

Assessment #8

All science education teacher candidates at Rhode Island College are expected to show that they understand the context of science. This expectation aligns with NSTA standards 1b, 2a, 2b, 3a, and 4a. This expectation is met in various places, according to Table 16 below.

NSTA standards met with this assessment:

1b) Understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards.

2a) Understand the historical and cultural development of science and the evolution of knowledge in their discipline.

2b) Understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world.

3a) Understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge.

4a) Understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues.

Table 16

Alignment with NSTA standards

	Physical Science 357	Research Class 491	SED 407	Praxis II scores	observation	Philosophy of Science essay	TCWS
NSTA 1a					x		x
NSTA 2a	x			x	x		
NSTA 2b	x			x	x	x	x
NSTA 3a	x	x		x	x		x
NSTA 4a	x		x		x		

In Physical Science 357, students are asked to write an essay on a contemporary issue, and then present their findings to the class. The data from this assignment is found in Table 17: Context of Science data, and the assignment and rubric are attached at the end of this document.

In the 2007-2008 academic year, students were asked to write an essay on their Philosophy of Science. The rubric for this assignment is attached at the end of this document. When the new assessment system was put into place, this essay was phased out, and Process #7 of the Teacher Candidate Work Sample was added.

Table 17

Context of Science data

	2007-2008	2008-2009	2009-2010
Contemporary Issue Essay (357)	87%	83%	88%
Contemporary Issue Presentation (357)	81%	91%	87%
Philosophy of Science essay (25 pt. scale)	83%	n/a	n/a
Research 491 average GPA	3.06	4.0	4.0
SED 407 pass rate	100%	100%	100%
Praxis II pass rate	100%	100%	100%
observation (6 pt. scale)	n/a	4.73	4.39
TCWS (6 pt scale)	n/a	4.07	4.86

Note: in 2007-2008, teacher candidates wrote the standalone Philosophy of Science essay and used the old assessment system. In 2008-2010, teacher candidates used the TCWS.

In hindsight, this change did not work as well as hoped. The complex environment of student teaching led students to reflect on a great variety of topics. In some cases, philosophy of science was only addressed tangentially. We plan to reintroduce the Philosophy of Science essay for the 2010-2011 academic year. Aside from this one correction, our students do well on our measures of scientific context.

PHYSICAL SCIENCE 357: HISTORICAL & CONTEMPORARY CONTEXTS OF SCIENCE

CONTEMPORARY ISSUE ESSAY & PRESENTATION

RATIONALE

Throughout the semester we will brush upon some of the basic tenants of observation, experimentation and reasoning applied within the study of science. Because we all have personal interest in one aspect of science or another, this is your opportunity to conduct and present individual research relevant to your personal interest. Topics **must** investigate a current application of science or technology in answering a question asked by contemporary scientists. A major portion of the presentation must examine the history of its development, the individuals, the implications of the knowledge obtained from this technology, and its impact on society and our future.

EVALUATION

THESIS: The writer clearly states the problem or question that the paper is trying to answer and answers that question. The writer does not go beyond the scope of the assignment. The writer keeps focused on the question, and does not stray to tangential or unrelated issues.

10 8 6 4 2

GRAMMAR AND CLARITY: The author uses complete sentences, the paper reads well, unfamiliar terms are defined and explained, and the ideas are expressed in a concise and direct fashion.

5 4 3 2 1

DEPTH: The writer demonstrates thoughtful and thorough analysis of the issues at hand. Positions of the stakeholders are well supported with arguments and evidence, including the *reasons* why stakeholders adopt their positions, and critical consideration of the opposing points of view.

20 16 12 8 4

ANNOTATED BIBLIOGRAPHY: Annotated bibliography properly cites all information sources and includes a brief statement to describe the kind of information (and perspective) received from each source.

15 12 9 6 3

PHILOSOPHY OF SCIENCE ESSAY

GRADING RUBRIC

NAME _____ DATE _____

EVALUATOR _____ SCORE _____

OVERALL: _____ EXEMPLARY [25 – 20] _____ ACCEPTABLE [19 – 10] _____ UNACCEPTABLE [BELOW 10]

NOTE: ALL CATEGORIES MUST BE EVALUATED AT THE “ACCEPTABLE” LEVEL OR HIGHER.

EXEMPLARY [5 – 4]	ACCEPTABLE [3 – 2]	UNACCEPTABLE [1 – 0]
_____ Includes a thoughtful and well-developed philosophy section. Mentions assumptions about the nature of science.	_____ Includes a philosophy section. Mentions assumptions about the nature of science.	_____ Includes a philosophy section or mentions assumptions about the nature of science.
_____ Clearly identifies a variety of theories and authors to base their philosophy.	_____ Identifies a few theories of science to base their philosophy.	_____ No mention of theories of science or authors.
_____ Displays higher order thinking skills.	_____ Displays insight and some higher order thinking skills.	_____ Writing is shallow and does not analyze the content very extensively..
_____ Creates a clear correlation between their experiences and their own philosophy. Incorporates examples to clarify their ideas.	_____ Creates a correlation between their experiences and their own philosophy, but fails to incorporate examples to clarify their ideas.	_____ Creates no correlation between their experiences and their own philosophy. Fails to incorporate any examples for clarification.
_____ Writing engages the reader, follows a well-thought out plan, and has no spelling or grammatical errors.	_____ Writing is presented in a conversational tone, follows a clear path, and has few spelling or grammatical errors.	_____ Writing is choppy, lacks an organized train of thought, or has numerous spelling or grammatical errors.

