Developing and integrating a student portfolio and portfolio assessment process into a graduate level degree program; a pilot study

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Abstract: A university is at the beginning of implementing a portfolio assessment process. For students, the portfolio is evidence of their skills; for the institution, they help determine the extent to which students' course work has given them the skills and outcomes named in program and course objectives. Another important purpose is to provide artifacts for accreditation activities. To support institutional accreditation, programs have articulated program and course objectives, matching program objectives to specific courses and analyzing the current state of those relationships. That assessment work socializes active discussions and activities on higher-level program/course issues. It is also providing a practical grounding in articulating criteria and relationships in ways that will support the implementation and utilization of student portfolios. Some portfolio and assessment background is presented. A mature process found at the University of La Crosse is described, which provides which provides a focus for beginning our current portfolio development. The challenge of creating programmatic learning outcomes-specific criteria as requirements for inclusion in the portfolios is discussed. We have not accomplished this articulation, but believe that accomplishing it will provide significant specificity that can be of service to our accreditors, faculty, students and the institution as a whole.

Developing and integrating a student portfolio and portfolio assessment processes into a graduate level degree program

The current real world emphasis on articulating learning outcomes at college level is important to five audiences. First are students, who are increasingly value-centric. As education becomes more expensive and time more dear, students more and more are becoming informed consumers, or put another way, careful shoppers, with many educational choices.

Second are faculty, some of whom are full time, many of whom are not. Faculty apply most of their energy to teaching their courses. They are typically less engaged in administrative matters, and higher-level analysis of programs around accreditation issues is certainly seen as administrative. They are, however, sensitive to student perceptions of

their courses, as the emphasis on student course/instructor evaluations shows. Third are administrators, who will be charged by the institution with implementing activities in support of degree and program improvement, driven by forces of institutional objectives and, in this case, the requirements of an accrediting agency. Fourth is the institution itself, with its multiple motives of maintaining market position, organizational continuity, marketing and public relations stances, and of course, continued accreditation by a significant regional agency.

Setting

Golden Gate University is a private graduate/doctoral institution, with graduate and undergraduate schools in business, tax and law. The San Francisco based institution has an over 100 year history of providing practice-based business education for working adults (http://www.ggu.edu/about). It is accredited by the Western Association of Schools and Colleges and the American Bar Association. The university's Cybercampus (www.ggu.edu/cybercampus) was named one of the top 25 schools offering business-related online degrees in 2001 by US News and World Report. The university offers 20 fully accredited online degrees.
This writing focuses on work being done in the Operations and Information Technology Management Department, which houses and Master of Science in Information Technology Management degree (http://www.ggu.edu/academic_programs/information_technology; http://www.ggu.edu/academic_programs/information_technology/ms_information_technology) and the Master of Science in Project and Systems Management (http://www.ggu.edu/academic_programs/project_and_systems_management), as well as related concentrations and certificates. The outcomes assessment work discussed leading to our present state was undertaken during the late 2009 and 2010 school years.

Research interest

While this work can be considered a case study of a work in progress, there are nonetheless a number of questions of interest:

1. How can the use of student portfolios, and portfolio assessment, drive both student satisfaction and institutional viability?

2. How does an electronic student portfolio make graduate-level students more salable in the job market?

3. How can comprehensive portfolio and portfolio assessment processes provide insights to students, teachers and the institution, as to the efficacy of degree programs?

4. How do student portfolios address the current emphasis by accrediting bodies on assessing student learning outcomes?

Discussion

The educational landscape is more complex and crowded than ever. Higher education continues to be valued in the United States, but also continues to become more expensive.

As this is written in early 2011, the effects of the global and United States financial crisis are impacting students and educational institutions. For example, the University of Phoenix is suffering both a drop in student enrollment and stock price: (http://www.insidehighered.com/news/2010/10/15/qt/u_of_phoenix_enrollment_drop_projections_spark_stock_drop). In our school, we see increasing numbers of two-income family members struggling to attain degrees while holding one or even two jobs, commuting, and trying to maintain balanced personal and home lives.

We are a private institution, and our courses and degrees are not inexpensive. Our marketing, like that of many other institutions, can reference the total cost of an education as an "investment." Increasingly our students ask specific questions of us: how will this degree (or these courses, or this certificate) help me to get a job? Where do your graduates get jobs? What is their salary? What can your school do to help me get a job? Put rhetorically, what is the return on this investment?

Dialogues at this level of specificity are not something that universities are used to engaging in. Universities traditionally market the implicit notion that attaining a degree will provide students with job specific skills, but until recently, they have not been expected to provide evidence that those connections exist.
As this is written, the National Association of Student Financial Aid Administrators has just released a document titled Final Program Integrity Rules: Gainful Employment (2010). New guidelines expect educational institutions to provide both proof and documentation relative to the jobs students attain as the result of their participation in certificate and other trade-specific programs at schools. Students will also have access to matriculation and graduation rates, educational costs, and transfer data.

While this does not yet impact degree programs, it does reflect an emerging climate of transparency to the realities of one's education vis-à-vis the world of work.

There have been various responses over time in the educational communities to the situation. Two are discussed here: student portfolios and portfolio assessment as evidence of student attainment and attendant student perceptions about their education, and, secondly, the current emphasis by accrediting bodies (WASC, the Western Association of Schools and Colleges for our university) on providing direct links between "what we say we teach them", and what they actually learn."
It can be said that a "perfect storm" of forces is occurring around that central question: how do stakeholders know that students are learning what our programs purport to teach?

Learning Outcomes Assessment and Student Portfolios

The remainder of the paper discusses two interrelated forces in our institution's "next steps" in addressing these matters. First is an accreditation-driven process called learning outcomes assessment, which is one of a series of expectations of our accreditation agency; this was recently accomplished. The second, and the real subject of this paper, is the creation and implementation of a viable student portfolio process for our students. This is in its beginning stages.

There is a connection, which is that the learning outcomes assessment process has been a positive force in articulating the relationships between program objectives and course objectives. The articulation process has driven discussions on those relationships, resulting in several action plans that are being currently undertaken.
Articulation is an important term that drives our current and near-future work. Articulation is a term for a difficult process, which is to give shape and voice to intangibles. We can say that making the intangible, tangible, is one of the expected outcomes of improved educational processes. What is an example of an intangible? Here's an example from a course syllabus: "Students will learn about global project management." One can say that this is an example of a highly generalized objective, but for this paper we say that the objective is reasonable, but there are no criteria by which to measure it.

The next section introduces a discussion of the portfolio tool, in terms of best practice and our current state. "Articulation" and "criteria" are important because articulating (or making tangible) specific program and course criteria as components of the expectations for content items in a portfolio is not only an important design parameter, but can individualize our "flavor" of the portfolio design so as to differentiate it from others, and also to ensure that it more directly serves relevant stakeholders.

Student portfolios

On the simplest level, a portfolio is a collection of something, or things, that is a container of work or activities. An ideal portfolio is comprehensive yet fluid enough to be constantly updated, and in a configuration that provides transparent access to those invited.

Since Golden Gate University is a business school, we begin with a business definition of a portfolio, that is, the "portfolio approach to managing projects (Hill, 2007)) which means that Information Technology projects in a business are taken together and actively assessed according to various factors, the most common of which is the notion of risk. Risk is defined by traditional business criteria as well as business specific criteria, and projects are acted upon (selected, rejected, managed) according to those criteria.

The portfolio is then a container for proposed and ongoing projects, which can be continuously exposed to actionable criteria. One benefit of many is transparency: projects are accumulated in one location, and in accordance with common criteria. Because both ongoing and proposed projects comprise the portfolio, a greater level of positive exposure is possible than if the projects were managed separately. Discussions can be held among stakeholders, analytic criteria can be applied, and actions can be taken based on access to this collective of data, the portfolio.

In higher education, the student portfolio is often taken to mean a collection of student work, a student vita or resume, and student reflections on their experiences. A reasonable overview of the rationale and approaches to portfolios is found in the discussion titled

Electronic Portfolios in the K-12 Classroom (2002). Although ostensibly referring to K-12, the author acknowledges the use of portfolios in higher education, and intends in the writing to discuss the use of portfolios in public school arenas.

Helen Barrett, cited in the article, discusses various approaches to the development of the portfolio and attendant processes:

> Barrett identified five steps inherent in the development of effective electronic portfolios:
>
> 1. Selection: the development of criteria for choosing items to include in the portfolio based on established learning objectives.
>
> 2. Collection: the gathering of items based on the portfolio's purpose, audience, and future use.
>
> 3. Reflection: statements about the significance of each item and of the collection as a whole.
>
> 4. Direction: a review of the reflections that looks ahead and sets future goals.
>
> 5. Connection: the creation of hypertext links and publication, providing the opportunity for feedback.
> (http://www.educationworld.com/a_tech/tech/tech111.shtml

Davies and Mahieu's (2003) meta-analysis of portfolios and assessment provides a thoroughgoing discussion on the topic. A higher level purpose for student-centered portfolios is improved learning, enabled by not only reflection on course content, but by reflection on one's own processes for engaging experiences. These same outcomes can occur in the teaching community as well, when teachers engage those portfolios in common settings. That is, portfolios allow benefits to accrue for the various audiences involved with those portfolios.

A current example of an institutional portfolio approach is found at the University of La Crosse. The Student Affairs in Higher Education program (http://www.uwlax.edu/saa/eports.htm) web page lists these requirements for the student portfolios:

> **Requirements:**
>
> • An "Introduction/Home" link should be present (like your own homepage to introduce yourself) – include contact info
>
> • All 7 Competencies should be present
>
> • 1 artifact (professional piece) should be selected from each course (and assigned to a competency area)
>
> • Each artifact should have a reflection statement attached
>
> • Each Competency should have a minimum of 1 artifact
>
> • Resume

The competencies referred to above are described in this way:
(http://www.uwlax.edu/saa/competencies.htm) :

Program Competencies

The following competencies describe what is expected of our students as they enter the student affairs profession. These competencies provide the foundation for SAA program planning and assessment.

- Applied Research: The design and implementation of program evaluation, assessment, and applied research using both quantitative and qualitative techniques.

- Critical Analysis and Problem Solving**:** The ability to examine multiple perspectives and draw reasonable inferences that are accurate, applicable, and justified in making decisions to solve a problem.

- Effective Communication: The ability to converse expressively and receptively in a clear and accurate manner in oral, written, interpersonal, and electronic communications.

- Ethics and Professional Responsibility**:** The understanding and application of ethical standards and legal issues to work environments and relationships; the ability to act ethically and to conduct university business as a person of integrity and contribute to the profession and the university community.

- Global Connection and Human Diversity: The awareness, knowledge, and skills needed to work effectively with others who are culturally different from self both locally and internationally as well as gain insight into a global perspective of student affairs and higher education.

- Higher Education Knowledge: The knowledge and understanding of concepts, principles and practices of higher education as they relate to leadership, technology, management, and administration in both a historical and current context.

- Student Characteristics and Effect of College on Students: The knowledge and understanding of concepts and principles of student development theory, traits of the current college generation, and ability to apply theory to improve student affairs practice.

We can see that while the portfolio on its face is designed to serve the professional needs of students, it can also serve the institution as evidence of learning outcomes, and as phenomena to provide input into program development and improvement.

A version of this attractive, well-considered approach is hoped to be applied to the portfolio process at our institution. We ultimately intend to have the student-centric portion of the portfolio process be a public artifact of our degrees, available in public arenas such as the GGU website.

The beginnings of our portfolio process

As this is written, instructors in the Operations and Information Technology Department in the spring 2011 semester have been asked to do two things: gather examples of student work, and build in an end-of-course reflective component on the program and course. This is assuredly not intended to be a complete process by any means, but is intended to be a pilot study, as well as to introduce a culture change, within the department.

The portfolio of student work is to be developed as the student takes courses in our programs. The instructor will gather specific student work in each course, at this beginning stage being course projects, case studies and papers. Students will be encouraged to provide reflections about that work as he/she goes.

An overview reflection process will ultimately occur in the culminating courses, that is, the capstone course in the IT degree and the project course in the Operations /Project management degree. Both the work and the students' reflections on that work provide feedback for teachers, curriculum developers and the institution as a whole.

This gathering is being accompanied by my personal interactions with the faculty, encouraging their engagement, and also supporting the development of portfolio process for each instructor and course that is unique to them, but which, taken together, are intended to provide a set of practices that will be massaged and integrated into a portfolio approach.

A development challenge

If we were to closely follow Le Crosse's excellent portfolio example, we would, I believe, not address several components that our institution, which describes itself as a practitioner-based school (http://www.ggu.edu/about/), must address if the portfolio is to ultimately serve relevant stakeholders.

If a program purports to engender skills such as "leadership" or "project management", we must articulate those terms in such a way that students and faculty can discuss and perhaps measure them, and faculty and administrators can assess student perceptions of their effectiveness. Our list of competencies should then reflect those articulations.

The role of the learning outcomes assessment in articulating criteria to be applied to portfolios

During the 2009-2010 school year, departments engaged in an accreditation-driven set of activities called learning outcomes assessment, whose ultimate goal was to ensure that programmatic learning objectives were in fact present in specific courses. The operating question was, to what extent does student work represent appropriate articulation of programmatic and course learning outcomes? The process involved a number of steps, involving, for example, completing rubrics. Here are two of those rubrics, first, a program learning outcomes statement, and second, a rubric demonstrating how learning outcomes are represented in specific courses:

Table 1. Student learning outcomes for the Master of Science in Information Technology (GGU)

I. STUDENT LEARNING OUTCOMES
Please list (numerically) student learning outcomes for the program. The numbers associated with the learning outcomes correspond to those shown in the column headings. Learning outcomes listed here should be identical to those listed in the Learning Assessment Plan, Program Review Plan, Program Review Report, shown at the GGU website, etc.

SLO1 - Students will articulate the contributions of IT to business strategy, operational goals and business processes, and will be able to communicate clearly with line-of-business counterparts and internal clients to create an IT strategy that aligns to business strategy.

SLO2 - Students will provide well-argued business cases and business proposals that demonstrate evidence of both course and programmatic learning outcomes.

SLO3 - Students will demonstrate the ability to manage the enterprise information architecture and a portfolio of IT projects. Students can articulate how to deliver projects that are successful in business alignment, user adoption and the use of appropriate technology.

SLO4 - Students will evidence the skills and the knowledge to manage effectively in an IT environment increasingly mediated by evolving demands of IT outsourcing, regulatory issues of security and compliance, and the increasing use of Internet/Web tools such as Software as a Service, Infrastructure as a Service, "Cloud" data storage and management.

Table 2. Learning outcomes as represented in specific courses

I = INTRODUCED. The material is presented during lecture or in reading materials, etc.
P = PRACTICED. The knowledge is applied or the skill is practiced. Students complete exercises in class, participate in discussions, engage in relevant reading or research, but do not actually produce work or engage in behavior that demonstrates their full level of knowledge or skill.
D = DEMONSTRATED. The knowledge or skill is clearly demonstrated in the form of student work products that are evaluated to determine student proficiency. Students may submit an assignment or a report, make an oral presentation, take an examination, etc. that demonstrates their level of skill or knowledge.

Required Courses	SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7	SLO8	SLO9	SLO10
ITM340 – Managing Information Technology in the Business Enterprise	I, P, D	I	I	I,P	X	X	X	X	X	X
OP340 – Project Management	I,P	I, P	I, P	I, P	X	X	X	X	X	X
ITM342 – Enterprise Architecture Planning	I, P	I, P	I, P	I, P	X	X	X	X	X	X
ITM343 – Budgeting and Finance for the IT Manager	I	I	I	I, P, D	X	X	X	X	X	X
ITM344 – Information Technology Governance, Portfolio and Program Management	P, D	P, D	P, D	I, P	X	X	X	X	X	X
ITM395 – Strategic Information Technology Planning, Organization and Leadership (CAPSTONE course)	P, D	P, D	P, D	P, D	X	X	X	X	X	X

Having created these and other rubrics provided by WASC, we then determined a current-state way of determining how these outcomes were present in student work. The accrediting agency is flexible in how this can be done, but a popular and often used method is to utilize the work in a culminating or capstone course as the primary unit of measure; this is what we did. The Information Technology degree has a capstone course whose student work products are a comprehensive business case and business plan. The Operations degree has a culminating course that is project oriented. The student work in these courses was taken to, at this stage, represent student learning outcomes relative to stated course and programmatic learning outcomes. This is not taken to be an ideal measure, but is considered appropriate as a step in an institution's process of developing mature programmatic assessment.

The next and final step in this stage of our accreditation process was to provide analysis and action plans for our findings. To do this, full time faculty and selected expert adjunct faculty viewed all recent student work from courses in their respective disciplines in the past several years, and provided input based on a rubric based points model:

Table 3. Rubric for evaluating student work

1.a Contributions of IT to business strategy

ATTRIBUTE	AVERAGE	ABOVE AVERAGE	SUPERIOR
Articulate IT strategy	Business case and business plan student work is at summary level; student work shows little integration of IT strategy-related course concepts and practices.	Business case and business plan student work shows an emerging sense of integration of IT strategy-related course theories and practices.	Business case and business plan student work shows a mature sense of integration of IT strategy with course theories and practices.
Articulate IT strategy and practice relative to business function	Business case and business plan student work is at summary level; student work shows little integration of IT strategy vis a vis business practices and functions	Business case and business plan student work shows an emerging ability to integrate of IT strategies and practices with business practices and strategies	Business case and business plan student work shows a mature sense of ability to integrate IT strategies and practices with business strategies and strategies
Articulate IT tools and their role in business value	Business case and business plan student work is at summary level; student work shows little integration of IT strategies and practices into the role and use of IT tools as enablers and providers of business value Student shows minimal ability to comprehend and discuss contemporary IT tools	Business case and business plan student work shows an emerging ability to integrate IT strategies and practices into the role and use of IT tools as enablers and providers of business value Student shows an acceptable understanding of contemporary IT tools	Business case and business plan student work shows a mature ability to integrate IT strategies and practices into the role and use of IT tools as enablers and providers of business value Student shows thorough understanding of contemporary IT tools

Faculty provided these analyses individually, and then we came together to discuss our findings and, importantly, to devise action plans for going forward. We completed the ratings activity during the summer of 2010, have devised action plans, and are moving forward according to an institutional timetable.

Application of criteria to portfolio competencies

It is the development of criteria that is of interest, and that will be useful in the development of our portfolio competencies. Recall that the objective is to develop criteria (in La Crosse's words, Program Competencies) that are specific to various learning outcomes, and that are expected to be used in the Operations and Information Technology Department's ultimate student portfolio design.

Our accreditation-driven process to now has encouraged articulation of intangibles, connections among high-level and course-level outcomes, and a further process involving active, long-term dialogue among faculty members in the two disciplines (and degrees) within our department.

Yet, we are still a ways from the ideal. Our analysis criteria above for "articulating IT strategies" are admittedly vague, but do provide a starting point: "Average" = "little integration", "Above Average" = "emerging sense", and "Superior" = "mature sense or ability."

So we intend to strive to provide specific criteria for items such as "articulating IT strategies" that contain more concrete descriptors. A significant part of the dialogue occurring during this pilot study semester will be to bring together what we have learned about articulating intangibles through the learning outcomes assessment process, and to apply those learnings to the creation of more descriptive, actionable criteria, to be applied to portfolio competencies.

For example, it can be that a course objective is that students will "articulate the term 'information technology value' in the workplace". As part of the reflection process in the course, the instructor will encourage students to discuss their understandings of that objective, their learnings and perceptions. Their ostensible point of reference will be the portfolio course artifacts, but it is expected that those artifacts and the reflection process will create a larger and more profitable dialogue, for all parties, that can address questions such as these:

Specifically, how do students perceive and operationalize an intangible term such as "value"?
Generally, what is the student's skill in (or approach to) articulating criteria for an ephemeral concept?

To what extent do student and teachers have common understandings of terms, concepts, and practices?

To what extent do students' work products match the teacher's objectives for those artifacts?

How do the students' responses help teachers improve course materials and teaching in subsequent iterations of the course?

How do those responses provide substantial information that can be integrated back into the teaching community to continue to finesse the process?

There is a WASC rubric that we use as a touchstone in our work, shown here:

Table 4. WASC portfolio assessment rubric

WASC

PORTFOLIOS
Rubric for Assessing the Use of Portfolios for Assessing Program Learning Outcomes

Criterion	Initial	Emerging	Developed	Highly Developed
Clarification of Students' Task	Instructions to students for portfolio development provide insufficient detail for them to know what faculty expect. Instructions may not identify outcomes to be addressed in the portfolio.	Students receive some written instructions for their portfolios, but they still have problems determining what is required of them and/or why they are compiling a portfolio.	Students receive written instructions that describe faculty expectations in detail and include the purpose of the portfolio, types of evidence to include, role of the reflective essay (if required), and format of the finished product.	Students in the program understand the portfolio requirement and the rationale for it, and they view the portfolio as helping them develop self-assessment skills. Faculty may monitor the developing portfolio to provide formative feedback and/or advise individual students.
Valid Results	It is not clear that valid evidence for each relevant outcome is collected and/or individual reviewers use idiosyncratic criteria to assess student work.	Appropriate evidence is collected for each outcome, and faculty have discussed relevant criteria for assessing each outcome.	Appropriate evidence is collected for each outcome; faculty use explicit criteria, such as agreed-upon rubrics, to assess student attainment of each outcome. Rubrics are usually shared with students.	Assessment criteria, e.g., in the form of rubrics, have been pilot-tested and refined over time; they are shared with students, and student may have helped develop them. Feedback from external reviewers has led to refinements in the assessment process. The department also uses external benchmarking data.
Reliable Results	Those who review student work are not calibrated to apply assessment criteria in the same way, and there are no checks for inter-rater reliability.	Reviewers are calibrated to apply assessment criteria in the same way or faculty routinely check for inter-rater reliability.	Reviewers are calibrated to apply assessment criteria in the same way, and faculty routinely check for inter-rater reliability.	Reviewers are calibrated; faculty routinely find that assessment data have high inter-rater reliability.
Results Are Used	Results for each outcome are collected, but they are not discussed among the faculty.	Results for each outcome are collected and discussed by the faculty, but results have not been used to improve the program.	Results for each outcome are collected, discussed by faculty, and used to improve the program.	Faculty routinely discuss results, plan needed changes, secure necessary resources, and implement changes. They may collaborate with others, such as librarians or Student Affairs professionals, to improve student learning. Students may also participate in discussions and/or receive feedback, either individual or in the aggregate. Follow-up studies confirm that changes have improved learning.
If e-Portfolios Are Used	There is no technical support for students or faculty to learn the software or to deal with problems.	There is informal or minimal formal support for students and faculty.	Formal technical support is readily available and proactively assists in learning the software and solving problems.	Support is readily available, proactive, and effective. Tech support personnel may also participate in refining the overall portfolio process.

The above rubric is clear in its application to using portfolios relative to assessing program learning outcomes. While the ability to do this is one of our purposes, we currently do not aspire to be categorized according to any of the descriptors above, even the "initial" one, but the guidelines are clear and beneficial for one part of the equation, that is, the expectations for analysis of portfolios for the institution.

What is not shown here nor apparently presupposed is the input students have on the design of the portfolio, the nature and structure of their reflections, the inclusion of additional artifacts such as resumes and perhaps audio and video inclusions.

This takes us back to our starting point, that we are at the beginning stages of creating a dual-purpose portfolio and portfolio assessment process for several audiences and purposes. It is to feature articulated "intangible made tangible" descriptors, again for the benefit of all audiences.

Conclusion

By the end of the spring semester (late April 2011) we will have

- Gathered an initial set of student work products

- Gathered a set of instructor-designed approaches gathering student reflections and perceptions for courses

- Be in a position to formally interact with instructors to develop mature criterion-based competencies, an early stage tool in the development of a broad based set of department specific competencies for use in our department's portfolio tool.

The look and feel of the ultimate portfolio may not differ substantially from those of other graduate level institutions, but it is intended to feature competencies that include articulated, specific criteria related to programmatic and course outcomes, that students will be expected to respond to.

We hope that that specificity will provide all our university stakeholders with the means to both express themselves productively, be it students who are presenting themselves professionally, students who are telling us their perceptions of our offerings, faculty who are assessing students and their own instructional skills, or administrators who are using these artifacts for curricular and institutional improvement.

Earlier in the paper, Davies and Le Mahieu (2003) comment that students develop meta skills, that is, the ability to think analytically about their own thinking, by having control over the contents and approaches to their portfolios. The same can be said of teachers and an institution. We hope that this pilot study approach to portfolios, enlightened by our ongoing accreditation work and with one clear eye on the experiences of others as found in the literature and in best practices, will enable us to quickly implement a dual-purpose portfolio tool, engaging both students and teachers in reflective, thoughtful dialogue on the teaching/learning experiences that occur in this university.

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