

ePortfolio and Laptop Program Initiative Project

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Abstract:

The offices of Academic Affairs and Information Technologies at Salve Regina University collaborated on a project to develop a useful means of assessing the effect of an enhancement to the university's Core Curriculum on student outcomes through the implementation of an electronic portfolio program coupled with a laptop program initiative for all first year students in the fall semester 2006. Utilizing pilot procedures in both the electronic portfolio and the laptop support programs in which important partnerships were formed with key vendors in the previous year, the project was fully implemented in a timely and cost-effective manner. The presentation will include a review of the project scope and plan, the vendor selection process, the risk assessment before and during execution and lessons learned from the experience.

Report:

Realizing a vision in any enterprise can be an exciting journey that can require several years of accomplishing small but critical steps. In the case of an academic initiative, given the process of incorporating a change in the way teachers and students interact, the path may take several semesters of effort. So it was with the experience at Salve Regina University in advancing a dual threaded vision of creating a valid assessment tool for student learning (electronic portfolio) through the means of state of the art technology (wireless laptop computer). This report will describe key elements of the multi-year journey of implementing a student electronic portfolio and required student laptop program. Various strands of the report will describe efforts initially undertaken in response to a new university goal and the creation of a new Core Curriculum that resulted in the formation of a number of academic and administrative committees, faculty development programs, technology configuration designs, business partnerships and project team implementations that came to fruition in the fall semester of 2006.

The seeds for infusing more technology into the academic curriculum were planted in response to the university goal "to create a vibrant learning community that generates new standards of academic excellence and is charged with intellectual excellence, diversity of thought and centrality of purpose." Mindful of the key tenets of the new Core Curriculum (2002-3) which were to provide an education with a Catholic identity, to provide a liberal education, to form responsible citizens of the world and to cultivate lifelong learning, actions were undertaken to create a vibrant learning community through the use of technology. From an academic perspective, the primary purpose of utilizing technology in the curriculum is in support of faculty and student efforts to enhance their learning experience. To this end, actions included the greater utilization of the learning management system, additional installations of teacher station configurations in classrooms (consisting of a computer, an Internet connection, a projection unit, a screen, a

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VCR/DVD player, a sound system and, in many cases, a document camera), and the introduction of laptop carts in specific classrooms to integrate access to the vast reservoirs of information on the Internet within class activity.

In the fall of 2004 an academic team consisting of the dean of undergraduate studies and selected faculty participated in an assessment conference in which the student electronic portfolio was described as a means for students to express visually and textually the effect of their college education. This idea was extended to possibly serve as a means to demonstrate evidence of the impact of the newly formed Core Curriculum at Salve Regina on student learning for assessment purposes; this result could be very important during accreditation visits and also for interested constituencies such as students, parents, alumni, benefactors, among others.

The academic team led by the undergraduate dean met with a small group of faculty and IT personnel in August 2004 to share their recent conference experience and to solicit input and assistance in developing a prototype of an electronic portfolio. One of the underlying principles of the ePortfolio is the process for the student to “collect...select...and reflect on” examples of their educational experience. Colleges offering exemplar ePortfolio programs at the time included Portland State University and LaGuardia Community College; these programs were ones that particularly excited our academic team in that they depicted an interesting design of an underlying technical framework interwoven with a creative fabric that would enable students to express themselves in a free manner utilizing not only written text but other more engaging multimedia elements.

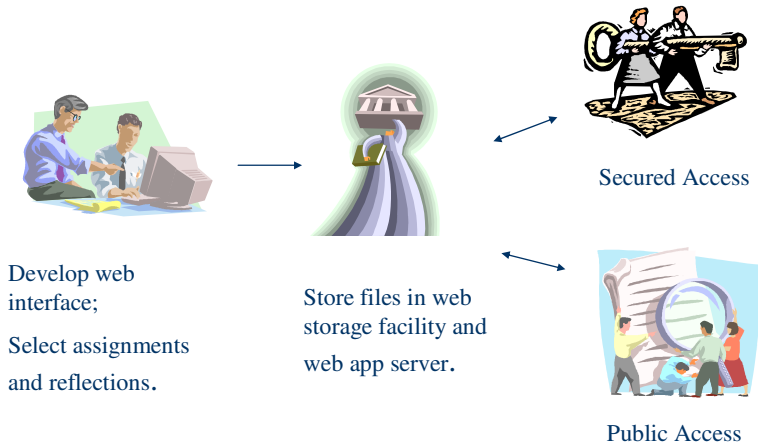
The university’s director of Web Services conducted research on various software tools available at the time that could be used to develop an electronic portfolio (ePortfolio) and proposed the use of the Macromedia (now Adobe) product *Contribute 3*; this product offered students a software tool to easily (and safely) update web pages with text, graphics, pictures, videos and other digital objects. As a storage component for the electronic portfolio, the university already provided a web storage facility (WSF) product offered by Xythos. The ePortfolio configuration therefore consisted of the reflective development component using Macromedia’s *Contribute 3* and the back end storage component using Xythos’ web file storage product WFS (renamed as *MyData* for the Salve Regina community); initially the selected reference documents were imported into the *Contribute 3* server environment to be incorporated into the ePortfolio.

A pilot ePortfolio project team was formed for the spring semester of 2005 consisting of five (5) New Student Seminar sections from the First Year Experience program each including an instructor, an upper class student mentor and fifteen (15) first year students. The pilot would be using the prototype *Contribute 3* based configuration with the primary Xythos WFS storage facility; much had to be learned and accomplished in a very short period of time to be ready for the pilot to begin.

During the actual pilot period, another academic-based team selected by the undergraduate dean was assembled to determine the best means to assess the ePortfolio. What made this engagement particularly challenging was the scarcity of precedents and the paucity of experiences and training paradigms for such an endeavor. For example, it was one exercise to have an English professor or History professor grade a submitted subject matter paper; it was another exercise, however, to assess the reflection that a student may have within the ePortfolio to a previously graded paper. Based on the feedback from faculty and students who participated in the initial project,

the pilot was considered successful and the overall positive experience led to the development of a more expansive pilot for the subsequent year.

ePortfolio Configuration



The second ePortfolio pilot for the 2005-6 academic year was expanded to twelve (12) sections of the New Student Seminar from the First Year Experience program as well as selective Education major sections. By including the Education majors in the ePortfolio pilot, a new dimension of the ePortfolio was addressed which involved the tracking of achieved objectives in the Education program by the student teachers as they progressed through their chosen academic program. The *Contribute 3* configuration for supporting the ePortfolio program was enhanced by the university's director of Web Services working closely with Macromedia / Adobe parties; the application was now integrated with our Microsoft *Active Directory* authentication process and retained the capability of referencing selected documents stored in the Xythos WFS system. One restriction remained, however, in that the use of *Contribute 3* for students was bound to the location on campus where the application software was installed, that being the University Computer Labs (UCL) in the garden level of the McKillop Library. This result made the training and development of the student ePortfolio location-centric. Another solution was needed in order to provide full deployment to the full undergraduate student community.

During this period, there was much interest within K-12 and higher education institutions on the merits of a student portfolio, particularly an electronic portfolio. A group was formed in the New England area, called the NEePP (New England ePortfolio Program) peer group that convened three or four times a year at different universities to discuss and debate the various interpretations and solution configurations of an electronic portfolio. The director of Web Services at Salve Regina University participated in several ePortfolio workshops and conferences, and made

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numerous presentations. He became a respected ambassador of the ePortfolio program at Salve Regina, and its unique configuration, to other universities.

In support of the greater acceptance of the key tenets of the new Core Curriculum, particularly the lifelong learning element, two new faculty development initiatives were begun; they were the Writing Across the Curriculum initiative and the Information Literacy and Technology Across the Curriculum (ILTAC) initiative. For the ILTAC effort, the core support group included parties from the Library and the IT Office working in close contact with the undergraduate dean. Each semester a series of workshops was provided in support of faculty development in providing instructional materials for faculty to apply to students to facilitate the learning of essential information literacy skills and technology fluency, regardless of the academic discipline (see ASCUE presentation June, 2004). A typical cohort of faculty participating in a semester ILTAC program included Nursing, Philosophy, Business and English professors. The program provided a non-threatening, nurturing environment in which ideas pertaining to instruction on the use of information literacy skills and technology fluency could easily flow among the faculty members.

During the 2004-5 academic year, the vice president of Academic Affairs (VPAA) announced that an inclusive committee of university parties would be formed to articulate a future vision and identify a strategy for using technology in the curriculum at the university. The committee, named the Academic Technology Planning Committee (ATPC) included representatives from Academic Affairs, faculty, Library, IT and students. A survey was provided for students based on a national Educause template to obtain insights into the feeling and appreciation of using technology in the curriculum from a student perspective; the results of the survey revealed an interest by students for employing a moderate degree of technology in the classroom. This finding suggested the utilization of carefully planned technology in the classroom to enhance, but not replace, the current teaching methodology.

After the year-long committee study on the future vision and strategy of using technology in the curriculum at the university, the VPAA announced at the May, 2005 faculty assembly that she was recommending the adoption of a required laptop program to be used initially with the student development of an ePortfolio; this initiative would commence with the incoming class for the fall of 2006. Later that summer of 2005, however, the VPAA left the university and in September, the director of Network Services also departed. Thus within a month's time, at the outset of this important project, the university lost a key academic champion and a key network architect for the ePortfolio and Laptop Program initiative. Nevertheless, knowing that others would rise to the occasion, the president of the university announced at the opening of school in September, 2005 the commitment to the ePortfolio and Laptop Program initiative beginning in the fall 2006 semester.

Visits to other schools with Laptop Programs were continued. Over the course of several years, parties from both the Academic Affairs area and the IT office made visits to higher education institutions who had embraced a Laptop Program; these included Bentley College, Babson College, Bryant University and Sacred Heart University, among others. Various lessons learned from the visits included the selection process of the laptop model and software image, the faculty development resources provided in using the laptop and technology for instructional purposes, the faculty classroom support procedure, the placement and utilization of wireless access points inside and outside of classrooms, the logistics of laptop distribution, the operation of the Laptop Support Center, among other items.

In order to prepare for the laptop required program, the undergraduate dean requested that the university distribute laptops to all undergraduate faculty in the 2005-6 academic year. In turn, the IT office decided to offer the same laptop model for students as a 'recommended' model in the same year; this action would allow faculty to become accustomed to the features of the laptop both on and off campus and the IT office would be provided with an opportunity to prepare an equipped laptop support location and prototype operation before the required program began.

From the Academic Affairs office and with a faculty development, support and training perspective, the undergraduate dean and the interim VPAA immediately began a series of meetings on the impact of the laptop initiative on the academic program. Although laptops were distributed to half of the faculty in the summer of 2005, more formal faculty development programs had to be enhanced to meet the imminent deadline. The basis for the programs had been started with the ILTAC workshops but now had to be escalated to address the needs of many more faculty members. Several aspects had to be addressed including not only the functionality of the laptop itself, but more importantly, the selective use of the laptop for in class student activities and outside of class individual and collaborative assignments.

The dean established a series of workshops offered to faculty on two occasions during the academic year addressing the management, teaching, research, assessment and communication components (MTRAC) of using technology, including the laptop. The workshops were offered during the spring semester of 2006 in tri-weekly sessions and also at the end of the semester in a two-day faculty development workshop. The feedback on the acceptance and effectiveness of the training workshops was very positive. The faculty could now look forward to the fall 2006 commencement of the ePortfolio and Laptop Program initiative with a greater degree of confidence.

In parallel with and in support of the faculty development efforts and the expanded ePortfolio pilot, the IT office formed a Laptop Infrastructure project team in January, 2006 to prepare for the classroom environment and lay plans for the distribution, support and utilization of the laptop by the incoming class of students in the fall of 2006. The team consisted of representatives from IT, Library, faculty, Registrar, Purchasing, Facilities, Finance, business partners, among others. The team followed a formal project management format with biweekly project status meetings; the project manager for the team was the IT director. There were many deliverables included in the Work Breakdown Structure of the project; these deliverables are described in the following paragraphs.

Deliverable 1: Laptop and Software Image Selection. The selection of the laptop began in 2005 as part of the process to prepare for the future use of technology in the curriculum at Salve Regina. The chosen vendors to review included IBM (Lenovo), HP and Dell; for students interested in Mac computers, the university offered three Mac Lab locations on campus for use particularly with Art technology programs. Research and analysis were conducted on the various products offered by each vendor; multiple presentations were provided to university representatives including Academic Affairs, Finance, IT and faculty. The chosen vendor and laptop based on cost, functionality and support was the HP nc6230 laptop for the faculty and as the recommended laptop for the 2005-6 academic year (Year 0 of the Laptop program). During the 2005-6 academic year, feedback on the use of the chosen laptop was favorable and the number of repair or maintenance request was minimal. As a result of this initial experience, the project team recommend-

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ed the same HP nc6230 laptop for the commencement of the Laptop Program initiative in the fall of 2006.

Deliverable 2: Physical, Classroom and Network (including wireless) Infrastructure. The classrooms needed to be enhanced to some degree to be ready for the Laptop Program. Several classrooms had teacher station configurations (about 42%) but more were needed to accommodate the planned expanded use of technology in the classrooms. Because of the heterogeneous nature of the campus classroom layouts, teacher station designs that accommodated the classroom layout in traditional classrooms did not necessarily apply to classrooms located in historically preserved buildings. Further, many classrooms had tablet arm chairs that would cause a challenge for students who needed a larger work surface. Rather than rush to a total forklift of the classroom formats, the project team suggested a plan that could be implemented over a few years; the means for establishing such a plan was to work closely with the Registrar's office to determine the particular classrooms typically assigned for first year courses. In this way, the university would be able to accommodate the present needs with the capability to adjust and expand as the Laptop program took hold.



In a similar vein, the use of wireless technology was essential for classroom laptop activity. The IT office had experimented with various wireless technologies in particular zones of the university areas (Library, lounges, selective classrooms), but now it took on a much more important strategic importance. Several vendors had been considered including Cisco, Aruba, Chantry, among others. After initially choosing Chantry (Siemens), the IT office altered course and selected the Cisco wireless solution; this action allowed the IT Network staff to focus on learning wired and wireless network skills required by one vendor Cisco, rather than by multiple vendors. The communication closets within the campus buildings where wireless access would be available needed to be enhanced with new switches with an advanced Power over Ethernet (POE) capability to support the wireless access devices. These switches emitted more heat and required more electric power than the previous data switches; the Facilities department, therefore, was requested to provide a better vented or conditioned environmental solution to the communications closet area and a more dedicated provision for electric power for the technology configuration enhancement.

Deliverable 3: Laptop Security and Maintenance. The pervasiveness of viruses and other malware affecting computers is always a challenge and would be an important concern in supporting a Laptop Program. Included in the software image installed on each laptop were Symantec *Norton Anti-Virus*, Microsoft *Windows XP Pro* with SP2, and Lavador's *Ad-Aware* software; these software elements accompanied by best practice guidelines mitigated the risk of a malware out-

break during the launch of the Laptop Program. With regard to physical security, each laptop was to have an asset tag number in addition to a serial number that would be recorded in the university's asset tracking system (*BMC Magic / Service Desk Express*). Rather than include Absolute's *CompuTrace* program for remote asset tracking, the project team recommended that students' parents consider rental insurance or a rider on their home owner insurance. From a maintenance service perspective, the university planned to offer a conveniently located Student Laptop Center with flexible business hours for student support; the Student Laptop Center was located on the garden level of the McKillop Library across from the University Computer Labs. The student laptop package included a fourth year of maintenance and accidental damage protection; the latter element allowed the provision of free repair or replacement in the occurrence of a serious accident (one per year).

Deliverable 4: Academic Instructional Technology. In an effort to assist instructors in the use of technology, particularly the laptop, the IT office collaborated with representatives from Academic Affairs and the Library on several workshops offered to the faculty in general as part of the aforementioned MTRAC program. For instructors involved in the New Student Seminar program, special instruction would be needed because it was the New Student Seminar program where the development and support of the student's ePortfolio was to occur. Thus, in addition to the MTRAC program, the New Student Seminar instructors had to learn about the development of the ePortfolio using the Adobe *Contribute 3 / Xythos WFS* (a.k.a., *MyData*) configuration; due to the workload and time constraints on these instructors, this activity was particularly challenging.

Deliverable 5: Staffing. A new program with new technology requires new staffing provisions. For example, the project team had to plan for a new Student Laptop Center, the use of a new Asset Tracking System, a support of new wireless access configuration, among other items. In some respects, these items provided opportunities for staff to learn new technical, operational and management skills. There was a need, however, for additional staff (professional and student work study) particularly in the Student Laptop Center and in the classroom support of faculty using technology in the classroom; this request was recommended through the project team and provided by the university.

Deliverable 6: Finances. The financing of such a large undertaking takes on new dimensions in challenges. The finance member of the project team, who is the controller for the university, aware of information from technology parties and experiences from other universities offering Laptop Programs, preferred the financing of a one-time distribution, four year laptop rather than a two year laptop refresh program. To this end, he devised a procedure in which the student would pay for the laptop program (laptop, software, services and warranty) in the fall semester of the first year; financial aid would be available on an 'as needed' basis through the financial aid package offered by the university to the student. The financing of the laptops by the university would be provided through a two year lease for each year of laptop distribution. In this way, the university had two years to pay off a lease with funds that would be collected early in the first year.

Deliverable 7: Communications Plan. Communications is a socio-cultural aspect of a project that is frequently overlooked, especially by parties in the IT office. Yet, communication is of critical importance so that those affected by practices or decisions from the IT area are properly informed in a timely basis, both of the notification and of the impact of the change. Of particular

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challenge in the launching of the Laptop Program was the absence of the initial champion of the program itself, the departed VPAA. The communication of such a program has to begin early in the admissions recruiting cycle. For example, prospective high school students typically visit universities of interest in their junior years. The presence or absence of a required laptop program at a school is an important item of consideration. With the recommendation and announcement of the Salve Regina University Laptop Program in Summer 2005 presented key challenges for the Admissions department to ensure that brochures, catalogs, pamphlets, etc. were reflective of this offering. Adding more to the complication was the delayed decision of providing a one-time purchase of a four year laptop as opposed to a two year laptop refresh program and also whether the one time fee was to be included or excluded from tuition. The message had to be consistent throughout the various avenues of communication; this was not a simple task. Fortunately, a Laptop Program web site was provided to communicate timely and accurate information to the many university constituencies.

By focusing on these seven deliverables, the Laptop Infrastructure project team worked steadily for over eight months to ensure that the university's facilities and support were ready for the arrival of first year students and the commencement of a full-class ePortfolio and required Laptop Program in fall 2006.

In the spring of 2006, a new director of Network Services arrived and, with the involvement of such a seasoned veteran, the logistical planning for the distribution of the laptops greatly benefited. A site location was chosen and prepared, activities with vendors (HP and Computopia) were coordinated for ordering, shipping, imaging, testing and delivery components, recruitment of staff and supporters for the Labor Day distribution were extended and the laptop overview presentations were planned. Because of the multitude of factors involved with the laptop distribution, some that can be controlled and others that cannot be controlled, an assessment of possible risks had to be managed.

As part of a risk assessment exercise for the laptop distribution, several possible events were identified and assessed; more risk events should have been included but became part of the 'lessons learned' category. For example, to mitigate the occurrence of an incorrect software image, several tests were conducted between the university's network staff and the business partner charged with providing the initial laptop software image load. To minimize the risk of theft or damage to the laptops on delivery to the university, special provisions were made by the university's security office to the laptop storage location. Also, a week before the distribution date of the laptops, a significant rain storm caused a significant leak in one of the main distribution rooms for the laptops; alternative locations were explored but it was decided to accept the risk of the original location based on the assurances of the university's facilities office.

Laptop Distribution Day, September 4, 2006, finally came. Five hundred seventy two (572) laptops were distributed on Labor Day Monday, September 4, 2006. Based on utilization of some basic queueing theory concepts regarding arrival rates and service rates, the plan was to invite 75 students per hour to the distribution location to receive their laptop and sign their laptop agreement. The service element for the student flow through the distribution location included stations for check-in verification, contract distribution and signature, laptop and accessory bag distribution using an asset tracking application; a separate area was conveniently located in case the student wanted to make additional purchases of printers, external hard drives, flash drives, laptop

bags, etc. Over twenty staff members participated in the distribution day, along with representatives from our business partners of Computopia and HP.

Although the distribution and service components of the Laptop Program initiative proceeded very well, the initial utilization of the laptops in the New Student Seminar program for the ePortfolio activity encountered some challenges. For example, even though the Adobe *Contribute 3* – Xyθος WFS configuration remained intact from the two pilot experiences, there were three shifts in the escalation process to a full class deployment that were problematic. The first shift was the installation of the required *Contribute 3* files in the Xyθος WFS directory identified for ePortfolio use; several students had experienced difficulty in importing the appropriate ePortfolio files to the Xyθος WFS directory. The second shift was the change from the computer lab wired environment to the student laptop wireless environment; some students had difficulty utilizing the *Contribute 3* software using the wireless access infrastructure. To complicate matters further, the third shift was achieving a heightened level of confidence and competency among all of the New Student Seminar instructors; with the time and resource constraints on providing necessary training of the instructors on the ePortfolio configuration, several instructors felt somewhat uncomfortable in providing a first level of technical support when difficulties arose. A concerted collaborative effort by the New Student Seminar administrative team along with key IT representatives restored confidence in the program after some fairly frustrating experiences.

To gauge the acceptance by first year students of the ePortfolio and Laptop Program initiative, a multi-part survey was provided to the students after the Fall semester. For most of the queries in the survey pertaining to laptop functionality, support, wired and wireless access and overall ease of use, effect on collaborative learning and improved ability to do class assignments, the returns were quite favorable in that greater than 80% mentioned no dissatisfaction at all. Feedback from first year students on the initial full class ePortfolio endeavor is in progress.

After a full year of the ePortfolio and the Laptop Program initiative, the university has several lessons learned and to learn.

- Since the driving path of utilizing the laptop in the classroom was through the New Student Seminar program and its development of the student ePortfolio, an improved procedure is needed from the IT office to establish the required configuration of ePortfolio *Contribute 3* files for each student within their respective Xyθος WFS ePortfolio directory before the student attempts to develop their ePortfolio. Further, the New Student Seminar instructors have to be provided with additional training and support in order to be an effective resource in and out of the classroom in assisting their students in the development of the ePortfolio.
- Regarding a laptop model selection, the university seeks to develop plans to provide support for a Mac laptop for students enrolled in the Art department program for Fall 2008. Most of the technology programs utilized by the Art faculty require Mac computers. Thus, even though the university provides three Mac lab environments with over 40 Mac computers for Art students, it is important that students in these related disciplines be able to use a university-supported Mac laptop.
- From a program communications perspective, steps have already been taken to ensure that all pertinent communication stakeholders agree on a consistent message and plan of deployment.

The justification of the ePortfolio and Laptop Program initiative stemmed from the academic strategy to infuse technology in the curriculum, in and out of the classroom. The initial driving activity was the development of the student ePortfolio by the first year students in the New Student Seminar. Using this course, the desire was that other faculty and disciplines would adapt to the opportunity presented by the laptop and would consider methods to utilize the laptop in other activities. Another opportunity to infuse technology in the curriculum is through the selective use of a Learning Management System (LMS) by faculty for their course. In addition to providing an easy means to store the course syllabus, assignments, discussion threads and presentations, the LMS provides the opportunity to offer an ePortfolio self-paced 'course' that can assist and guide students in building their ePortfolio through their remaining years of reflection and growth at the university culminating in a final thematic component for the senior year.

The many paths of planned activities over several years conducted by the Academic Affairs office and the IT office lead to the realization of the shared vision of assessed student learning in a technology infused educational environment. The university has taken a giant leap in the formation of an academic program that includes the development of a student ePortfolio and utilization of a required laptop. The stakeholders in this effort included faculty, students, administration, staff and a myriad of support parties. There were a few missteps, setbacks and lessons learned along the way, but with the perseverance of the many stakeholders and the leadership of senior administration and surrogate academic and technology champions, the ePortfolio and Laptop Program initiative was implemented on time and within budget. The next phase in the continuous exploration of instructional strategies to enhance the learning experience, including the appropriate use of technology in the classroom, particularly the laptop, is ready to embark.