

## Capstone Experience

**Definition.** culminating experience(s) in which students are expected to integrate, extend, critique and apply knowledge gained in the major [certificate or degree program]

### **Benefits**

- a. helps students make sense of what they have learned across years and therefore better understand the value of their major and of their degree
- b. allows students to put learning into practice
- c. helps faculty determine the cumulative effect of the major on student learning
- d. provides evidence of student learning that helps faculty determine students' levels of achievement on program learning outcomes

### **Frameworks**

- a. **Mountaintop.** Students from two or more disciplines (or specializations) engage in interdisciplinary inquiry. For example: Geography majors and Biology majors enroll in their major's capstone courses and are paired with a student from the other discipline. Each GEOG-BIOL pair of students completes an interdisciplinary project such as a project that uses geographic information systems (GIS) to monitor fish migration patterns or habitat changes.
- b. **Magnet.** Students pull together their learning from multiple courses and/or experiences. For example, students gather their best work samples from four courses (can also include internship, practicum, service learning, etc.), choosing samples that directly address the program's learning outcomes.
- c. **Mandate.** Students document their learning in relation to external industry/professional standards or requirements. For example, civil engineering students gather evidence to demonstrate they have achieved the outcomes set forth by the American Society of Civil Engineers.
- d. **Mirror.** Students reflect on their experiences and metacognitive skills in relation to program goals and outcomes. For example, students write short reflective pieces that describe what they have learned and how their assignments and experiences have helped them achieve each program outcome.

### **Options**

- a. course in the major
- b. interdisciplinary course with at least two disciplines represented
- c. out-of-class co-curricular experience
- d. service and/or community-based learning experience
- e. the application and/or demonstration of specialized knowledge via such means as a research paper, a thesis, a portfolio, a project, an exhibit, a performance, a show, or a recital; or a college-to-work or career transition experience such as an internship or informational interviewing

Resource: <http://www.manoa.hawaii.edu/assessment/howto/capstone.htm>

## Facilitation Activity: A Pre-mortem Discussion on a Draft Signature Assignment

The pre-mortem discussion is a technique to anticipate and address reasons why something may fail; it answers the question, “What could go wrong with this plan?” before the plan is implemented and then uses the answers to modify the plan to increase the likelihood of success.

Activity purpose: To build a scaffold for a signature assignment and reflect on what in-course and cross-course scaffolding is needed.

Activity result: A list of pre-requisite skills and knowledge needed for students to be successful on the assignment and the top recommendations on how to prepare students to meet the assignment demands. Note: recommendations do not need to be limited to this course.

### Materials:

- Program student learning outcomes
- Curriculum map
- Signature assignment guidelines
- Flip charts & markers

### Time:

Welcome participants and describe the activity. Format :

“Thank you for coming today. At our last department meeting, the Assessment Committee presented the idea of a *signature assignment* for our majors and we got the go-ahead to move forward with developing such an assignment.

We drafted a signature assignment and have a copy for you today. The signature assignment taps into [three] of our program learning outcomes and asks students to apply what they’ve learned in many of our courses to a real-world situation. All majors will complete the signature assignment in [496, the capstone course]. The assignment will let us assess how well seniors are doing on the [three] outcomes.

Research shows that breaking a complex assignment into chunks for students leads to better learning and increases student success. In the literature, this is called ‘scaffolding.’ The first step is to take the assignment and figure out what skills and knowledge are needed to complete the assignment and, second, create mini-assignments that that develop the needed skills and knowledge. This is what we want your help with today: identifying pre-requisite skills and knowledge and mini-assignments that help students develop those skills and knowledge.

Are there any questions before we get started?”

*Facilitation tip.* Dealing with an objection to already-made decisions (e.g., a signature assignment):

Jon: “Why don’t we use the same exam as UCLA instead of some assignment.”

Facilitator: “Okay, Jon, the department reviewed options like exams and agreed that a signature assignment will be worthwhile to both students and faculty so we’re not going to take time to discuss that anymore. Or, do you have a different objection?”

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:05 Individuals brainstorm a list: What pre-requisite skills and knowledge are needed for students to be successful on this assignment?

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:10 Each person shares one pre-requisite skills and knowledge and it's publicly recorded (flip chart paper or computer+projector+screen). By show of hands, others indicate their agreement with skill/knowledge and the count is recorded. Continue until all unique items are listed.

*Facilitation tip.* Facilitator combines a proffered skill/knowledge with an existing one ONLY AFTER verifying with the participant, "Thanks, Leslie, would you say that 'use the library database' is the same as this one already here—'find sources in the library'? Can I combine them or are you saying something different?"

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:30 Facilitator then helps the group generate strong recommendations to address the identified pre-requisite skills/knowledge. Facilitator can ask, "What mini-assignment could a student do to learn [data analysis]?"

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:10 Facilitator asks group to decide where in the curriculum students should be practicing the skills and/or knowledge before they receive the signature assignment in the [capstone course]. Mark courses on the curriculum map or create a list.

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:15 Facilitator leads the group in deciding how to proceed and asks someone or a group to take ownership to move a recommendation forward. E.g., Jennifer will modify the curriculum map; George and Sean will develop the mini-assignments; Ryan will create a master syllabus; Curriculum Committee will create a master signature assignment with mini-assignments included.

Facilitator summarizes the session accomplishments, reinforces the follow-through that needs to take place, and encourages everyone to celebrate their success.

"Okay, we've made a lot of progress and we're out of time. We've taken the signature assignment and broken out the skills and knowledge that students need. For each major chunk, we identified a possible mini-assignment and decided that some of the mini-assignments should also be practiced in other courses. Everyone has their list of tasks—thank you for volunteering! For the next meeting, we'll share the revised signature assignment, mini-assignments, and the new curriculum map. We will make sure the notes from today are circulated to everyone in the department. Thanks again for helping us today. We couldn't have done it without you. Aloha."

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Sources consulted:

Ching, D.R. (2010). *Facilitative Skills for Collaborative Leaders*. Honolulu: Pacific Center for Collaboration.  
Sanaghan, P. & Gabriel, P.A. (2011). *Collaborative Leadership in Action: A Field Guide for Creating Meetings That Make a Difference*. Amherst: HRD Press.

## Signature Assignment & Assignment Design Example

### Anderson's Assignment for Senior Biology Course<sup>1</sup>

In this assignment you will compare two commercially available products on the basis of at least four criteria to determine which is the "better" product as operationally defined. You will **conduct** original science research and **compose** a two- to three-thousand word original scientific research report (exclude the reference section and graphics in your word count).

Audience: Write for your peers as junior colleagues in the scientific community.

Main point and purpose: For you to learn and demonstrate use of the scientific method for original scientific research. The skills you will develop in this project are those used by many biology program graduates in their jobs at companies such as Noxell.

Pattern and procedures: Please follow the scientific report form. Your final copy should be typed or word processed and should contain the following components:

- Title (twenty-five words or fewer, with appropriate descriptors)
- Abstract (150 words or fewer)
- Introduction with literature review and hypothesis
- Methods and materials section
- Results section
- Conclusions and implications section
- Reference section
- Minimum of three graphics with self-contained labels
- Preference tests (if used) with an n (sample size) of 20+
- Statistics appropriate to your expertise

Due dates:

Early proposal: February 28

Draft: April 1

Final: April 26

Standards and criteria: In completing this assignment, demonstrate that you can conduct scientific inquiry. Your written report should demonstrate that you have formulated a hypothesis, designed a good experiment, controlled variables, operationally defined terms, and interpreted data appropriately. In addition, you should demonstrate that you understand the scope and sequence of the scientific report format and the importance of quantification to scientific writing.

This assignment allows you to practice and demonstrate this biology program learning outcomes:

Conduct scientific research to make informed decisions

<sup>1</sup> Adapted from exhibits 3.5 and 3.6 in Walvoord, B.E. & Anderson, V.J. (1998). *Effective Grading: A Tool for Learning and Assessment*. Jossey-Bass, San Francisco. Pages 39-41.

## **Way's Assignment for Economics<sup>2</sup>**

Due Date: November 30

### *Objective*

The aim of this assignment is to teach you how to carry out economic research, much as you would if you were employed in an entry-level economist position. Essentially, you will learn how to use economic theory and empirical data to analyze a policy issue.

### *Your Role*

You are an aide to Congresswoman Thompson, who has not taken an economics course since 1962. She must, therefore, delegate economic analyses to you. Whenever you perform economic analyses for Congresswoman Thompson, bear in mind that she is concerned with advocating policies that improve economic growth, efficiency, employment, price stability, and equity.

### *The Research Issue*

Congress is considering amending the Fair Labor Standards Act of 1938 to raise the minimum wage to \$4.75 per hour from its current level of \$4.25 per hour. You are told to analyze the proposal using economic theory and data. You must decide whether Congresswoman Thompson should support or oppose the proposal and justify your position in a report addressed to her.

### *The Report*

Your report should contain the following elements:

- A. An executive summary that states your position and summarizes the main reasons for your conclusion.
- B. A definition of the criteria you are using to assess the implications of the change in the minimum wage. You should also indicate the relative weighting (importance) of the criteria. (Hint: remember the congresswoman's concerns.)
- C. A theoretical analysis that supports your position. Examine the likely impact of the increase in the minimum wage on the criteria you have selected in (B). You should analyze the effects in terms of a minimum of three different diagrams:
  1. A production possibility frontier (perhaps to illustrate the effect on efficiency or growth).
  2. A supply-and-demand diagram (perhaps to illustrate the impact on unemployment or prices or equity).
  3. A production costs-supply diagram (perhaps to illustrate the effect on costs and prices or output).
  4. Make sure you label your diagrams and explain the implications of your diagrams in terms of the assessment criteria.
- D. An analysis of economic data that support your position. Quantitative and qualitative information concerning the effect of the increase in the minimum wage can be gathered from newspapers, magazines, reports by other economists, interviews, phone calls, and so on. A number of readings that may assist you in your research have been placed on reserve in the library. Make sure you summarize the evidence accurately, noting differences of opinion where they exist. Assess the reliability of the evidence. Reference your sources.

<sup>2</sup> Adapted from exhibits 3.5 and 3.6 in Walvoord, B.E. & Anderson, V.J. (1998). *Effective Grading: A Tool for Learning and Assessment*. Jossey-Bass, San Francisco. Pages 39-41.

You should be succinct in your writing. Your paper should be two to three double-spaced typed pages plus diagrams. Style and grammar will be graded. You may find a style manual or the writing center helpful.

Note that the way in which you reach a position and the order in which you present the material need not be the same. I suggest that in order to form an opinion you (1) set criteria, (2) weight the criteria, (3) gather information, and (4) reach a conclusion.

### *Checklist*

In order to ensure the quality of your work, it is suggested that you carefully proofread your paper and that you ask several of your classmates to review it as well in the light of the following list of hallmarks of a good paper:

1. A clear identification of the criteria used to justify your position.
2. A weighting scheme for the criteria.
3. A clear theoretical analysis of the impact of the increase in the minimum wage using three different diagrams.
4. A clear analysis of empirical data from primary or secondary sources.
5. A clear link between the theoretical and empirical analysis and the assessment criteria.
6. A clear stance on the minimum wage issue that is supported by the analysis.
7. Properly labeled and titled graphs.
8. Correct spelling and grammar.
9. Clear section headings.
10. Evidence of original thought; that is, your analysis is not simply a summary of others' opinions or analyses but rather your own evaluation of the proposals in light of the criteria and weighting scheme you have chosen.

[The assignment is accompanied by a grading sheet showing the criteria and standards for each grade level. The grading sheet is in Appendix C of the Walvoord and Anderson book.]