniques and routines to establish a safe learning environment for all students. The teacher candidate incorporates humor and personal stories, appropriate to the conversation, to make the content and class objective accessible and relatable to the students. One of his emphases is to overtly help the students see why learning this information is important and/or how this information pertains to their career paths or real-world experiences. The teacher candidate has worked to learn student names, and realizes the importance as a management technique to use student names as much as possible. As students work in groups, or-as during this observation for example-as students complete laboratory activities, the teacher candidate is aware of how his proximity, or physical location with respect to the students, helps to maintain attention and focus. When students feel comfortable participating in class discussions and activities due to the environment created and promoted by the educator, |                                     |                                |

\* Observations must collect and document evidence for at least the focus elements. Focus elements are highlighted.

\*\* Evidence included is indicative of performance relative to each element. It may include evidence that demonstrates one or more of the dimensions (quality, consistency, scope) of an element are being met or that performance is not yet at the expected threshold.

|       |  |
|-------|--|
|       | the results and formative feedback gained from student work will yield more accurate information that can be used to adjust future lessons.  |
| 2.D.2 | The teacher candidate creates learning opportunities where students need to integrate content knowledge, follow directions, make predictions and practice discourse. During this observation, students were given laboratory equipment and a set of directions intended to guide them to observe and explain phenomena. The teacher candidate, as he monitored student progress, promoted and modeled effective discourse utilizing appropriate academic vocabulary. When educators promote a culture of high expectations, then students will have opportunities to operate at the higher levels of Bloom's taxonomy. |
| 4.A.1 |  |

| Focused Feedback  |   |
|---|---|
| Reinforcement Area/Action:<br><i>(strengths)</i>          | <p>Continue to create learning opportunities that promote inquiry and questioning.</p> <p>Continue to allow students to AVIDize their laboratory activities, which now also aligns with the CollegeBoard skills of inquiry.</p> <p>Continue to frequently monitor student progress, such as by checking in with each lab table or work group.</p> <p>Continue to utilize formative assessment results to tweak or stretch current practices, and try new strategies to extend your repertoire of pedagogical techniques.</p>  |
| Refinement Area/Action:<br><i>(areas for improvement)</i> | <p>Need tangible, product based evidence to justify grades. Range of assessment types (HW, discussion, quiz, test, lab, etc.). Good practice to collect samples of work so that you can provide tailored, written or explicitly targeted feedback</p> <p>Continue to try new techniques. With some notice, students can be expected to adjust to fit your practices. This will give you more information and as you try new pedagogical techniques, you'll find yourself able to make better activities and assessments since your knowledge of techniques will strengthen with practice.</p> |

\* Observations must collect and document evidence for at least the focus elements. Focus elements are highlighted.

\*\* Evidence included is indicative of performance relative to each element. It may include evidence that demonstrates one or more of the dimensions (quality, consistency, scope) of an element are being met or that performance is not yet at the expected threshold.

## Unannounced Observation 2

## Candidate Assessment of Performance (CAP): Observation Forms

Stephen Olis

WPI

## Observation Form: Unannounced Observation #2

|                 |  |      |             |
|-----------------|--|------|-------------|
| What:           | Observation # 2  | How: | Unannounced |
| Who:            | John Staley, Supervising Practitioner  |      |             |
| Focus Elements: | 1.B.2: Adjustment to Practice & Others as identified during the Formative Assessment |      |             |

| Observation Details             |  |                                     |                    |
|---------------------------------|--|-------------------------------------|--------------------|
| Date:                           | 5/4/2016   | Time (start/end):                   | 12:13 – 12:55 p.m. |
| Content Topic/Lesson Objective: | SWBAT apply engineering design principles to build, test and evaluate prototypes of airplanes and redesign and communicate the results in writing. |                                     |                    |
| <input type="checkbox"/>        | Whole Group  | <input type="checkbox"/>            | Small Group        |
|                                 |  | <input checked="" type="checkbox"/> | One-on-One         |
|                                 |  | <input type="checkbox"/>            | Other              |

Active Evidence Collection occurred during the observation and is synthesized and categorized below.

| Element* | Evidence**   |
|----------|--|
| 1.A.4    |  |
| 1.B.2*   | The teacher candidate, based on the collection of formative assessment data, adjusts lesson plans to better target students' preferred learning styles and academic abilities. As a result of working with the students over many weeks, assigning and reviewing classwork and/or homework activities, and through working one-on-one with students during class, the teacher candidate came to know the students' individual strengths and areas of need. As a result, future assignments were structured and scaffolded to better enable students to access the curriculum. For example, within one set of classes, the students' are struggling with foundational mathematical skills, as evidenced by poor performance on initial formative assessment tasks, district provided standardized assessment data (e.g. MCAS) and a review of students' academic records. The teacher candidate planned activities to review core mathematical tasks, such as Pythagorean Theorem and trigonometric functions (SOHCAHTOA) to analyze force diagrams. The teacher candidate, in realizing that students would enjoy a competitive task, planned a series of lessons involving the creation, evaluation, and modification of paper airplanes. The obvious benefit in observing the class was that all students had marked increases in their level of participation. There was an increase in the amount of related classwork completed as well. When educators plan lessons with the students in mind, and reflects on the success of each lesson when planning future lessons, the degree to which students engage with the |

\* Observations must collect and document evidence for at least the focus elements. Focus elements are highlighted.

\*\* Evidence included is indicative of performance relative to each element. It may include evidence that demonstrates one or more of the dimensions (quality, consistency, scope) of an element are being met or that performance is not yet at the expected threshold.



## Candidate Assessment of Performance (CAP): Observation Forms

|       |  |
|-------|--|
|       | planned learning activities will increase. |
| 2.A.3 |  |
| 2.B.1 |  |
| 2.D.2 |  |
| 4.A.1 |  |

## Focused Feedback

|  |  |
|--|--|
| Reinforcement Area/Action: <i>(strengths)</i>          | <p>Continue to reflect on the success of each lesson, and reflect on the degree of completion and accuracy for each assignment, to better understand your students' strengths and weaknesses so that lessons are more appropriately targeting their preferred learning styles and help address their weaknesses.</p> <p>Continue to plan lessons that appropriately challenge students.</p> <p>Continue to plan units that are comprised of varied tasks and that enable all students to engage with the curriculum.</p> |
| Refinement Area/Action: <i>(areas for improvement)</i> | <p>Be mindful to collect as much student information as possible, including homework, classwork, projects, quizzes, tests, etc. This gives you opportunities to provide targeted feedback. In addition, this gives you information to more accurately assign a grade to a student: with more assignments incorporated into the student's gradebook, the more realistic the grade.</p>  |

\* Observations must collect and document evidence for at least the focus elements. Focus elements are highlighted.

\*\* Evidence included is indicative of performance relative to each element. It may include evidence that demonstrates one or more of the dimensions (quality, consistency, scope) of an element are being met or that performance is not yet at the expected threshold.

## Appendix F: Crosswalk for the Six Essential Elements of CAP and PST Guidelines

| <p><b>(1) Curriculum, Planning, and Assessment Standard:</b> Promotes the learning and growth of all students by providing high quality and coherent instruction, designing and administering authentic and meaningful student assessments, analyzing student performance and growth data, using this data to improve instruction, providing students with constructive feedback on an on-going basis, and continuously refining learning objectives.</p> |   |
|---|---|
| Indicator   | Essential Element in CAP  |
| (a) Curriculum and Planning indicator: Knows the subject matter well, has a good grasp of child development and how students learn, and designs effective and rigorous standards-based units of instruction consisting of well-structured lessons with measurable outcomes.   | 1.A.4 Well-Structured Lessons   |
| (b) Assessment indicator: Uses a variety of informal and formal methods of assessment to measure student learning, growth, and understanding, develop differentiated and enhanced learning experiences, and improve future instruction.   | 1.B.2 Adjustment to Practice  |
| SEI (a) Uses instructional planning, materials, and student engagement approaches that support students of diverse cultural and linguistic backgrounds, strengths, and challenges.  | 1.A.4 Well-Structured Lessons   |
| SEI (c) Demonstrates knowledge of the difference between social and academic language and the importance of this difference in planning, differentiating and delivering effective instruction for English language learners at various levels of English language proficiency and literacy.   | 2.B.1 Safe Learning Environment<br>2.A.3 Meeting Diverse Needs<br>2.D.2 High Expectations |
| <p><b>(2) Teaching All Students Standard:</b> Promotes the learning and growth of all students through instructional practices that establish high expectations, create a safe and effective classroom environment, and demonstrate cultural proficiency.</p>   |   |
| Indicator   | Essential Element in CAP  |
| (a) Instruction indicator: Uses instructional practices that reflect high expectations regarding content and quality of effort and work, engage all students, and are personalized to accommodate diverse learning styles, needs, interests, and levels of readiness.   | 2.A.3 Meeting Diverse Needs<br>2.D.2 High Expectations                                    |
| (b) Learning Environment indicator: Creates and maintains a safe and collaborative learning environment that values diversity and motivates students to take academic risks, challenge themselves, and claim ownership of their learning.   | 1.A.4: Well-Structured Lessons<br>2.B.1 Safe Learning Environment                         |

|   |  |
|---|--|
| c) Cultural Proficiency indicator: Actively creates and maintains an environment in which students' diverse backgrounds, identities, strengths, and challenges are respected.   | 2.A.3 Meeting Diverse Needs<br>2.B.1 Safe Learning Environment                                   |
| (d) Expectations indicator: Plans and implements lessons that set clear and high expectations and make knowledge accessible for all students.   | 2.A.3 Meeting Diverse Needs<br>2.D.2 High Expectations   |
| (f) Classroom Management Indicator: Employs a variety of classroom management strategies to monitor, modify, and motivate positive student behavior and to establish and maintain consistent routines and procedures. | 1.A.4: Well-Structured Lessons<br>2.A.3 Meeting Diverse Needs<br>2.B.1 Safe Learning Environment |
| SEI (b) Uses effective strategies and techniques for making content accessible to English language learners.  | 2.A.3 Meeting Diverse Needs  |
| SEI (d) Creates and maintains a safe collaborative learning environment that values diversity and motivates students to meet high standards of conduct, effort, and performance.                                      | 2.A.3 Meeting Diverse Needs  |

|   |  |
|---|--|
| <b>(4) Professional Culture Standard:</b> Promotes the learning and growth of all students through ethical, culturally proficient, skilled, and collaborative practice.   |  |
| <b>Indicator</b>  | <b>Essential Element in CAP</b>  |
| (a) Reflection indicator: Demonstrates the capacity to reflect on and improve the educator's own practice, using informal means as well as meetings with teams and work groups to gather information, analyze data, examine issues, set meaningful goals, and develop new approaches in order to improve teaching and learning. | 4.A.1 Reflective Practice  |
| (f) Professional Responsibilities indicator: Is ethical and reliable, and meets routine responsibilities consistently.  | 1.A.4 Well-Structured Lessons:<br>1.B.2 Adjustment to Practice<br>2.A.3 Meeting Diverse Needs<br>2.B.1 Safe Learning Environment<br>2.D.2 High Expectations<br>4.A.1 Reflective Practice |

## Appendix G: Works Cited

### Chapter 1 References

- (1) Chester, Mitchell D., Ed. D. "Building on 20 Years of Massachusetts Education Reform." *Doe.mass.edu*. Massachusetts Department of Education, Nov. 2014. Web. <<http://www.doe.mass.edu/commissioner/BuildingOnReform.pdf>>
- (2) United States. Census Bureau. *QuickFacts United States*. Census.gov, 2015. Web. <<http://quickfacts.census.gov/qfd/states/25000.html>>
- (3) "About TIMSS and PIRLS." *Timssandpirls.bc.edu*. TIMSS & PIRLS International Study Center, n.d. Web. [http://timssandpirls.bc.edu/home/pdf/TP\\_About.pdf](http://timssandpirls.bc.edu/home/pdf/TP_About.pdf)
- (4) Chang, Kenneth. "Expecting the Best Yields Results in Massachusetts." *Nytimes.com*. New York Times, 2 Sept. 2013. Web. <[http://www.nytimes.com/2013/09/03/science/expecting-the-best-yields-results-in-massachusetts.html?pagewanted=all&\\_r=3](http://www.nytimes.com/2013/09/03/science/expecting-the-best-yields-results-in-massachusetts.html?pagewanted=all&_r=3)>
- (5) United States. Department of Education. *Profiles.doe.mass.edu*. Massachusetts Department of Education, n.d. Web. <<http://profiles.doe.mass.edu/profiles/general.aspx?topNavId=1&orgcode=03480000&orgtypecode=5&>>
- (6) "Doherty Memorial High in Worcester, Massachusetts." *Http://public-schools.startclass.com/*. Start Class, n.d. Web. <<http://public-schools.startclass.com/1/43212/Doherty-Memorial-High>>
- (7) "MCAS Tests of Spring 2016 Percent of Students at Each Achievement Level for Doherty Memorial High." *Http://profiles.doe.mass.edu/*. Massachusetts Department of Education, 26 Sept. 2016. Web. <[http://profiles.doe.mass.edu/mcas/achievement\\_level.aspx?linkid=32&orgcode=03480512&orgtypecode=6&](http://profiles.doe.mass.edu/mcas/achievement_level.aspx?linkid=32&orgcode=03480512&orgtypecode=6&)>
- (8) "Doherty Memorial High School." *K12.niche.com*. Niche, n.d. Web. <<https://k12.niche.com/doherty-memorial-high-school-worcester-ma/>>

## Chapter 2 References

- (1) Peske, Heather. "Preparing Educators." *Candidate Assessment of Performance (CAP) 2015-16 Pilot- Massachusetts Department of Elementary and Secondary Education*. Massachusetts Department of Education, 10 Sept. 2015. Web. 10 Oct. 2016. <<http://www.doe.mass.edu/news/news.aspx?id=21180>>
- (2) Ibid. Next to the bold phrase "Cap Rubrics" are links to the document.
- (3) "Guidelines for the Candidate Assessment of Performance." *Massachusetts Department of Education* (n.d.): n. pag. June 2016. Web. <<http://www.doe.mass.edu/edprep/cap/guidelines.pdf>>

## Chapter 3 References

- (1) "Guidelines for the Candidate Assessment of Performance." *Massachusetts Department of Education* (n.d.): n. pag. June 2016. Web. <<http://www.doe.mass.edu/edprep/cap/guidelines.pdf>>

## Chapter 4 References

- (1) Ibid.

## Chapter 5 References

- (1) Ibid.
- (2) See Appendix D
- (3) See Appendix D

## Chapter 6 References

- (1) "Guidelines for the Candidate Assessment of Performance." *Massachusetts Department of Education* (n.d.): n. pag. June 2016. Web. <<http://www.doe.mass.edu/edprep/cap/guidelines.pdf>>
- (2) See Appendix D
- (3) See Appendix D

## Appendix H: Example of Weekly Reflection Sheet

Name: Stephen Olis

Date: 3.28.16

Highlights of my week:

We started the modern physics unit, found the speed of light using chocolate bars and a microwave, and had two snow days.

Challenge of my week and what I learned about myself, learning or teaching through it:

My apartment was robbed and I was denied a SURF research grant, so I don't know what I'm doing for work this summer. It hasn't really affected my teaching. I've played sports before, so I'm used to forgetting about life and just performing the task at hand.

One goal I have for the next week:

I'd like to try and keep the modern physics unit as hands-on as possible. It's easy for me to geek out about the abstract parts, so I need to consciously bring it down to earth.

Self-Evaluation:

I've been doing a better job with formative assessments lately. I have students fill out worksheets in class more frequently, which help get them understand their expected tasks.

Journal Question of the Week: Describe the importance of using a variety of measurements to assess and promote student learning.

Students have a variety of performance advantages and disadvantages. Because of this, it's important for teachers to control for student learning and not unrelated variables. For example, a student with a broken hand won't perform well on an in-class essay, but their performance says nothing about their ability to write essays. That kind of activity accidentally measures the students' abilities to physically grab and manipulate a pencil, which is not an ability teachers are interested in measuring. For teachers to avoid these accidents, it's important to use a variety of measuring devices to gauge student learning. In the case of a broken hand in English class, the teacher might want to consider giving a multiple-choice or oral examination which measures the ability to construct essays.