Assessing Student Learning in Undergraduate Research

The University of Delaware (UD) is committed to assessing student learning outcomes and the Undergraduate Research Program (URP), a 10-week summer program, engages students from every major in research projects. At the time of the Request for Proposals (RFP) for the 2010 Teaching Learning Assessment (TLA) ePortfolio grant pilot, the University was also writing the Middle States self-study and wanted further documentation in regards to the level of General Education (Gen Ed) competencies demonstrated by students engaged in high impact practices such as undergraduate research. The Undergraduate Research TLA ePortfolio pilot was supported with the intent to assess General Education learning outcomes. As the program gets ready to implement the TLA ePortfolio for the third time, the achievement of student learning outcomes has improved in the areas of oral and written communication. This practice is an exceptional example of using reflection to not only enhance student learning outcomes, but also inform program administrators of ways to enhance the quality of their program delivery.

Author(s)

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ePortfolio Leadership Team

Practice Identifiers
Location
The Undergraduate Research Program's Summer Scholars is a 10-week summer program.

Scale
Engages students across all academic majors, professional majors, internships/experiential learning and other high impact practices. Feedback on students’ ePortfolio entries is provided by URP alumni who are hired as program assistants. Each assistant oversees up to 15 students and helps them attain their goals. In addition, a selection of Honors students who elect to complete a thesis are asked to participate in the ePortfolio.

High Impact Practices
Undergraduate Research at the University is a high impact practice.

Helping students Advance Their Learning

Reflection as Integrative
Students’ ePortfolio reflections are designed to help them...

- Make connections throughout the Undergraduate Research Experience
- Make connections among academic experiences, particularly between their research experience and coursework
- Make connections among co-curricular & lived experiences

Reflection as systematic & disciplined
Students’ ePortfolio reflection processes embody...

- A structured & scaffolded process
- The reflective cycle
- Connecting their learning to Gen Ed or programmatic competencies

The TLA ePortfolio requires the following elements:

- A structured & scaffolded process
- Prompts that encourage students to reflect on their experiences, progress, and plans for improvement
- Careful integration of the URP Summer Scholar Program’s goals and competencies with UD’s General Education goals, and with the adapted AAC&U Value Rubrics

Reflection as Social Pedagogy
Students use ePortfolio to share/peer review/ discuss/collaborate, connecting around coursework, reflections, plans, goals, stories, etc.
- Sharing their ePortfolios w/ & getting comments from faculty
- Sharing & engaging in interactive ePortfolio commentary w/ other students
- Sharing their ePortfolios w/ & getting comments from external groups

Students use an ePortfolio to share their research with their research team, which is comprised of undergraduates of unrelated disciplinary areas. By continually discussing their research with students both within and outside of their subject area over the course of ten weeks, students gain the ability to communicate their research to multiple and diverse audiences.

Feedback occurs on many levels:

- Each program assistant provides verbal feedback to their group during their weekly group meeting.
- Undergraduate researchers within each group provide feedback to each other via questions, clarification, and continual discussion about the progress of their research.
- The URP Coordinator visits each group once over the summer, provides feedback to students and offers one-on-one feedback to each program assistant.
- The URP Coordinator and Faculty Director review selected students’ reflections in the ePortfolio in conjunction with the program assistants’ feedback, and provide additional feedback to program assistants when appropriate.

**Reflection as a process of guiding personal change**

Students use ePortfolio for educational and career development, identity formation, by

- Planning/preparing for transfer or advanced education

Students use the ePortfolio to document their research experience, and receive feedback on their research project and competencies to improve their research process. This documentation of research helps students prepare to conduct further research as well as prepares them for the rigors of graduate school application and interview process.

**Description**

**Practice Step-by-Step**

The Undergraduate Research Program's (URP) Summers Scholars Program ePortfolio was selected as a representation of integrated learning, that is program goals, program activities, reflective prompts, and assessment rubrics were carefully aligned to encourage reflection that asked students to integrate their research experience with program activities, their major and future career plans.
The social pedagogical strategies included weekly group meetings with the summer researchers and the Program Assistants (graduate mentors), as well as presentation of research progress to multiple audiences, i.e., faculty, administrators, peers. The cycle of reflection and feedback enabled by the ePortfolio was dramatically strengthened by the weekly group meetings, students’ written reflections, self-assessments, Program Assistants’ assessments and targeted, formative feedback resulting in reinforcement and refinement of competencies. In addition, the URP administrators after participating in the CTAL semistructured interview process, refined program activities, reflective prompts and rubrics.

The ePortfolio program was implemented for three reasons.

1. The University was undergoing accreditation and wanted to assess how well the URP’s Summer Scholars Program was helping students attain the General Education goals of critical thinking, creative thinking, oral communication, written communication, and ethical reasoning.

2. Assessment results in 2009 and 2010 indicated a need to improve undergraduate researchers’ oral presentations skills. For example, when oral presentation skills were assessed during the 2010 Undergraduate Research Symposium, faculty and Office of Educational Assessment evaluators scored students’ oral presentations at closer to milestone level two, using a four-point AAC&U VALUE oral communication rubric. Given these relatively low scores, as well as feedback from CTAL, URP administrators realized that students needed to improve their oral communication skills, and saw the TLA ePortfolio as one pedagogy to address this need.

3. URP administrators and Program Assistants, all of whom are alumni of the Summer Scholars Program, decided to monitor closely the development of a student’s research over the course of the program, align program activities with the ePortfolio reflection prompts, and provide students with constructive feedback on their progress.

The Role of Reflection in Advancing Student Learning

The reflection prompts created by the URP and CTAL, based on language from the benchmark and capstone criteria of AAC&U VALUE rubrics can be found on this page: Reflection Prompts Undergraduate Research. The reflections address the areas of ethics (ethical reasoning), oral communication, written communication, critical thinking (inquiry and analysis), and creative thinking; prompts span the entire 10-week program.

The following adapted VALUE rubrics were used:

- Inquiry and Analysis (used to assess critical thinking)
- Creative Thinking
- Written Communication
- Oral Communication

Evidence of Impact on the Student Learning Experience

The following evidence associated with this and other similar practices has been collected:

- # of students in the Undergraduate Research Program by Year
- Scores on rubrics
Connections to Other Sectors of The Catalyst

Professional Development

The ePortfolio team (CTAL staff and IT-ATS staff) worked closely with the URP Summer Scholar’s program administrators in ePortfolio conceptualization, design, pilot implementation, review of pilot experience and further enhancement of ePortfolio delivery.

In addition, assessment staff worked with the URP program assistants as follows: conducted calibration sessions to ensure inter-rater reliability when scoring student work with the adapted VALUE rubrics and provided training on how to provide effective, growth-oriented feedback on student reflections.

Program assistants received sample reflections and artifacts from students in the previous year program for practice purposes.

Outcomes Assessment

CTAL helps programs assess the programmatic student learning outcomes as well as assesses General Education goals as part of its long term commitment to assessment of student learning for use in programmatic improvement.

The Undergraduate Research TLA ePortfolio pilot was supported with the intent to assess General Education learning outcomes. As the program gets ready to implement the TLA ePortfolio for the third time, the achievement of student learning outcomes has improved in the areas of oral and written communication. This practice is an exceptional example of using reflection to not only enhance student learning outcomes, but also inform program administrators of ways to enhance the quality of their program delivery.

Technology

The technology of the Open Source Portfolio in Sakai at times hinders the implementation of the ePortfolio and the ability to report data. However, the matrix itself provides students and the program managers a clearly outlined pathway to successful completion of the 10-week program and sets forth the program’s goals, objectives, students requirement to self assess, reflection prompts connected to the adapted VALUE rubrics, all in one area (visually represented by the matrix).
At the present time we do not have an ePortfolio campus culture. We are working on providing a white paper to the Deputy Provost's Office to articulate the scalability and resource requirements for the ePortfolio.

**Attachments and Supporting Documents**

Examples of the ePortfolio work the Undergraduate Research Program has accomplished, in collaboration with the ePortfolio team (CTAL and IT-ATS):

- ePortfolio UGR site
- Presentation at the 2010 AAC&U conference on ePortfolio implementation
- Reflection Prompts Undergraduate Research
- Adapted AAC&U VALUE Rubrics
  - Inquiry and Analysis (used to assess critical thinking)
  - Creative Thinking
  - Written Communication
  - Oral Communication

**Conclusion**

The Undergraduate Research Program's TLA ePortfolio was selected as polished practice because the program administrators have done an outstanding job of monitoring the TLA ePortfolio implementation, collected data on an ongoing basis, and used their evidence to make curricular changes to the benefit of the students.

Revisions to the ePortfolio based on evidence have included the following changes:

- Modifying the adapted AAC&U VALUE rubrics based upon student and program assistant feedback.
- Changing the program activities to align more closely with the URP goals, and to better address the desired student learning outcomes (e.g., changing a general research group talk into a “speed dating” format, in order to boost students’ oral communication skills when talking with diverse audiences)
- Asking students to reflect developmentally and in connection to desired student learning outcomes
- Providing further professional development for the program assistants so that their feedback is more helpful to the students
This practice directly connected the iterative assessment cycle towards programmatic improvement. CTAL implemented the semi-structured interview process at the end of the first and second year and asked the program administrators to reflect upon the achievement of the ePortfolio goals for the Undergraduate Research Program. As a result of this reflective process, there were numerous revisions made to the ePortfolio delivery. Summer 2013 marks the fourth implementation of the TLA ePortfolio with undergraduate researchers.

Posted with permission April 26, 2012 from the UD Undergraduate Research Program- Dr. Lynnette Overby - Faculty Director of Undergraduate Research & Service Learning & Meg Meiman- former Coordinator of Undergraduate Research

(Updates have been made from original posting to show the most recent changes to the matrix.)