

Academic Program / Discipline Area (for General Education) or Co-Curricular Program Area- GENERAL EDUCATION- SCIENCE				
Planning Team Leader(s) ¹	Campus	E-mail Address	Phone Extension	Mail Code
Note from Planning Team Fall 2011: Please note, with respect to the designation of Planning Team Leaders: The Planning Team came to a consensus that Planning Team Leaders should include representation from each of the three major campuses (East, Osceola, and West). Those selected, or volunteering, for the role of Planning Team Leader are to be a non-tenure track full time faculty members (tenured or four-month). It was the determination of the Planning Team that tenure-track faculty should be encouraged to concentrate on the completion of their ILP.				
Leesa Sward	Winter Park	lsward@valenciacollege.edu	6925	5-3
Elizabeth Ingram	East	eingram@valenciacollege.edu	2771	3-23
Planning Team Members ²	Campus	E-mail Address	Phone Extension	Mail Code
The Planning Team came to the consensus that all tenured, tenure-track, and full-time four-month faculty are considered members of the planning team. As the work being conducted for these Assessment Plans impacts all tenured and tenure-track faculty, they all should play an active role in the work being conducted.				
Victor Bonzie	East	vbondzie@valenciacollege.edu	2639	3-23

¹ Planning Team Leaders assume the responsibility for coordinating activities associated with the expectations for the design, approval and implementation of Assessment Plans.

² Planning Team membership, whenever possible, should reflect the *Principles for selection of members for assessment plan work teams*. For faculty teams the principles include: College-wide representation where possible; Full-time faculty from the respective program / discipline (tenured, tenure track, and non-tenure earning 4 / 8 / 10 month faculty); Adjunct faculty when an adequate number of full-time faculty do not teach in the program / discipline; Faculty from both disciplines or programs when an outcome is assessed in two programs or a program other than the primary discipline. For plans developed in Student Affairs planning teams should include the following: College-wide representation where possible; Staff from the targeted program area; Part-time Student Affairs professionals when an adequate number of full-time staff do not work in the targeted program area; Faculty / staff from other program / discipline areas working on the same or similar outcomes; Students representation when possible.

Patricia Smith	East	patsmith@valenciacollege.edu	2752	3-23
Mary Beck	West	mbeck2@valenciacollege.edu	1882	4-3
Angela Cortes	East	Acortes15@valenciacollege.edu	2479	3-23
Kelly Moore	West	kmmoore@valenciacollege.edu	1197	4-3
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Euncie Laurent	Osceola	elaurent1@valenciacollege.edu	4838	6-3

End of the Academic Year 2012-2013 – End of This Cycle

Results & Improvement Plan for Next Year

The template has 9 pages. Please return this completed form with the dean signatures or their E-mail approval(s) copied & pasted in at the end. by **May 10, 2013** to Jessica King in the Valencia Institutional Assessment (VIA) Office (jking84@valenciacollege.edu.) Please see the VIA website for this form, your plans, and related materials: www.valenciacollege.edu/via --> left tab LOA)

If you are working on several programs please submit a template for each one; each labeled for the specific program.

Six Items Documenting Results

Please fill in the blue shaded areas with brief sentences. A second page is provided for longer comments.

Documenting the Assessment Process

1. In a sentence or two, what did you do and who was responsible for coordinating the collection of student artifacts / data?

Results from answers to multiple choice questions pertaining to scientific reasoning in a current science news article were collected from students. The Planning Team Leaders in conjunction with the aid of the Institutional Assessment Department coordinated the collection of student data.

2. At what point in the academic year / semester were the student artifacts / data collected? How many students were assessed?

The data was collected during the Spring 2013 term after the withdrawal date. All students who were enrolled in Valencia Science classes were given the opportunity to take the assessment. Two thousand one hundred and ninety two students actually took the assessment.

Improvement Plan and Use of the Assessment Results – Next Year’s Cycle

3. What were your results? (Please e-mail the data and copies of instruments when you submit this form if possible, for example rubric scores in an Excel sheet.) How did this compare with any predictions that you made in the Fall?

Results are attached. However, our faculty have made suggestions for further discrimination analysis, and we will get that done as soon as possible and disseminate the results. The development of our assessment tool by the Task Force went through several changes from the fall term to improve the assessment tool. The first revision was done following a piloted study by faculty that compared several sections of a majors science lab class with sections of a nonmajors class without a lab. The second revision occurred following the workshop – “Assess Higher Order Thinking: Multiple Choice Question Development” sponsored by Institutional Assessment. The science general education faculty were extremely supportive of the tool that was used. (More comments follow on page 4.)

4. What are the changes / improvements you plan to make within the curriculum (targeted courses), co-curricular program, or student activity over the next year? (Please use the following page if you need more space for your response.)

We are using the same college-wide assessment next year. We will be requiring each science faculty member to submit documentation of a formative and/or summative assessment that they are using to measure student learning of scientific method/reasoning for each of their science courses. These classroom/lab assessments will be made available to all science faculty through the Science Gen. Ed. Blackboard website.

5. What changes, if any, will be made to the common course outlines, the catalog, etc.

Our goal is to review and update, where necessary, all science common course outlines for the inclusion of a learning outcome reflecting Scientific Reasoning/Method.

Next Steps – Planning for Next Year’s Cycle— Academic Year 2013-2014 (see below for detailed planning)

6. What are your next steps – acting on the results? (These steps will guide others in the next cycle... moving the process forward.) If these steps include the development and implementation of a new assessment, include that information here. If you plan to change the current assessment or the program learning outcome that you focus on, you will want to do that here.

No changes will be made to the college-wide assessment. We will run it one more cycle and then revisit the data. We will attempt to include the use of this assessment in the Humanities discipline to compare students who have taken a college level science course with students who have not taken a college level science course.

Please include the name of the person completing this page and your program: [Leesa Sward and Elizabeth Ingram](#)

See next page...

Additional Space for Comments Reporting on Prior Year (if needed)

3) *If you have additional comments for the following question, please share them here:* What were your results?

As cited above, we are pursuing further data analysis. Some of the important results are listed below.

1. By implementing a Communication Plan, we increased our student participation by 92%. (1,144 students participated in 2012; 2,192 in 2013)
2. We discovered that our assessment tool was suitable for all subject areas within science, e.g. biology, chemistry, physics, etc.
3. We did not see a big difference between the performances of students in lab science courses verses non-lab science classes.
4. We did see a difference in correct student responses if they had taken a prior science class.

(Note: The comments made in 2, 3, and 4 are not based on a statistical analysis.)

4) *If you have additional comments for the following question, please share them here:* What are the changes / improvements you plan to make within the curriculum (targeted courses), co-curricular program, or student over the next year? N/A

6) *If you have additional comments for the following question, please share them here:* What are your next steps – acting on the results? If these steps include the development and implementation of a new assessment, include that information here. If you plan to change the current assessment or the program learning outcome that you focus on, you will want to do that here. N/A

See next page....

Planning for AY 2013-2014 Learning Outcomes and Performance Indicators

Complete only the sections that apply to your work.

Academic Program / Discipline Area (for General Education) or Co-Curricular Program Area: Science	
Targeted Program Learning Outcome(s) (How many will you be assessing this coming year?): Scientific Reasoning using the Scientific Method	Targeted Course(s), Co-Curricular Program or Student Activity associated with the Academic Program: All Science General Education Courses
	Targeted Outcome(s) within the Course(s), Co-Curricular Program or Student Activity identified above: Students will apply scientific reasoning when evaluating science news stories.
Performance Indicators for the Program Learning Outcome(s) selected: Students will apply scientific reasoning when evaluating a science news story to answer questions specifically targeting the tenets of the scientific method: observation; hypothesis; interpretation of data; conclusion.	Performance Indicators for Outcome(s) within the Course(s), Co-Curricular Program or Student Activity selected: Students will apply scientific reasoning when evaluating science news stories, case studies, or scenario questions used in class throughout the semester as formative and/or summative assessments.
External Standard(s) in the field or discipline (please contact Laura Blasi lblasi@valenciacollege.edu with any questions about this): None	
Common Assessment (What assessment method (written assignment, speech, test, etc.) will you use to assess student ability related to the program / course outcome(s) selected): Student results of a multiple choice test applicable to a science news article will be evaluated. Results will be compared to student data collected during the spring of 2013.	
Description of the Proposed Common Assessment (Common assessments should be designed to ensure a balance between (1) the need for a consistency within the program in order to ensure comparable student artifacts and (2) the need for reasonable flexibility in order to encourage faculty judgment in the design and delivery of learning activities): <ul style="list-style-type: none"> • The assessment contains a current news article and 4 multiple choice questions aimed at different levels of Bloom's Taxonomy of cognitive skills. • Questions focus on these four aspects of scientific reasoning: Observation; Hypothesis; Interpretation of Data; Conclusion. • When students have completed the electronic assessment and faculty have received the results, these results will be used by instructors to 	

determine if the students have met the outcome and also the level they achieved within the Bloom's Taxonomy hierarchy.

- Individual faculty will receive results and be able to make modifications to future instruction plans.

Proposed Assessment Instrument (In some cases the assessment method may not need an associated assessment instrument – e.g., multiple choice tests):

Multiple choice test applicable to a science news article

Implementation Process

Collection of Student Artifacts

What information needs to be communicated to students concerning the assessment process (informed consent, etc.)?

An invitation to students to participate in an Assessment of Instruction for Science Education will be sent electronically during Fall 2013 and Spring 2014 terms. The invitation will contain a link that will direct students to the assessment. Electronic reminders will be sent to the students during the period of time that the assessment is accessible. In addition, many science faculty have expressed their support in their desire to encourage their students to participate in the assessment.

How will student artifacts or data associated with student performance be collected?

Multiple choice test by electronic delivery

If student artifacts are to be collected based on a random sample of students registered for the course or participating in the program / activity, what characteristics should the sample include? N/A

How will information about faculty / staff participation in the assessment project be communicated?

All information will be sent to the science faculty electronically. Additional communication is expected to occur through college-wide discipline and departmental meetings as well as through Outlook email.

Who will be responsible for coordinating the collection of student artifacts?

Elizabeth Ingram and Leesa Sward, Planning Team Co-Leaders; College-wide Science Faculty

We will coordinate with Laura Blasi and Jessica King of the Office of Institutional Assessment to help us with data collection.

At what point in the academic year / semester will the student artifacts be collected?

Fall 2013 and Spring 2014

Program Level Assessment / Evaluation of Student Artifacts and Analysis of Results

When will student artifacts be assessed / evaluated?

Assessment Day 2014

Which faculty or staff from the program/discipline will evaluate student artifacts?

Science General Education committee and College-wide General Education Science Faculty

What training / preparation / information will faculty or staff need in order adequately assess / evaluate the student artifacts collected?

The faculty will need help with the data collection process, as well as, with the data analysis using the software and expertise provided by the Office of Institutional Assessment.

When will the results / data associated with the assessment plan be analyzed?

End of Fall 2013 and Spring 2014 terms

What are your predictions regarding student performance? (What do you expect to see when you analyze your results?)

The expectation is that the majority of students will provide evidence of scientific reasoning skills during the course of their science general education at Valencia College and be able to apply these skills when evaluating a scientific news article.

What training / preparation / information will faculty or staff need in order to analyze the results data associated with this assessment plan?

Statistical evaluation in concert with the Valencia Office of Institutional Assessment

What additional sources of data might allow faculty / staff to better understand and act on the results of this assessment plan?

- **Webpage information to include:**
 - repository of news story/questions sets;
 - web-based tutorial on creating and using question sets;
 - classroom and online student activities using news story/questions sets available for faculty use throughout term
- **Discussion board/social network for:**
 - presenting questions for review;
 - discussion of strategies for use of question sets for formative assessment;
 - problems encountered in using question sets
- **Support for adjuncts and anyone needing help in implementing any part of this strategy**
- **Point person(s) for face-to-face support and advising**

In order to ensure curricular and programmatic alignment, who else should be included in this conversation (e.g., faculty from related discipline areas in General Education)?

- **General Science Faculty**
- **Science Department Deans**
- **Faculty from other Disciplines**
- **Office of Institutional Assessment**

How will the assessment results be disseminated to stakeholders (Faculty, Staff, Advisory Boards, etc.)?

All information will be sent to the science faculty electronically. Additional communication is expected to occur through college-wide discipline and departmental meetings as well as through Outlook email. Results will be posted on the Science Gen. Ed. Blackboard site.

Approval Process

Activities Associated with the Approval of Assessment Plans	Completion Date	Person Responsible	Results
Draft assessment plan is circulated for input to reviewers appropriate to the program / discipline (including Deans / Directors responsible for supporting and promoting the work necessary for the implementation of the Assessment Plan)	May 10, 2013	Elizabeth Ingram and Leesa Sward	

College-wide live or e-mail / Blackboard discussion will be coordinated to consider input received (if needed)	May 10, 2013	Elizabeth Ingram and Leesa Sward	
Draft assessment plan is revised to reflect input	May 10, 2013	Elizabeth Ingram and Leesa Sward	
Faculty vote on the Assessment Plan using the Current voter eligibility list for curriculum (http://valenciacollege.edu/faculty/forms/voterlists/)	Not Applicable		

Dean / Director Support

The Dean(s) responsible for supporting and promoting the work necessary for the implementation of the Assessment Plan need to indicate their support for the plan. Please copy and paste in E-mail approval (as applies) at the end of the document and then send the form complete to us or obtain, scan, and send handwritten signatures and then send.

Lynn Dorn, Interim Dean of East Campus	Signature E-mail approval (attached)
Mike Bosley, Dean of Lake Nona Campus	Signature E-mail approval (attached)
Melissa Pedone, Dean of Oseola Campus	Signature E-mail approval (attached)
Bob Gessner, Dean of West Campus	Signature E-mail approval (attached)
Michele McArdle, Dean of Winter Park Campus	Signature E-mail approval (attached)

Sign In Sheet for Assessment Day - May 3, 2013

Name	Dept.	Date	Event
Lynn Dorn	East	05/03/2013	Assessment Day
Elizabeth Ingram	East		
Melissa Schreiber	East		
Keith Malmos	East		
Angelica Vagle	East		
Steve Myers	East		
Patricia Smith	East		
Regina Falconer	East		
Thomas Zurosky	East		
Victor Bondzie	East		
Michael Taylor	East		
Angela Cortes	East		
Kris Dougherty	Lake Nona		
Mike Bosley	Lake Nona		
Timothy Grogan	Osceola		
Eunice Laurent	Osceola		
Brian Sage	Osceola		
Melody Boeringer	Osceola		
Flora Chisholm	Osceola		
Sue Skambis	Osceola		

Sign In Sheet for Assessment Day - May 3, 2013

Name	Dept.	Date	Event
Brenda Schumpert	West		
Robert Gessner	West		
Jackie Lindbeck	West		
Lois Crichlow	West		
Mary Beck	West		
Leesa Sward	Winter Park		
Michele McArdle	Winter Park		
Jessica King	Institutional Assessment		
Laura Blasi	Institutional Assessment		

Scientific Reasoning LO for SACs

Extent to Which This Outcome Is Being Assessed At the Programmatic-level Using Direct Measures

This has been assessed at the programmatic-level in the General Education Science courses (2010-2013) and will be assessed again in these courses.

Extent to Which Students Are Mastering This Outcome As Documented In the 2012-2013 Academic Year

One thousand nine hundred twenty-five science students were assessed for their ability to use scientific reasoning as measured by reading a scientific article and answering multiple choice questions pertaining to observation; hypothesis; analysis of data; drawing conclusions. Sixty-three percent of the science students were able to identify which variables were being observed by the scientists. However, only 44% of science students were able to identify the hypothesis used in the article. Sixty-five percent of the students were able to analyze the association of variables in the study. Just over half (51%) of the students were able to draw a conclusion about the research article. Faculty found that students that had taken a college-level science class prior to the one in which they were enrolled scored 2-7% higher than those who had not.

Actions Taken To Improve Student Learning As A Result Of the Assessment

Full time science faculty will be submitting documentation of a formative and/or summative assessment that they are using to measure student learning of scientific method/reasoning for each of their science courses to their department dean. These classroom/lab assessments will then be made available to all science faculty through the Science General Education website.