

**A Principle-Based Approach to Assessing General Education Through the Majors**

Sharon J. Hamilton  
Chancellor's Professor of English  
and  
Associate Dean of the Faculties  
IUPUI

**[shamilto@iupui.edu](mailto:shamilto@iupui.edu)**

The Office for Integrating Learning  
IUPUI  
755 West Michigan, Suite 1140  
Indianapolis, IN 46202

## **A Principle-Based Approach to Assessing General Education Through the Majors**

### **Abstract**

The learning matrix of the IUPUI student electronic portfolio (ePort) will be pilot tested during the fall of 2003. Based on our Principles of Undergraduate Learning, it is intended not only to document and assess both improvement and achievement in these discipline-transcendent skills and ways of knowing, but also to serve as a catalyst for deeper, more insightful, and more connected learning. To students and faculty, both at IUPUI and at other institutions of higher learning across the country, ePort will appear as an attractive and effective product. This article unpacks the processes, dilemmas, and decision-making that went into the development of this ePort learning matrix.

### **Institutional Context**

#### **The institution and its students**

IUPUI (Indiana University Purdue University Indianapolis) is an urban public research-extensive institution located in downtown Indianapolis. Combining both Indiana University and Purdue University programs, it houses twenty-two academic and professional schools, with more than 1600 faculty. A majority of its more than 29,000 students come from the city and surrounding counties; several of its professional and graduate programs, however, such as Medicine, Dentistry, and Engineering, attract a high proportion of international students. Since 1996, more than 50% of our undergraduates attend full time. On the other hand, while more of our students attend full time than ever before, they also work, on average, more than 20 hours a week, creating challenges of time management and opportunities for extended intellectual engagement.

Three years ago, the state of Indiana instituted a community college system, a move that enabled IUPUI to redefine its mission, establish higher admission standards, and expand its honors program. It is consequently in the process of transition from a “default choice” for students who could not get into their first choice of college into a first choice for many students in area high schools. As a result, our retention figures have begun to improve over the past two years, although they are still below the norm for our peer institutions.

#### The institution and general education

With so many academic and professional schools, some originally proprietary, some following Purdue traditions, and most with roots in Indiana University, the overall approach to general education was, to say the least, haphazard. In 1991, in preparation for the 1992 NCA accreditation visit, a newly-formed Council on Undergraduate Learning at IUPUI, composed primarily of deans of academic units, and the Academic Affairs Committee of the Faculty Council established a Commission on General Education to oversee development of a centrally coordinated approach to general education for undergraduates at IUPUI. At the time, general education was the responsibility of each school, and followed, primarily, a distributive model, wherein each school defined required areas, such as humanities, sciences, and social sciences, and then specified particular requirements within those defined areas. The 1992 NCA Accreditation team noted a need within this distributive approach to identify “desired outcomes for general education...amenable to meaningful assessment.” Bearing in mind both their initial

charge to develop a centrally coordinated approach and the NCA mandate to develop specific learning outcomes for general education, several members of the Commission on General Education attended the 1993 Lilly Endowment Workshop on the Liberal Arts. Out of that workshop, and in conjunction with several other campus committee conversations, the Commission initiated “a process approach” to general education. They set up a series of multi-disciplinary committees, day-long retreats, and town halls to explore fundamental values associated with general education.

This process culminated in the IUPUI Principles of Undergraduate Learning (PULs).

The simplicity of that previous sentence belies the complex, often contentious turf-related negotiations, passionate disagreements, and entrenched attitudes that threatened the process. With twenty-two different academic and professional schools carefully guarding their tuition dollars in a responsibility-centered budgeting system, consensus was not just elusive; it appeared at many times to be downright unattainable. Yet more than 200 faculty persevered in trying first to come to some agreement and second to convince their colleagues that a set of common learning outcomes would provide not only a shared intellectual foundation but also a coherent path for IUPUI students through the morass of school-specific and program-specific requirements.

These PULs are significant not in their uniqueness – they are very similar to the undergraduate learning values in almost any institution of learning – but rather in the fact that they are intended to permeate the undergraduate curriculum instead of being a set of

courses or skills concentrated in a student's first two years of college. Students are expected not only to improve their level of competence in each of the PULs during their first and sophomore years, but also to continue to improve their level of competence throughout their undergraduate learning experiences.

### **Identification of Learning Outcomes to be Assessed**

The following outcomes for undergraduate learning were approved by the IUPUI Faculty Council in March of 1998, after considerable discussion, and a winnowing down from a set of first eight and then nine principles originally developed during the 1992 discussions. The six faculty-approved Principles of Undergraduate Learning at IUPUI are:

1. Core Communication and Quantitative Skills, which involve the ability of students to write, read, speak and listen, perform quantitative analysis, and use information resources and technology.
2. Critical Thinking, which involves the ability of students to analyze carefully and logically information and ideas from multiple perspectives.
3. Integration and Application of Knowledge, which involves the ability of students to use information and concepts from studies in multiple disciplines in their intellectual, professional, and community lives.
4. Intellectual Depth, Breadth, and Adaptiveness, which involves the ability of students to examine and organized discipline-specific ways of knowing and apply them to specific issues and problems.

5. Understanding Society and Culture, which involves the ability of students to recognize their own cultural traditions and to understand and appreciate the diversity of the human experience, both within the United States and internationally.
6. Values and Ethics, which involves the ability of students to make judgments with respect to individual conduct, citizenship, and aesthetics.

The Office of Planning and Institutional Improvement (PAII), through its establishment of the Council for Undergraduate Learning and the Commission on General Education, played a significant role in the development and approval process of the PULs, which involved several hundred faculty from all IUPUI academic and professional programs. That same office continued its stewardship of the PULs through another committee, the Program Review and Assessment Committee (PRAC), comprised of two faculty members, one of them generally serving also in some administrative capacity, from each of the twenty-two schools. While the 1998 approval of the PULs resulted in their acceptance both as a significant part of the undergraduate curriculum and as our approach to general education, the approval included no specified mechanism for assessing student growth or achievement in the PULs. Integrating the PULs into the curriculum was implicitly accepted as the responsibility of all faculty, but explicitly stated as the responsibility of no specific faculty. Informal surveys of graduating seniors carried out in some capstone classes between 1998 and 2000 indicated that most students had not encountered the PULs explicitly in any of their courses. Annual assessment reports, submitted to PAII and reported on to PRAC, indicated only sketchy and sporadic

integration of the PULs into the curriculum, although professional schools whose accrediting agencies required similar kinds of skills and knowledge were able to integrate the PULs into their curriculum much more readily.

The year 1998 saw not only the approval of the PULs, but also the beginning of the IUPUI Institutional Electronic Portfolio (I-Port), developed as one of the first generation of institutional portfolios as part of the Pew-funded, AAHE-sponsored Urban Universities Portfolio Project. Our portfolio focused on evaluating the processes and evidence related to achieving our mission of providing to our constituents excellence in teaching and learning, research and creative activity, and civic engagement. One of the key challenges of developing the portfolio was how to demonstrate student learning using authentic evidence of learning, not just aggregates of grades and surveys. With so many different academic and professional programs, the obvious point of entry seemed to be the PULs. Additionally, with the impending 2002 NCA accreditation visit, we knew we would need to demonstrate the ways in which the PULs contributed to and interacted with learning in our academic majors, not only as the key component of our general education program but also as principles that permeate the undergraduate learning experience. In other words, if IUPUI defines general education with a set of principles that are intended to permeate the undergraduate learning experience, we need to be able to demonstrate what students know and are able to do in relation to the PULs at both the “general education” level (within the first 56 credit hours) and at the senior level. We need to be able to show both improvement and achievement, and not just in the PULs

alone, but as they are integrated into the major and professional programs in ways that enhance student learning and add value to the undergraduate experience.

Concurrent with the approval of the PULs and the development of I-Port was the establishment of the Committee on Liberal Arts and Sciences, charged with exploring the possibility of a common core curriculum. Labelled “The Principled Curriculum,” this common core, which took almost three years to develop and become approved, is based upon the PULs, and has played a key role in bringing the PULs to the attention of those faculty who had not been directly involved in the process of their development and approval. One consequence of the Principled Curriculum was a requirement for every course syllabus to include the PULs. Unfortunately, in higher education, such a mandate results more often in perfunctory compliance than in enthusiastic intellectual engagement with the reason behind the mandate, and many course syllabi simply listed the PULs, with no mention of how they were integrated into the course and no further mention during the course. Inclusion of the PULs in course syllabi without further explicit integration in a number of disciplinary areas reinforced the need to determine the extent to which the PULs were playing a significant role in the undergraduate learning experiences of our students.

In 2000, the Dean of the Faculties provided funding for three faculty associates, headed by the Director of Campus Writing, to ascertain the extent to which the PULs were being explicitly integrated into the curriculum. This group met with the academic deans of every academic and professional school, pored through syllabi, and conferred with

faculty. The results were, to put the best possible face on it, spotty. Some schools paid no explicit attention at all to the PULs and had no direct evidence to determine whether their students were improving in writing, critical thinking, or understanding of society and culture. Many faculty articulated an assumption that students improved inherently in these areas as a result of their courses in the school, and that passing grades in courses such as freshman writing and oral communication indicated corresponding competence and understanding transferable to other disciplinary areas. Others, particularly the professional schools, had explicitly integrated the PULs into the coursework, and could present a corpus of evidence demonstrating the growth and achievement of their students in these areas. After presenting our findings to PRAC, in a document entitled *Phase I of a Study of Student Learning at IUPUI: A working document for the campus*, we decided to present the information on the institutional portfolio in three ways:

- a. First we uploaded the narrative discussion of the study, providing an overview of how the PULs were taught, learned, and assessed in each of the schools;
- b. Second, we summarized the narrative in the form of a matrix that showed, for each school and PUL, how the PUL was taught and assessed, how it was integrated into student work and learning outcomes, what the school learned from its assessment of the PUL, and how that assessment influenced curricular and pedagogical decisions [ADD EXAMPLE].
- c. Third, we took advantage of the electronic feature of the portfolio to develop an interactive matrix, whereby the visitor to the portfolio could identify which school(s) and which PUL(s) he or she wanted information about. For example, if someone keyed in Liberal Arts and Critical Thinking, they would see how

critical thinking was taught and assessed, what forms it took in Liberal Arts, and how Liberal Arts had used its assessment to improve teaching and learning.

This interactive matrix quickly became one of the more demonstrated and visited areas of our institutional portfolio. Whether at national conferences or in campus-level committees, people wanted to see what was occurring in relation to these PULs in certain schools, and any gaps or blanks were blatantly apparent. In particular, the last two columns – What have you learned from your assessment of the PULs? and How have these discoveries influenced curriculum and pedagogy? -- were either left blank or barely begun by several schools. The interactive matrix became a powerful catalyst for schools to make the integration of the PULs into their academic work much more explicit, in order to be able to complete their part of the matrix. The most important lesson we learned from this endeavor was that the PULs were not being explicitly or intentionally taught or assessed in any consistent manner across the campus. While it may have been true that students were improving in their ability to think critically or communicate more effectively, we had insufficient evidence to support that claim, or to demonstrate that the PULs were indeed providing a coherent pathway through the undergraduate experience at IUPUI.

I write “insufficient,” because we do actually have an accumulating corpus of indirect evidence, through self-reporting on NSSE, on our own first-year and graduating senior surveys, and on reflective writing done concerning the PULs by graduating seniors in the School of Liberal Arts and the School of Science. But we needed to develop a system that

would provide direct and authentic evidence of improvement and achievement in learning of these PULs in relation to learning in the major. We needed this system not only for accreditation purposes, in order to demonstrate that our general education program provides an effective foundation for learning, but also for our own purposes, to demonstrate to ourselves and to our constituents that the PULs provide a coherent curricular basis for undergraduate learning at IUPUI, and actually enhance learning in the major. Out of this need grew the impetus for the IUPUI electronic student portfolio (ePort).

**Overview of Assessment Process and Method**

**The Assessment Method**

While the mature ePort will have many components, including a resume-building function and a knowledge-mapping function, we are beginning with two features: a learner profile and a learning matrix. The learning matrix is at the heart of the assessment function of ePort, and will, in essence, capture the entire undergraduate learning experience on one screen that will look something like this:

**Learning Matrix of the IUPUI Student Electronic Portfolio**

**PUL Pre-Survey:**

<b><u>Principle of Undergraduate Learning</u></b>	<b>Introductory</b>	<b>Intermediate</b>	<b>Advanced</b>	<b>Experiential</b>
<b>1a Core Skills: Written Communication</b>	Add/Edit Help	Add/Edit Help	Add/Edit Help	Add/Edit Help
	Reflection	Reflection	Reflection	Reflection
<b>1b Core Skills:</b>	Add/Edit	Add/Edit	Add/Edit	Add/Edit

<b>Analyzing Texts</b>	Help Reflection	Help Reflection	Help Reflection	Help Reflection
<b>1c Core Skills: Oral Communication</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>1d Core Skills: Quantitative Problem Solving</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>1e Core Skills: Information Literacy</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>2. Critical Thinking</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>3. Integration and Application of Knowledge</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>4. Intellectual Depth, Breadth, and Adaptiveness</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>5. Understanding Society and Culture</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection
<b>6. Values and Ethics</b>	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection	Add/Edit Help Reflection

Intermediate PUL Survey

Senior PUL Survey

In the matrix, Introductory Level captures evidence of student learning based on campus consensus of what all students should know and be able to do, regardless of major or professional program, after 26 credit hours at IUPUI. Intermediate Level captures evidence after 56 credit hours. The Senior Level captures evidence of student learning of the PULs as they have been integrated into the academic major or professional program. The Experiential Level cuts through all three of the previous levels, and involves evidence of student learning of the PULs in co-curricular and extra-curricular experiences. To date, we are focusing on the Introductory and Intermediate levels.

The development of campus consensus about what all students should know and be able to do in relation to each of the PULs, regardless of academic major or professional program, was a year-long process involving more than a hundred faculty working on multi-disciplinary committees. It is currently in its final phases, as faculty work to develop “scenarios” for the portfolio. Here is one, for example, that was just drafted for PUL 6: Values and Ethics:

Scenario for students uploading documents directly into matrix
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1. Student enters PUL Matrix
2. Student clicks on PUL 6: Values and Ethics:
3. Student sees:
  - a. **Values and Ethics**
  - b. **Aesthetics**
4. Student clicks on a. **Values and Ethics**
5. Student sees:
  - a. **Students are able to make judgments with respect to individual conduct and citizenship.**
  - b. **Introductory** - Students demonstrate an understanding of how ones values influence personal ethics and conduct.
  - c. **Intermediate** - Students demonstrate an understanding of and respect for the values of others in contrast to their own and are aware of how decisions and conclusions may vary based on different perspectives.

6. If students click on values, students see:

**Values** provide the foundation for making personal and ethical decisions related to what a person considers to be good or bad, right or wrong. They stem from multiple sources as someone matures (e. g. family, local community, religious affiliations, professional organizations, educational institutions, national forums, etc.). Values are developed through making choices, experiencing challenges, and taking action in accordance with personal beliefs. They are reflected in the judgments people make and the solutions they choose. Values are categorized as moral when they pertain to the human interactions and non-moral when related to inanimate objects. A gun is non-moral but if used by a human, the act may be judged as moral or immoral in regards to the act itself or the motivation for the conduct.

7. If students click on ethics, students see:

**Ethics** refers to the study of moral values held by individuals or groups. A person or an act is considered ethical or moral when it is judged consistent with the values of the group or society (morality). Ethics also establishes the degree of rightness or wrongness for moral conduct or decisions.

8. If students click on Introductory, students see:

**To demonstrate your understanding of this PUL at the Introductory level, the documents you upload and your reflection should show the following:**

- a) you can explain the relationship between personal values and the choices a person makes.
- b) you can articulate the values that are important to you in making personal choices about conduct and citizenship.  
(May include a situation in which your values influenced your personal ethics and resulting conduct.)

**The documents you choose to illustrate competence at the introductory level may be from 100 – 200 level courses or from documents you have written related to out of class experiences (campus organizations, religious affiliation, employment, etc.).**

**Not every paper needs to show every element, but every element should be represented in the totality of documents you upload in this section or else accounted for in your reflection.**

**DO YOU WISH TO UPLOAD A DOCUMENT NOW? Y N**

9. If student click Y, student sees a **browse/upload screen**

10. IF students click on Intermediate, they see:

**To demonstrate your understanding of the PUL at the Intermediate level, the documents you upload and your reflection should show the following:**

- a. you can analyze situations and foresee how decisions or conclusions may vary when values, within yourself or between individuals, are conflicting.

**The documents you choose to illustrate competence at the intermediate level may be from 200+ level courses or from documents you have written related to out of class experiences (campus organizations, religious affiliation, employment, etc.).**

**Not every paper needs to show every element, but every element should be represented in the totality of documents you upload in this section or else accounted for in your reflection.**

**DO YOU WISH TO UPLOAD A DOCUMENT NOW? Y N**

11. If student click Y, student sees a **browse/upload screen**.

For PUL 6b

12. Student enters PUL Matrix

13. Student clicks on PUL 6:

14. Student sees:

- a. **Values and Ethics**
- b. **Aesthetics**

15. Student clicks on PUL 6 (b) Aesthetics

16. Student sees:

a. **Students are able to make judgments with respect to aesthetics.**

b. **Introductory** - Students will explain their understanding of aesthetics and how it impacts their lives.

c. **Intermediate** - Students explain the role of aesthetics in society.

**Choose documents that demonstrate your aesthetic awareness.**

17. If student clicks on aesthetics, student sees:

Aesthetics is the study of cognition and emotions in relation to beauty and meaning in life. Meaning is attained through

intense perceptual, intellectual, and emotional experiences that provide personal insight into the human condition. These

aesthetic experiences influence ones personal values and promote active inquiry and reflection.

18. If student clicks on Introductory: student sees:

**To demonstrate your understanding of this PUL at the Introductory level, the documents you upload and your reflection should show the following:**

- a) you can explain how aesthetics influences decisions you make in your life.
- b) you can evaluate an aesthetic experience and how this strengthened or changed your valuing or understanding of the human condition or culture.

**The documents you choose to illustrate competence at the introductory level may be from 100 - 200 level courses. OR From documents you have written related to out of class experiences.**

**Not every paper needs to show every element, but every element should be represented in the totality of documents you upload in this section or else accounted for in your reflection.**

**DO YOU WISH TO UPLOAD A DOCUMENT NOW? Y N**

19. If student click Y, student sees a **browse/upload screen**

20. If student clicks on Intermediate: student sees

**To demonstrate your understanding of this PUL at the Intermediate level, the documents you upload and your reflection should show the following:**

- a. you can explain the unique contributions of aesthetic experience to human life and culture.
- b. you can analyze how your aesthetic awareness has been broadened through your studies at IUPUI and the effect of this awareness on your personal development.

**The documents you choose to illustrate competence at the intermediate level may be from 200+ level courses OR from documents you have written related to out of class experiences.**

**Not every paper needs to show every element, but every element should be represented in the totality of documents you upload in this section or else accounted for in your reflection.**

**DO YOU WISH TO UPLOAD A DOCUMENT NOW? Y N**

21. If student clicks Y, student sees a **browse/upload screen**

Students complete the matrix by submitting assignments from their academic and professional classes. These assignments will already have been graded by the professor in each class for content knowledge, and, in some cases but not all, for the particular PUL in the matrix where the student has chosen to upload it. As is evident in the above scenario, students will need to upload several (3-5) documents, generally from different courses or classes, to complete a PUL cell in the matrix at any given level. When students determine that a cell is complete, they click on “Reflection,” and will be prompted to write a reflective essay making the case that the uploaded documents do indeed demonstrate the level of competence as specified.

This reflective piece is what takes the portfolio beyond the function of providing authentic evidence of student learning, important as that is in itself. The reflection is intended to catalyze deeper learning, to capture the connections between disparate skills and information from diverse courses, and to move students into an awareness of meaning that transcends discipline-specific knowledge. Simply writing a reflection, however, does not guarantee profound or insightful metacognitive thinking or enhanced understanding [REFERENCE ARTICLE]. Through workshops offered by national experts, such as Marcia Baxter Magolda, in the development of intellectual

understanding, faculty committees are being guided to write prompts for reflective writing for each of the PULs at the Introductory and Intermediate levels. These prompts will be accessible to students through the portfolio infrastructure, in the form of a ‘prompt wizard’. The intention is that the “just-in-time” prompts will lead students to the kind of intellectual probing required for connective understanding beneath and beyond course content and will provide the catalyst for deeper, more meaningful learning.

These reflections will then be electronically sent to and read by members of the Senior Academy (retired faculty wanting to remain intellectually connected to IUPUI) and by alumni volunteers who will be trained to read and evaluate the reflections in relation to the campus expectations for learning for each PUL. By drawing upon the expertise of our retired faculty and our alumni, we intend ePort to contribute significantly to a community of learning that extends beyond the immediate campus. These alumni and members of the Senior Academy will send a written response to the students and a 1, 2, or 3 designation, 1 being that the work exceeds expectations; 2 being that it meets expectations; and 3 being that it does not meet expectations. The written response, which can be chosen from a selection of pre-written responses or can be composed by the trained volunteer, will comment on the strengths and weaknesses of the reflection, and the appropriateness of the documents selected by the student to demonstrate the specified PUL, and will include suggestions for writing more effective reflections for the next cell they complete. The 1s, 2s, and 3s will be automatically aggregated according to a wide range of demographic information, so that deans, chairs, and campus administrators will not only have a richer picture of how the PULs are influencing student learning on the campus, but will also be

able to pinpoint areas where more attention – and possibly more resources – might be needed to generate improvement. This information will be reinforced by a PUL survey that students will complete during their first month at IUPUI, after they complete 56 credit hours, and during their senior capstone. The survey contains three questions for each PUL, two quantitative in nature, and one qualitative. Example:

1. How important do you think **written communication** will be in your education at IUPUI?

<i>Not at all important</i>	<i>Slightly important</i>	<i>Moderately important</i>	<i>Important</i>	<i>Very important</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How would you rate your knowledge level or competence in relation to **written communication**?

<i>Very low</i>	<i>Somewhat low</i>	<i>Moderate</i>	<i>Somewhat high</i>	<i>Very high</i>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What does written communication mean to **you** and what role will it play in your education?

*Students enter their open-ended response to this question in an expanding word box.*

*Please limit your response to 300 words.*

Because ePort is being built as part of an enterprise system, these surveys will be emailed to students automatically, according to the number of credit hours they have taken. While information from these surveys provides only indirect evidence of learning, through self-reporting, it will nonetheless enrich the picture of the relationship of the PULs to learning in the major.

### The process of design

*Who was involved in the design process?*

The point person for the conceptual part of the design – given her charge by the Dean of the Faculties -- was the Director of Campus Writing and the (then) Director of the Institutional Portfolio. She worked with several different campus committees, including the Faculty Associates, an ePort management committee formed of campus faculty leaders and administrators, the Program Review and Assessment Committee, and ten multidisciplinary PUL committees, each charged with developing consensus about what all students, regardless of academic major or professional program, should know and be able to do in relation to the PULs at 26 credit hours and 56 credit hours.

The point person for research and design (R&D) has changed three times over the past four years of the project, each time stalling the progress of the project while the technological infrastructure was recoded. The first R&D person was a very talented and advanced student working in the IUPUI CyberLab, who cobbled together an infrastructure of the conceptual framework for alpha testing the first year of the pilot. Working from a usability study based on that alpha test, the second point person, the faculty member who directs the CyberLab, began to design an infrastructure that included, but reached far beyond, the conceptual framework envisioned by the faculty committee. After conducting an alpha test of the new structure, that R&D person formed a national consortium for electronic portfolios which currently includes several campuses across the country, such as Penn State, UCLA, Maricopa, Bowling Green, and others. Since the IUPUI portfolio needed to be built as an enterprise system consistent with the language (java) of our course management system, our student information system, and

our registrar's office, we began again with a third R&D person, one centrally located in the Indiana University Information Technology Services (UITS) and are now just in the beginning phases of writing the program to realize the conceptual framework we have been working on for more than four years, and have piloted, with the previous technological structures, for two years. Because of financial challenges, the timeline for implementation will depend upon the allocation of resources for programmers, as they incur the major starting-up expense of the project.

*Institutional support for the assessment innovation*

Administrative support for the conceptual aspect of the project has been outstanding. In fact, in order to facilitate the kind of campus-wide administrative planning required for the project, the Dean of the Faculties promoted the Director of Campus Writing, who had been leading the project, to an Associate Dean of the Faculties position. Support for the financial aspects of the project has been more challenging, primarily because of several concurrent demands on our diminishing resources for technology, not because those making financial decisions about resources doubt the importance of the ePort project. The initial two stages of R&D were funded by soft money from the office of Academic Affairs. Funding the third stage of R&D will be much more extensive, since ePort will be built as part of an enterprise system with one portal into a comprehensive and rich learning environment. Currently, we are working on an internal grant to fund both R&D and assessment of the ePort project, once again with positive support to date from the administration at all levels.

### **Presenting the Assessment Results**

Because we are just entering the (third) pilot, this discussion of assessment results is primarily future-oriented and will address envisioned possibilities.

One major assessment issue we have already addressed is the notion of making faculty grading public. Alverno College has played a leadership role in developing an electronic student portfolio that shows faculty grading and faculty comments, followed by student comments. This kind of approach to assessment, however, is not readily scaleable to a large comprehensive institution with so many different academic schools and professional programs. For several reasons, many IUPUI faculty were resistant to having their grading of and comments on student work made accessible through ePort.

Following current tenets of copyright and intellectual property, we determined that, while students “owned” their completed, graded, assignments, faculty “owned” their grading and comments on the students’ assignments. Students will decide which assignments they will upload onto their portfolios as evidence of competence in the PULs, but the faculty grades for these assignments will generally not be available (although a process for including grades and/or comments by mutual consent is being built into the technological infrastructure). Either by going through the course management system (Oncourse) or through another secure process, all documents uploaded will be “stamped” or authorized by the appropriate faculty member as having been completed, with a passing grade, in his or her course during that semester. These documents will then become secure, “read-only” documents that cannot be changed by the student (although the student can decide to archive or delete the document).

Since all uploaded documents will already have been assessed for discipline-specific content knowledge, ePort is designed to play a more integrative and comprehensive assessment role. What will be assessed through ePort are the students' selections of documents as evidence of competence in the PULs and their reflective writing making the case that these documents, taken together, really do provide evidence of competence. The people involved in making these assessments are members of the Senior Academy, IUPUI alumni, and faculty, all of whom will be trained in holistic scoring methods, the campus expectations for competence at the Introductory and Intermediate levels, and the reflective writing prompts for each PUL. Checks will be built into the technological infrastructure for inter-rater reliability.

Students will each receive a written response and a 1, 2, or 3 designation for each completed cell on their learning matrix. In our current vision of the project, they will, if they wish, be able to revise and resubmit, but will not be required to, since the comments they will receive will focus on how they might improve subsequent reflections. This initial position, however, is negotiable as students and faculty work through the pilot.

The ePort is intended to use assessment to improve not only the learning of individual students, but also learning throughout the campus community. The 1, 2, and 3 designations will be aggregated according to demographic constructs requested by administrative units. Based on administrative requests, the Office of Information Management and Institutional Research will provide overall reports. At the same time,

Deans and Chairs with administrative access to aggregated information will be able to generate specific reports according to their own specific inquiries. For example, the Deans of some academic schools or professional programs may want access to indications of growth and achievement in the PULs according to gender, or to number of credit hours taken that semester, or number of credit hours in relation to number of hours of employment, or direct admits in relation to conditional admits, or any of a wide range of demographic possibilities. We anticipate, for example, if the Chair of the Biology Department learns that 80% of biology majors score either 1 (exceeds expectations) or 2 (meets expectations) in critical thinking, but only 40% score either 1 or 2 for values and ethics, that the Chair will explore, with faculty, the curricular and pedagogical implications of those findings. On a broader scale, if the Dean of the Faculties learns that 90% of graduating seniors across the campus score 1 or 2 for oral communication but only 60% of graduating seniors score 1 or 2 for written communication, the Dean may explore allocating resources to a campus-wide emphasis on writing throughout the curriculum. In other words, we anticipate that ePort will provide information to improve learning from the level of each individual student to the level of the entire campus.

### **Using Assessment Results to Make Changes**

Since the project is still in its alpha and beta testing stages, it is too early to report on how ePort has generated assessment results that have led to curricular or pedagogical changes or to reallocation of resources. The strength of the project lies in the potential for ePort to provide the kinds of assessment results that will enable individual students, faculty, chairs, and deans to make evidence-based decisions related to student learning, and to

provide these results in ways that safeguard the identities of individual students and individual faculty.

### **Conclusions**

Using student electronic portfolios to assess learning both within majors and across the institution run counter to several traditional feature of our current educational model, which is built primarily on disciplines. As Carol Geary Schneider and Robert Shoenberg of the Association of American Colleges and Universities write:

Moving forward with a framework for learning that expects broad, deep, and complex accomplishments for every student is a challenge that invites the participation of the entire array of higher education stakeholders....The groundwork for success has already been laid in the form of an emerging consensus about what matters in undergraduate education and some promising educational strategies for getting there. We need to seize the opportunity for building the more purposeful, powerful, and integrative forms of undergraduate education that the consensus now makes possible (1999, p.35).

The potential of student electronic portfolios to improve learning lies not just in the design, but, even more importantly, in those who will be using them. One major paradox of establishing an institution-wide method of assessment is that, even as it will inevitably change the institution by influencing -- possibly even transforming -- the culture of teaching and learning, it must at the same time blend into the current institutional culture. Whether the platform is developed in a consortium, purchased from a software developer,

or developed on-site, it must be modifiable and customizable in order to suit the educational values of the institution, and of the faculty and students in each department and academic and professional program in the institution. Probably the most significant lesson learned in the development of this approach to assessment is that faculty and students must be involved throughout the process of research and design and the development of the conceptual framework. Additionally, there must be close ties right from the outset between those working on the conceptual development and those working on research and design.

Student electronic portfolios, by providing authentic evidence of student learning, are beginning to play a significant role nationwide in the assessment of teaching and learning. With intentional planning and implementation, they can also play a significant role in catalyzing deeper, more connected learning. Possibly even more important, they can showcase and document the kinds of learning and thinking that transcend specific disciplines and professional programs. The AAC&U Statement on Liberal Learning concludes with the following assertion:

The ability to think, to learn, and to express oneself both rigorously and creatively, the capacity to understand ideas and issues in context, the commitment to live in society, and the yearning for truth are fundamental features of our humanity. In centering education upon these qualities, liberal learning is society's best investment in our shared future.

In centering undergraduate learning upon these qualities, and developing a customizable technological infrastructure to document and assess growth and achievement in these

qualities, electronic student portfolios, appropriately designed, may well become higher education's best investment in our shared future.

There are many different models of student electronic portfolios being developed across the country. Most of them are multifunctional, intended for a variety of audiences. The more complex the functions and the more varied the audience, the more expensive the development costs in both time and money. And yet I can imagine no means more powerful for documenting improvement in student learning, presenting authentic evidence of that learning, and for assessing that evidence according to a wide and interactively modifiable set of parameters to meet dynamically changing institutional needs.

#### Works Cited

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