

ASSOCIATION REPORT AND RECOMMENDATIONS

Professional Organization: National Science Teachers Association

Date of Review: 4/29/02

Institution Submitting Program: Virginia Tech

State: VA

Program(s): Graduate, SF (grades 6-12) 5th year program in the licensure areas of biology, chemistry, physics, and Earth science.

RECOMMENDATIONS ON THE PROGRAM:

The graduate secondary program at Virginia Polytechnic Institute and State University is not recommended by the NSTA for national recognition. The rationale is very general and does not present enough specific information to determine whether or not there is a sound basis for content selection. The standards for content and curriculum are met. The Standards for nature of science, inquiry, context of science, skills of teaching, social context of science, assessment, environment for learning and professional practice are not met. All of the Standards lacked candidate performance data specific to science. The weaknesses in the Standards *not met* should be addressed by the five-year review. These collected data should reflect and justify compliance with all Standards and Dimensions in the next review.

NSTA recommends that the institution reports and provides specific assignments, requirements and assessments used in the program to ensure candidates' preparation, and student learning. At the programmatic level, summative data at key decision points should be collected in relationship to each of the Standards.

RATINGS ON THE STANDARDS

Standard #	Standard	Program: Graduate, Secondary		Program:		Program:		Program:	
		Met	Not Met	Met	Not Met	Met	Not Met	Met	Not Met
1	Content	X							
2	Nature of Science		X						
3	Inquiry		X						
4	Context of Science		X						
5	Skills of Teaching		X						
6	Science Curriculum	X							
7	Social Context of Science		X						
8	Assessment		X						
9	Environment for Learning		X						
10	Professional Practice		X						

COMMENTS: For institutions whose programs are being reviewed in Spring 2002, levels 1 and 2 for each standard must be met for the standard to be met. NCATE Guidelines require institutions at this time to show both that the standard is accounted for in the program and that the program has a performance assessment system in place or planned for collecting data to assess candidate performance in relation to each standard. The performance assessment system must include assurance that all candidates achieve an adequate performance level in relation to each standard. It is not enough merely to be able to show data. Some weaknesses may exist for levels one and two (or higher levels), even if the standard is met. Weaknesses must be addressed by the next review in five years regardless of the rating given to any standard or recommendation made on any program. Failure to address and remove weaknesses may result changes to previous recommendations. A program may not be recommended if it fails to meet more than two standards. If one or two standards are not met, the decision on recommendation will depend upon the reviewers' judgment on the degree to which the problem or problems affect the preparation of candidates.

RATINGS AND WEAKNESSES, BY STANDARD

Rationale

Provide an analysis of the science content required in each licensure area showing that such content is consistent with the recommendations of the National Science Education Standards and NSTA recommendations, or state standards that are aligned with the NSES or other appropriate national professional standards, and any special the needs of the community you serve.

Weaknesses:

- Rationale is consistent with the current goals and knowledge in the science education field, but does not reflect a programmatic philosophy.

Additional Comments:

The collaboration between the faculty in the Secondary Science Teacher Licensure Program and the Arts and Science is to be commended. The rationale is a good description of the process and development of the program, but the philosophical reason or rationale for why the changes have been implemented does not appear to be addressed in this rationale statement.

Standard 1 Content

The program prepares candidates to structure and interpret the concepts, ideas and relationships in science that are needed to advance student learning in the area of licensure as defined by state and national standards developed by the science education community. Content refers to concepts and principles understood through science; concepts and relationships unifying science domains; processes of investigation in a science discipline; and applications of mathematics in science research.

Overall Rating for Standard 1: Met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Demonstrate depth and breadth of subject matter knowledge aligned with state <u>and</u> national standards for their teaching discipline(s). • Demonstrate knowledge of unifying concepts and relationships of science as defined by state and national standards. • Demonstrate knowledge and skills needed to design, conduct and report investigations within their science discipline. • Demonstrate the ability to apply mathematics to data analysis and problem solving within their science discipline. 	<p>There were no specific examples of the use of the NSES themes for the content in the science courses that these students take. We are not sure how the themes are integrated into the pure science courses. This is not a weakness per se, unless it is applied to VT undergraduate science courses.</p> <p>There is no actual data for collection of this standard (Performance Data for INTASC Standards). We assume that there will be data to report for the next review.</p>	<p>Met</p> <p>The admission standards with the emphasis on the content area are consistent with science education reform efforts.</p> <p>The research component that all candidates must have is excellent.</p> <p>The evaluation for the Performance Data for INTASC Standards for the portfolios and the Student Teacher Intern Evaluation are noteworthy.</p> <p>Good use of entrance standards using GPA and PRAXIS. Good use of PRAXIS exit data. What efforts are in place to assist students who do not achieve the standards on the PRAXIS?</p> <p>It is not clear how unifying concepts, as mentioned in the NSES, are integrated within and among science content courses for each licensure area.</p>
<p>Level 2: Assessment plan or system. The program has, or has plans for adequate multiple assessments of candidate knowledge and abilities in relation to the requirements for the content standard as identified under Level 1, and shows such evidence will be used to make decisions about the program and its candidates.</p>	<p>It is not clear how the “science specific” assessments will be used to make decisions on the candidates and the program.</p> <p>The STIE needs to reflect a science specific approach.</p>	<p>Met</p>
<p>Level 3: Data collection and decision making. The program systematically collects performance data and provides summary evidence of candidate preparation in relation to each of the dimensions of the standard and uses this evidence to make decisions about its candidates.</p>	<p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p> <p style="text-align: right;">5</p>

Standard 2 Nature of Science

The program prepares teachers to engage students in activities to define the values, beliefs and assumptions inherent to the creation of scientific knowledge within the scientific community, and contrast science to other ways of knowing. Nature of science refers to characteristics distinguishing science from other ways of knowing; characteristics distinguishing basic science, applied science, and technology; processes and conventions of science as a professional activity; and standards defining acceptable evidence and scientific explanation.

Overall Rating for the Standard 2: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Demonstrate knowledge of the conventions of scientific evidence and explanation as well as the philosophical and historical nature of science. • Engage students effectively in studies of the nature of science and conventions of scientific explanation 		<p>Met</p> <p>Criteria for grades, papers, reflective essays and similar materials are needed to assess candidate understanding of the nature of science.</p> <p>There is no evidence (e.g., assignments, candidate work, or experiences) that candidates translate their knowledge to secondary students.</p> <p>The portfolio may be an effective vehicle for highlighting the candidates' ability to translate their knowledge of the nature of science to K-12 students.</p>
<p>Level 2: Assessment plan or system. The program has means or plans to systematically assess and evaluate candidate preparation and teaching of the nature of science and to use this evidence to</p>	<p>Clear descriptions of planned or actual performance assessments are not provided. EDCI 5744 does not show how candidates complete an assignment or implement NOS with their K-12 students.</p>	<p>Not Met</p>

<p>make decisions about the program and its candidates.</p>	<p>Criteria for judging candidate performances and minimum performance levels in the STIE are not science specific.</p> <p>It is not clear how the data and evidence will influence the direction of the program and candidate achievement of competencies.</p>	
<p>Level 3: Data collection and decision making. The program systematically collects performance data and presents summary evidence of the willingness and ability of candidates to engage students in effective study of the nature of science and uses this evidence to make decisions about its candidates.</p>	<p>Portfolio evaluation has a section for NOS, but other evaluation instruments do not specifically reflect the NOS.</p> <p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates</p>
<p>Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices</p>	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Standard 3 Inquiry

The program prepares candidates to engage students regularly and effectively in science inquiry and facilitate understanding of the role inquiry plays in the development of scientific knowledge. Inquiry refers to questioning and formulating solvable problems; reflecting on, and constructing, knowledge from data; collaborating and exchanging information while seeking solutions; and developing concepts and relationships from empirical experience.

Overall Rating for Standard 3: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Demonstrate knowledge of scientific inquiry as a way of developing and imparting scientific knowledge. • Engage students effectively in the study of phenomena through inquiry as appropriate for their grade and abilities. 		<p>Met</p> <p>The portfolio may be an effective vehicle for highlighting the candidates' ability to translate their knowledge of inquiry to K-12 students.</p> <p>It is admirable that all candidates must engage in an original, open ended science investigation reflecting an inquiry approach.</p>
<p>Level 2: Assessment plan or system. The program has means or plans to systematically assess and evaluate candidate performances in relation to inquiry, and to use this evidence to make decisions about the program and its candidates.</p>	<p>The ability to conduct inquiry activities with K-12 students needs to have a more prominent role in the Student Teacher Intern Evaluation.</p> <p>The number or quality of performance assessments is insufficient to validate preparation.</p>	<p>Not Met</p> <p><i>Science Research Lesson Plan</i> is a good activity for the candidates to infuse inquiry ideas into their teaching.</p> <p>Discrepant event activity also engages candidates in their preparation for teaching</p>

	<p>Criteria for judging candidate performances and minimum performance levels are not identified in relation to each dimension. (i.e., STIE or portfolio)</p> <p>It is not clear how the assessments will be used to make decisions on the candidates and the program.</p>	in an inquiry manner.
<p>Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the willingness and ability of candidates to engage students in appropriate and effective science inquiry and uses this evidence to make decisions about its candidates.</p>	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates</p>
<p>Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices</p>	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	Not Met

Standard 4 Context of Science

The program prepares candidates to relate science to the daily lives and interests of students and to a larger framework of human endeavor and understanding. The context of science refers to relationships among systems of human endeavor including science and technology; relationships among scientific, technological, personal, social and cultural values; and the relevance and importance of science to the personal lives of students

Overall Rating for Standard 4: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to: <ul style="list-style-type: none">• Demonstrate knowledge of the relationships among science and other human values and endeavors.• Engage students effectively in the study of the relationship of science to other human values and endeavors.• Relate science to the personal lives, needs and interests of their students.		Met
Level 2: Assessment plan or system. The program has means or plans to systematically assess and evaluate candidate performances in relation to study of the contexts of science and to use this evidence to make decisions about the program and its candidates.	Performance assessments are not in place or planned for some or all of the dimensions of the standard. It is not clear how the assessments will be used to make decisions on the candidates and the program.	Not Met The STIE is more than adequate for generic teaching, but does not emphasize the science specific dimensions of the NSTA/NCATE standards. The assignments in the methods class are admirable, but there appears to be no

		application in the science K-12 classes.
Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the willingness and ability of candidates to engage students in effective study of the multiple contexts of sciences and uses this evidence to make decisions about its candidates.	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates</p>
Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices.	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	Not Met

Standard 5 Skills of Teaching

The program prepares candidates to create a community of diverse student learners who can construct meaning from science experiences and possess a disposition for further inquiry and learning. Skills of Teaching refers to science teaching actions, strategies and methodologies; interactions with students that promote learning and achievement; effective organization of classroom experiences; use of advanced technology to extend and enhance learning; and the use of prior conceptions and student interests to promote new learning.

Overall Rating for Standard 5: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to demonstrate the ability to</p> <ul style="list-style-type: none"> • Use diverse and effective science teaching actions, strategies and methodologies. • Promote learning and achievement. • Organize classroom experiences effectively • Use advanced technology to extend and enhance learning. • Use prior conceptions and student interests to promote new learning. 		<p>Met</p> <p>Specific examples and evidence of how candidates use prior conceptions and students’ interests to promote new learning needs to be presented.</p>
<p>Level 2: Assessment plan or system. The program has the means or a plan to systematically assess and evaluate the ability of candidates to organize the classroom and teach effectively as defined by the standard and to use this evidence to</p>	<p>It is not clear how the assessments will be used to make decisions on the candidates and the program.</p> <p>Where is the specific focus on teaching skills during the supervision of their</p>	<p>Not Met</p> <p>We like the inclusion of a “probeware” lesson plan. The infusion of technology in the methods classes needs to be extended also to the sciences if the candidates are</p>

make decisions about the program and its candidates.	internships?	coming into the program from VT. Prior knowledge investigation activity is good, but how will the results affect their teaching and lesson planning directly?
Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the ability and willingness of candidate abilities to perform effectively in relation to the elements in this standard and uses this evidence to make decisions about its candidates.	Data are not systematically being collected. Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard. Evidence is not being used to make decisions about candidates.	Not Met It is not mentioned how the impending data will affect and alter the course of the program and candidates. Cooperative Lesson assignment is great.
Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices	Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard. Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.	Not Met

Standard 6 Curriculum

The program prepares candidates to develop and apply a coherent, focused science curriculum that is consistent with state and national standards for science education and appropriate for addressing the needs, abilities and interests of students. Science curriculum refers to an extended framework of goals, plans, materials, and resources for instruction and the instructional context, both in and out of school, within which pedagogy is embedded.

Overall Rating for Standard 6: Met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Develop coherent, meaningful goals, plans, and materials and find resources. • Relate plans and resources to professionally-developed state and national standards, including the National Science Education Standards • Plan and develop science curriculum addressing the needs, interests and abilities of all students at the appropriate level. 		<p>Met</p> <p>The use of a graduate program ensures, to some extent, a science background. The added emphasis in science methods and curriculum and instruction of the program add to this knowledge development nicely.</p> <p>Criteria for evaluating these assignments should be included.</p>
<p>Level 2: Assessment plan or system. The program has the means or a plan to systematically assess and evaluate the ability of candidates to plan and provide a curriculum consistent with state and</p>	<p>It is not clear how the assessments will be used to make decisions on the candidates and the program.</p> <p>How is knowledge of science curriculum</p>	<p>Met</p> <p>Great assignments to emphasize the curriculum. For example, the Shadow activity and unit plans are solid.</p>

national standards and to use this evidence to make decisions about the program and its candidates.	specifically addressed in the internship evaluation instruments?	
Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the ability of candidates in relation to science curriculum and uses this evidence to make decisions about its candidates.	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p>
Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Standard 7 Social Context

The program prepares candidates to relate science to the community and to use human and institutional resources in the community to advance the education of their students in science. The social context of science teaching refers to the social and community support network within which science teaching and learning occur; relationship of science teaching and learning to the needs and values of the community; and involvement of people and institutions from the community in the teaching of science.

Overall Rating for Standard 7: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to: <ul style="list-style-type: none">• Know and understand the values and needs of the community and their effect on the teaching and learning of science.• Use community human and institutional resources to advance the learning of science in the classroom and field.		Met
Level 2: Assessment plan or system. The program has a functional plan to systematically assess and evaluate the ability and willingness of candidates to relate science to the community and to include community resources in teaching and to use this evidence to make decisions about the program and its candidates.	Criteria for judging candidate performances and minimum performance levels are not identified in relation to each dimension. It is not clear how the assessments will be used to make decisions on the candidates and the program.	Not Met The criteria for the analyses should be listed. The criteria should also reflect science specific issues.

<p>Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the ability and willingness of candidates to relate science to the community and use community resources in teaching, and uses these data to make decisions about its candidates.</p>	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p>
<p>Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices</p>	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Standard 8 Assessment

The program prepares candidates to use a variety of contemporary assessment strategies to evaluate the intellectual, social, and personal development of the learner in all aspects of science. Assessment refers to the alignment of goals, instruction and outcomes; measurement and evaluation of student learning in a variety of dimensions and the use of outcome data to guide and change instruction.

Overall Rating for Standard 8: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to: <ul style="list-style-type: none">• Align science goals, instruction and outcomes.• Use a variety of contemporary science assessment strategies to determine student needs and levels of learning and development.• Use assessment appropriately to determine, guide and change science instruction	There appears to be no evidence in the portfolio evaluation or STIE to show how assessment determines, guides, and changes the candidates' instruction.	Not Met The dimensions of this standard are well covered in EDCI 5744: Teaching in the Middle and Secondary Schools II and should continue to reflect a science specific aspect.
Level 2: Assessment plan or system. The program has the means or a plan to systematically assess and evaluate the ability and willingness of candidates to use a variety of assessment tools and strategies effectively and to use this evidence to make decisions about the program and its candidates.	It is not clear how the assessments will be used to make decisions on the candidates and the program.	Not Met

<p>Level 3: Data collection and decision-making. The program systematically collects data and presents summary evidence of the ability and willingness of candidates to use a variety of assessment tools and strategies effectively, and uses these data to make decisions about its candidates.</p>	<p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p>
<p>Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices</p>	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Standard 9 Environment for Learning

The program prepares candidates to design and manage safe and supportive learning environments reflecting high expectations for the success of all students. Learning environments refers to the physical spaces within which learning of science occurs; psychological and social environment of the student engaged in learning science; treatment and ethical use of living organisms; and safety in all areas related to science instruction.

Overall Rating for Standard 9: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Create and maintain a psychologically and socially safe and supportive learning environment. • Manage the activities and materials of science safely in storage areas, labs and field. • Keep and use living organisms as in the classroom in a safe, ethical and appropriate manner 	<p>It is admirable that candidates attend a science safety seminar and are introduced to the NABT Standards for maintaining and using live specimens, but evidence or criteria showing learning by the candidates is needed.</p>	<p>Not Met</p>
<p>Level 2: Assessment plan or system. The program has the means or a plan to systematically assess and evaluate the knowledge and abilities of candidates to design and manage safe and supportive learning environments, and to use this evidence to make decisions about the program and its candidates.</p>	<p>It is not clear how the assessments will be used to make decisions on the candidates and the program.</p> <p>Descriptions of the cooperating schools and school districts was not given. How are the facilities in which the students learn and teach?</p>	<p>Not Met</p>

<p>Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the knowledge and abilities of candidates to design and manage safe and supportive learning environments, and uses these data to make decisions about its candidates.</p>	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p>
<p>Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices</p>	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Standard 10 Professional Practice

The program prepares candidates to participate in the professional community, improving practice through their personal actions, education and development. Professional practice refers to knowledge of, and participation in, the activities of the professional community; ethical behavior consistent with the best interests of students and the community; reflection on professional practices and continuous efforts to ensure the highest quality of science instruction; and willingness to work with students and new colleagues as they enter the profession.

Overall Rating for Standard 10: Not met.

NSTA/NCATE Expectations	Program Weaknesses	Reviewer Explanation and Comments
<p>Level 1: Requirements. The program has structured experiences and/or requirements to ensure candidates are prepared and required to:</p> <ul style="list-style-type: none"> • Know and participate in professional organizations and activities of the science education community beyond the classroom. • Behave ethically and in best interests of preK-12 students and the community. • Engage in reflective practices and make continuous efforts to improve in practice. • Work willingly with peers, supervisors and others in a professional manner. 	<p>There is no evidence to show that reflection has impacted the candidates' instructional practice.</p>	<p>Not Met</p> <p>It is admirable that students demonstrate an activity at VAST.</p>
<p>Level 2: Assessment plan or system. The program has the means or a plan to systematically assess and evaluate the engagement of candidates in reflection and</p>	<p>It is not clear how the assessments will be used to make decisions on the candidates and the program.</p>	<p>Not Met</p>

professional practices and use this evidence to make decisions about the program and its candidates.		
Level 3: Data collection and decision making. The program systematically collects data and presents summary evidence of the degree to which candidates engage in behaviors identified by this standard and use these data to make decisions about its candidates.	<p>Data are not systematically being collected.</p> <p>Summary evidence is not provided demonstrating an adequate level of preparation in relation to each dimension of the standard.</p> <p>Evidence is not being used to make decisions about candidates.</p>	<p>Not Met</p> <p>It is not mentioned how the impending data will affect and alter the course of the program and candidates.</p>
Level 4: Assurance of preparation and program self-assessment. Summary evidence affirms that candidates from this program are prepared in relation to the standard and the program is engaged in data-based self-assessment intended to improve its practices	<p>Summary evidence is incomplete or inadequate to affirm that all candidates are prepared in relation to the standard.</p> <p>Summary evidence is incomplete or inadequate to affirm that the program is engaged in data-based self-assessment.</p>	<p>Not Met</p>

Summary and Self-Analysis

Discuss how you have used the data collected from candidate assessment and other sources to change and improve your program since the last review, and briefly identify your goals for improvement over the next five years.

Weaknesses:

- No evidence yet of changes made based on analysis of data and other sources.
- No evidence yet of well-defined goals based on a careful analysis of need.

Additional Comments:

The Self-Analysis does not reflect a science specific approach. If changes to the program are made based upon data gathered from current instruments, the science specific aspect of the dimensions in the NSTA/NCATE standards will not be present.

It appears that the program should achieve levels 1-3 for all standards with minor modifications. The modifications should reflect attention to 1) how candidates translate their knowledge to K-12 students, 2) how the data and evidence affect candidate and program advancement, and 3) how the portfolio and STIE address science specific competencies. The program has some excellent sources of performance evidence, but it is not apparent how this evidence will be used to further the program goals and improve candidate performance.

The Performance Assessment Plan appears to be well developed and implemented, but data are lacking at this early stage. The Student Teaching Intern Evaluation will become an excellent tool for meeting the standards once it is modified to be more science specific.

The *Baseline Performance Data*, *Student Teacher Intern Evaluation*, and *Portfolio Evaluation* instruments or other items are good starts, but they are not specific enough to match the science focus and specificity of the NCATE/NSTA competencies. For example, the nature of science aspect was only done as an in-class assignment in the methods class. Where else is it found in the internship and science classes?

There are many admirable qualities of this program, but the next phase of compliance will have to address the science specific nature of the NSTA/NCATE standards. The communication between the SOE and the COAS for undergraduate students at VT is admirable.

REJOINDERS: A rejoinder may be filed with NCATE if you feel additional information may result in a change in one or more ratings or removal of weaknesses. Please include a clarification directly addressing the review *and all supporting evidence* needed for the reassessment. *Do not refer to previous folios.* Please do not send a rejoinder unless explanations support a case for changing the rating(s). **Three copies of a rejoinder are needed.**

RATING SYSTEMS:

For Program(s)

Recommended for Recognition: The program provides acceptable levels of candidate preparation in relation to all standards and is moving toward implementation of a performance-based assessment system. No more than two standards may be rated “not met” for a positive recommendation. Assessments are in place or planned to systematically monitor candidate and program performance in relation to all standards. Weaknesses may exist that need to be addressed by the next review.

Not Recommended for Recognition. The program does not provide acceptable preparation in relation to all standards and/or does not appear to be moving toward implementation of a performance-based assessment system, or has not achieved a level of assessment that meets current NCATE guidelines. There is no evidence that assessments are in place or planned to systematically monitor candidate and program performance for all standards.