NOVA | Northern Virginia Community College

Collecting, Analyzing, and Using SLO Results to Improve Student Learning

Office of Academic Assessment
Northern Virginia Community College
Spring 2018

Steps to Assess Student Learning Outcomes

1. Identify student learning outcomes for your program
2. Determine practices used to achieve outcomes through curriculum mapping
3. Determine methods of assessment
4. Gather evidence
5. “Close the loop” (use results to continuously improve student learning)

Assessment at NOVA

- Identify Student Learning Outcomes
- Map Curriculum to SLOs
- Select Methods of Assessment
- Gather Evidence
- Use Results

Assessment at NOVA

1. Identify Student Learning Outcomes
2. Map Curriculum to SLOs
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5. Use Results

Assessment is…

- an **ongoing process** aimed at understanding and improving student learning. (AAHE Bulletin, Thomas A. Angelo, 1995)

- **an integral component of teaching and learning.**

Step 1:
Defining SLOs

What are student learning outcomes?

Student Learning Outcomes

- Student learning outcomes are the **knowledge, skills, attitudes and values** (KSAs) that students gain from a learning experience.

Think about: What should students know, be able to do, and value by the end of degree or certificate program at NOVA?

Programs at NOVA

- Have 6 to10 SLOs
- Review SLOs and their results at Cluster Meetings
- Update and revise SLOs to meet current needs and standards in field/ program
- Send SLO revisions to OIR for approval

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APER Checklist- SLOs/Program Goals

Student Learning Outcomes/ Program Goals
What did we assess?
❑ Were at least 4 SLOs assessed for the academic year? ❑ Which program goals were assessed? Do the program goals include one devoted to program-placed students and one devoted to graduates? ❑ Were only those SLOs and program goals for which you have gathered data this cycle (2016-17) included?

Step 2:
Mapping SLOs to the Curriculum

Mapping SLOs to the Program

	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6
SLO 1	I		P	M Essay		
SLO 2		I		P	P	M Test questions
SLO 3				I	P	M Quiz
SLO 4	I			P	M Problem Set	
SLO 5	I	P	M Project			

I- Introduced P- Practiced M-Mastered

Step 3:
Determining Methods of Assessment

Begin with the End in Mind:

What does the program want to know about SLO/program goal?

What decisions might your assessment results inform?

What kinds of changes can your program actually make?

Make Assessments Useful!

Typical SLO Assessment Questions at Program-Level

- **Are students learning the aspects of the SLO we want them to gain from this program?**
- Is the course level appropriately targeted for the abilities of the students when they begin?
- Are students learning what they need to succeed in future courses in the sequence or endeavors?
- Are we getting better at helping our student learn? Do recent innovations help students learn more effectively?

Direct Methods of Assessment

- Locally developed tests/test questions
  - Limited-choice (T/F, MC, matching, etc.)
  - Open-ended (+ rubric)
- Student work evaluated with rubrics:
  - Essays
  - Research papers
  - Homework assignments
  - Capstone/culminating projects
  - Lab work
  - Exhibits
  - Presentations
  - Performances
  - Portfolios of student work
- Standardized tests

Indirect Methods of Assessment

- Surveys
  - Student
  - Alumni
  - Employer
- Exit interviews
- Focus groups
- Job placement rates
- Course evaluations

Course-Embedded Assessments

- Main source of evidence for program-level assessments of student learning
  - No extra time for student or faculty
  - Student motivation is great
  - Provides both formative and summative data
  - Faculty-driven and therefore more likely to be used for improvements
  - Assesses what is actually taught
    - Linked to curriculum
    - Can identify specific curricular needs/areas for improvement
    - Feedback to faculty and students is quick

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APER Checklist- Assessments Methods

Assessment Methods

How did we assess?

❑ Where do the data come from? If an embedded assignment was used, provide the course name, number, and brief assignment description. If not an embedded assignment, also include the source and a brief description (such as, specific OIR documents, Fact Book, websites, national tests, etc.).

❑ Was at least one direct measure used for each SLO?

❑ Is each direct method **attached/described**?

- Assignment instructions
- Quiz/test
- Grading system (e.g., rubric, checklist)
- SLO-specific items/criteria highlighted
- If method is from an outside body, provide link to that organization.

❑ Are there any additional methods (e.g., student surveys, interviews, etc.) provided?

❑ If method is different from previous assessment(s), what was the earlier method?

Step 4:
Gathering, Summarizing, and Analyzing Evidence

Setting Achievement Targets/ Standards

Setting Targets

- Targets help **determine if students are attaining the specified SLO(s) at an acceptable level.**

- Faculty should think about and collectively decide the level which students ought to perform (ideal state) rather than where faculty know that students can achieve and is “safe” to assess

- To determine targets
  - Do some research
  - Involve others in the process
  - Use samples of student work

Possible Questions for Setting Targets/Standards

- Which examples represent exemplary work? Why? Would it be realistic to establish these as targets we aim for in all students?
- Which examples are unacceptably inadequate? Which would embarrass you if they were from students finishing your course/ graduates of program? Why?
- What kinds of student performance represent minimally acceptable work for a student finishing your course/graduating from the program?
- How do the exemplary, acceptable, and inadequate examples differ?

Setting Targets

Two common ways to set targets for SLOs:

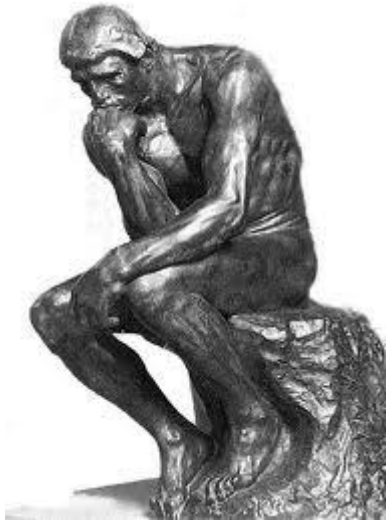
1. Minimum average score (or subscore)
   EX. Average total score of 80% or higher

2. Percent of students meeting minimum acceptable standard
   EX. 80% of students will score 85% or above

- Linda Suskie argues the % of students meeting minimum acceptable standard is more understandable and useful.

Setting Targets to Improve Learning

With overall grade/score, how can the program determine possible areas for improvement?



Important to Set Subscores Targets as Well

- Both tests and rubrics should have **subscores** in addition to **overall scores**.
  - Tests – individual items, groups of items
  - Rubric – evaluation criteria

Possible ways to set targets:

- The minimum standard met for each subscore
- Minimum standard for the sum or average of all subscores
- Minimum standard for certain traits met for entire work to be considered adequate

Setting Targets/Standards for Tests

- Use a minimum target for each test item or group of test items

- Based on difficulty and importance

- The expectation should be that no more than 50% of students answer the item or group of items incorrectly.

Setting Multiple Targets

- Consider multiple targets
  - 90% of students earn the minimally acceptable score/rating
  - And at least 30% earn the exemplary score/rating

- Example categories for levels of performance:
  - **Exemplary**, **Acceptable**, **Developing**, **Unacceptable**

- Be open to adjusting standards and targets

Example – Quiz/Test

SLO to Assess:

- Identify parts of the human body

Method of Assessment:

- Biology 141: Human Anatomy and Physiology I
- Fill-in-the-blank quiz with drawing of human body
  - 100 items
    - 45 – Torso
    - 35 – Arms, Neck, and Head
    - 20 – Legs

If Using Mean: Quiz/Test Example

- Determine target(s) for mean
  - Target: 80% average total score

    Or
  - Target: The average for correct answers should be at least 70% for each group of items

    Or
  - Target: The average for correct answers for a given group of items should be higher than the average % total score

REMEMBER

If one method was used to assess more than one SLO (or anything in addition to the one SLO), then the overall score cannot be used as an accurate representation of achievement of an SLO.

Assessment items/criteria must be specific to each SLO; there should be no overlap.

Gathering Evidence

Important Steps for Gathering Evidence: Program-Level

1. **Develop an action plan for collecting data**
   - Which semester(s) will SLO be assessed?
   - How many sections and from which campuses/from total offered?
   - Which sections/faculty will collect data? Assign responsibility.
   - How many students? Using sample or including all students? **If using a sample, contact OIR before assessment.**

Gather Evidence: Program-Level

2. Determine means to collect student work
   - Format: Test, quiz, short answer, project, etc
   - Assessment method is part of grading in course
   - Assessment method is not part of grading

3. Develop a timeline for collecting and sharing information
- When during the semester will the assessment take place?
- How will assessment process be communicated to faculty? Provide information in a timely manner to all those involved in assessment process

Gather Evidence: Program-Level

4. Who will gather, summarize, and analyze data?
    - SLO Lead, Course Faculty, Assigned Group, other

5. How will data be submitted once collected.
    - Excel spread sheet, word table, other?

6. Where will data be stored? Compile data into one document

Summarizing Results

Organize by SLO

- Ways to summarize results
  - Tallies (frequencies)
  - Percentages
  - Aggregates (overall and for subscore)
  - Averages (mean; median)
  - Qualitative (descriptive)

Review and Analyze Data

- Check that components of the method align with SLO
  - This would have been done when developing the method, but should be confirmed after data collection as well.

  - Organize data for each SLO being assessed
    - Test items/groups of test items (test blueprint)
    - Rubric subscores

Testing Blueprint Example

SLOs	Items	Total Number of Items	% of Test Out of 23 Items
SLO 1 – criteria a	1,2,6,8,9	5	22%
SLO 1 – criteria b	3, 7, 10,13,17	5	22%
SLO 2 – criteria a	4, 12, 18, 19	4	17%
SLO 2 – criteria b	5, 14,20	3	13%
SLO 2 – criteria c	11, 21-25	6	26%

Adapted from Jacobs, L. C., and Chase, C. I. *Developing and Using Tests Effectively: A Guide for Faculty.* San Francisco: Jossey-Bass, 1992.

Testing Blueprint Example

SLOs to be assessed	% of period being tested devoted to SLO.	**Level of Understanding (from Bloom's Taxonomy)**			# of quest-ions	% of test devoted to SLO
		Questions measuring recall/ comprehension	Questions measuring application/ analysis	Questions measuring synthesis/ evaluation		
Number of Questions						
% of test devoted to each level of understanding						

Adapted from Jacobs, L. C., and Chase, C. I. *Developing and Using Tests Effectively: A Guide for Faculty.* San Francisco: Jossey-Bass, 1992.

Rubric Example

- SLOs to Assess:
  - Students will create unified, coherent, well-developed texts that demonstrate a self-critical awareness of rhetorical elements such as purpose, audience, and organization.
  - Students will appropriately employ grammatical and mechanical conventions

  - Method of Assessment:
  - English course
    - Essay and rubric

Rubric Example

- Align criteria of rubric with specific SLOs / SLO components
- Holistic rubric vs. Analytic rubric

Analyze Evidence for Current Assessment

Example:

Criteria	Spring 2017
1	88%
2	82%
3	69%
Total	80%

Current Rubric Results: - Target = minimum overall score and subscores of 80%
Target was met for Average Total Score (80%).

- Target was exceeded for 1 (88%).
- Target was met for 2 (82%).
- Target was not met for 3 (69%).

Compare Current Results to Previous Assessments

Example:

Criteria	Spring 2017	Spring 2015	% increase
1	88%	72%	+16
2	82%	60.5%	+21.5
3	69%	55%	+ 14
Total	80%	62.5%	+17.5

Comparison to Previous Results

- All scores increase
  - from 14 to 22 percentage points.

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APER Checklist: Assessment Results

When did we assess? *Who was involved?* *What did we find out?*

2016-17 Assessment Results

- ❑ In what semester(s) were the data collected?
- ❑ Who was involved in the assessment activity?
  - ❑ How many sections and from which campuses/from total offered (Contact OIR if using a sample)
  - ❑ Assessed on each campus offered, including ELI?
  - ❑ How many students
  - ❑ Total sample

❑ What were the actual results? What strengths and weaknesses were uncovered during this assessment?

- Average criterion scores and overall rubric scores
- Average scores for SLO-specific test items/sections/etc.
- Frequencies
- Percentages at competency levels

❑ What was the achievement target? This refers to minimum score required for results to be satisfactory (e.g. achievement target is at least 80% of students will receive rubric score of 3 or higher)

APER Checklist: Assessment Results continued

Comparison to previous assessment(s)

- What were the results from the previous assessment(s)?
- How do the current (2016-17) re-assessment results compare to previous assessment results?
- Did student learning improve?

- If using OIR data for program goals, are data for previous five years included?

Step 5: Using Results

a.k.a.

“Closing the Loop”

Closing the Loop

A. In what ways did students accomplish the SLO(s)?

B. What changes did we make since the previous assessment, and what impact did they have?

C. What further actions are appropriate?

Part A:

In what ways did students accomplish the SLO(s)?

Analyzing Evidence: Compare actual results to target(s)

Was target exceeded?
Was target met?
Was target partially met?
Was target not met?

Did past actions contribute to these results?
If so, how?

Example A: Quiz/Test

- Gather evidence of student learning
  - Collect quizzes from all students
- Record scores in spreadsheet
  - Overall score per students
  - Score for each group of items
  - Number of correct answers for each body part
- Analyze scores
  - Overall mean for all students (Excel function)
  - % correct for each body part/group of items (Excel function)

Example: Quiz/Test Using Means

	Legs	Torso	Arms, Neck, Head	Total Score
Average Score	95%	65%	85%	82%

- Target: minimum average total score of 80%
- Target: The average for correct answers should be at least 70% for each group of items
- Target: The average for correct answers for a given group of items should be higher than the average % total score

Example: Quiz/Test Using Means

	Legs	Torso	Arms, Neck, Head	Total Score
Average Score	95%	65%	85%	82%

- Target: minimum average total score of 80%

Exceeded, Just Met, Met, Did not Meet

Example: Quiz/Test Using Means

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Average Score	95%	65%	85%	82%

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Exceeded, Just Met, Met, Did not Meet

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	Legs	Torso	Arms, Neck, Head	Total Score
Average Score	95%	65%	85%	82%

- Target: The average for correct answers for a given group of items should be higher than the average % total score

Exceeded, Just Met, Did not Meet

Example: Test/Quiz Using Performance Levels

	Exemplary 85-100%	Acceptable 70-85%	Not Acceptable below 70%
	% of students at level	% of students at level	% of students at level
Legs	35	55	10
Torso	10	50	40
Arms, Neck, Head	15	60	25
Total Score	20	60	20

For total score and each subscore

- Target: At least 75% of students will perform at the Acceptable or Exemplary level.
- Target: At least 25% will perform at the Exemplary level

Closing the Loop: Part B

How could student learning be improved?

Analyzing Evidence:

Compare actual results to target(s)

- **If overall target was met, program should examine subscores for areas to improve**

- If subscore targets were also met, program should still consider ways to improve or raise their expectations (i.e., standards, target)

- If target was not met, program must determine possible changes to improve student learning (examples of changes in later slide)

Example: Test/Quiz Using Performance Levels

	Exemplary 85-100%	Acceptable 70-85%	Not Acceptable below 70%
	% of students at level	% of students at level	% of students at level
Legs	35	55	10
Torso	10	50	40
Arms, Neck, Head	15	60	25
Total Score	20	60	20

For total score

Target: At least 75% of students will perform at the Acceptable or Exemplary level.

Exceeded, Met, Did not Meet

Example: Test/Quiz Using Performance Levels

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Legs	35	55	10
Torso	10	50	40
Arms, Neck, Head	15	60	25
Total Score	20	60	20

For total score

- Target: At least 25% will perform at the Exemplary level

Exceeded, Met, Did not Meet

Example: Test/Quiz Using Performance Levels

	Exemplary 85-100%	Acceptable 70-85%	Not Acceptable below 70%
	% of students at level	% of students at level	% of students at level
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Torso	10	50	40
Arms, Neck, Head	15	60	25
Total Score	20	60	20

For total score and each subscore

- Target: At least 75% of students will perform at the Acceptable or Exemplary level.

Exceeded, Met, Did not Meet

Example: Test/Quiz Using Performance Levels

	Exemplary 85-100%	Acceptable 70-85%	Not Acceptable below 70%
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Legs	35	55	10
Torso	10	50	40
Arms, Neck, Head	15	60	25
Total Score	20	60	20

For total score and each subscore

- Target: At least 25% will perform at the Exemplary level

Exceeded, Met, Did not Meet

Example: Test/Quiz Using Results

1. Target was exceeded for Legs and met Arms, Neck, Head. *Faculty reviewed the types of activities done for Legs and has adapted them for Arms, Neck, Head.*
2. Target was not met for Torso. *After reviewing the syllabus, faculty took one class meeting devoted to Legs and added it to the Torso portion of the course.*
3. Re-assessment has been scheduled for the next cycle.

Determining Strengths and Areas for Improvement

Based on the review and analysis of evidence, ask:

- What is working in the program, or for the students?
- What areas need improvement?
- What is a reasonable plan for making changes over the next semester(s)?

Additional SLO Assessment Questions at Program-Level

•If our students are not learning some aspects of the SLO, what are their stumbling points? How might we change what we are doing to help them learn more effectively?

•Might new pedagogies lead to improved student learning? Would new or increased resources help students learn more effectively? Where and how would those resources have the greatest impact on student learning?

Internal Uses for Results

- Revising existing courses
- Adding or modifying assignments, tests, readings, projects, etc.
- Reviewing methodology of delivering course materials
- Incorporating effective use of technologies

Internal Uses for Results

- Realignment between SLOs and teaching methods
- Modifying assessments:
  - Revising assessment method
  - Modifying SLO
  - Changing target level of achievement
- For program-level, discuss changes across program with cluster involvement

More Internal Uses for Results

- Sequencing of courses
- Adding or deleting a course
- Changing requirements/pre-requisites
- Improving educational and support programs
- Identifying training needs/professional development
- Guiding resource allocations

Determining Strengths and Areas for Improvement

Based on responses, ask:
What changes to the program…

…could be easily accomplished?

…might be done in one or two semesters?

…should be considered as long-range goals?

…would have the greatest positive impact on students?

…would require additional departmental resources (faculty, staff, money, space, or equipment)?

Making Changes to Improve Student Learning

- Use data as evidence for changes
- Assessment results for a method alone should never dictate decisions.
  - "We should always use our professional judgment to interpret assessment results and make appropriate decisions." (Suskie, p. 298)
  - Importance of using multiple methods
- Be as specific/concrete as possible
- Develop an action plan and assign roles

APER Checklist: Use of Results

What have we been doing to improve student learning?

Previous actions to improve SLO

- **What change(s) has the program implemented to improve student learning prior to the current assessment?**
  - ❑ **Who was involved? (Cluster, assistant dean, faculty teaching course(s), dean, Advisory Board, other - please specify)**
  - ❑ **When were the actions taken? (Semester/year)**

APER Checklist: Use of Results, continued

2016-17 Results

- ❑ **Since this/these action/s, has the outcome improved compared to previous assessments? Explain.**

- ❑ **Was the achievement target(s) for 2016-17 met?**

APER Checklist: Use of Results, continued

Current actions to improve SLO

- ❑ Based on analysis of the current assessment results (2016-17), what area(s) could be improved?
- ❑ What action(s) have been/will be taken to improve these areas?
  - ❑ Who was/is to be involved in improving student learning? (Cluster, assistant dean, faculty teaching course(s), dean, Advisory Board, other -please specify)
  - ❑ When were/are steps to be taken? (Semester/year)
- ❑ When will the SLO be assessed next? (Semester/year)

Sharing Results: Program-Level

How/where/when
can results be shared
with the cluster?

Reviewing and Analyzing Evidence: Program-Level

- Set aside designated time for review
- Share results widely and transparently
- Involve those with a stake in decisions stemming from results
- Discourage others from making inappropriate interpretations or misleading statements about the data
- Do not penalize faculty who have less-than-positive-results
- Keep faculty informed about how evidence will be or was used to support decisions

Sharing Results: Program-Level

- For program-level: share results
  - Share only aggregated results (no information on individual students)
  - Share basic information for the group, but offer to make additional information available
    - Consider variety of ways to present results
    - Narrative/text
    - Table
    - Graphic (pie chart, bar chart, etc.)

Making Changes and Measuring Effectiveness of Changes

- Act on and document recommended changes

- An important component of the definitions of assessment is the “ongoing process” part >> the assessment cycle continues

- Re-assess and continue with assessment loop

Assessment is a means to continuous improvement

Closing the Loop: Part C

What did the program learn from this experience?

Evaluate the Assessment

- Has the process produced the kind of data necessary for making program decisions?
- Has the program developed a process that is useful and beneficial to all involved—the program as well as students?
- Can and will the process be practically replicated as time and circumstance require?

Document and Store Evidence–Program-Level

- For future comparison and accountability
- Ensure the following has been saved and is available to others:
  - Listing of the raw data
  - Notes on coding (Excellent =5, Good=4, etc.)
  - Copies of assignment (instructions), rubrics, surveys, tests, etc.
  - Complete summary and analysis of data
  - Samples of good, bad, and mediocre work as evidence of standards
  - List of actions to be taken. When? And By whom?

Any other suggestions?

APER Template and Useful Resources

Template for the 2016-17 Annual Planning and Evaluation Report:

Programs should use this form for completing the Annual Planning and Evaluation Report.

Checklist for Annual Planning and Evaluation Report:

This checklist should be used by both programs (when completing the report) and deans (when reviewing the reports). It details what should be included/addressed in the Annual Planning and Evaluation Report.

SLO Assessment Process Checklist:

A useful checklist for every step of the assessment process.

https://www.nvcc.edu/assessment/_docs/1sloassessmentprocesschecklist.pdf

Questions

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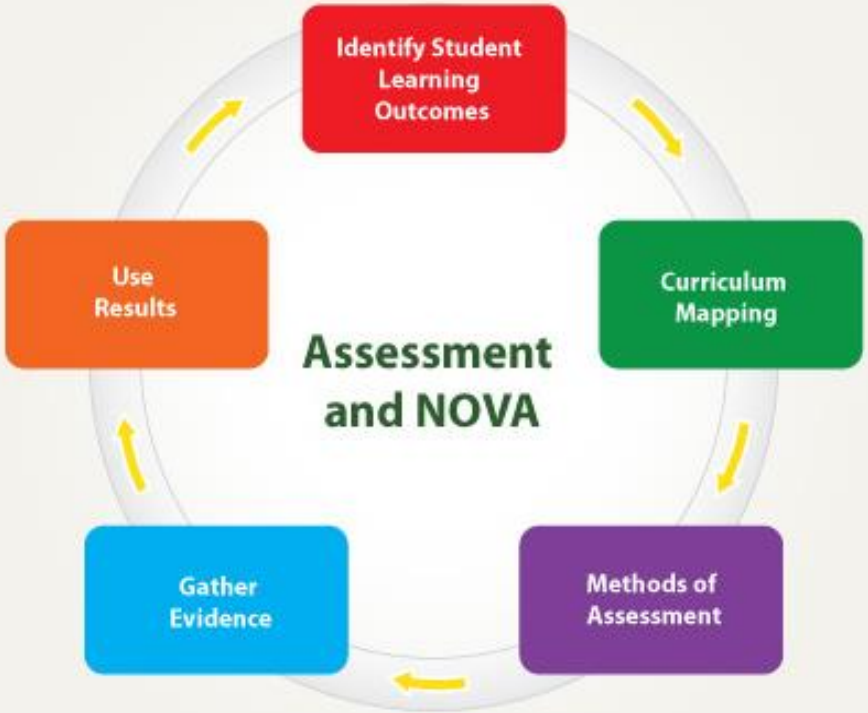
ASSESSMENT LOOP RESOURCES



Assessment Cycle of Continuous Improvement

The loop represents the continuous nature of assessing student learning outcomes. Assessment is comprised of several steps. Click on any step to access information and resources on that topic.

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http://www.nvcc.edu/assessment/loop/index.html