RESEARCH QUESTION

Our original goal was to research, network and implement an online platform for storing and accessing past and future student research on sustainability, engineering studies and other relevant sectors. The interdisciplinary nature of Engineering Studies creates a wide scope for our major’s research projects. Course assignments for engineering studies students aim to bridge engineering with the liberal arts focus of Lafayette College as well as social, cultural, and environmental aspects. The numerous research projects taken on by engineering studies majors have established the need for a central database where students, faculty and community members can access previous work. For our project, we constructed an online archive to organize and store student research works and serve as a platform for the future implementation of a digital repository.

BACKGROUND CONTEXT

Education relies heavily on the ability to research, learn from, and continue previous works. The concept of free and easy access to information is steadily moving to include the work completed by students. The importance of a digital repository for archived student research and course projects is being realized in today’s colleges and universities. There is currently much debate as to whether student archives should become a part of information technology’s permanent infrastructure, and our group has brought this debate to Lafayette.

Digital Repositories are a part of the larger debate on information access and use of electronic archiving. The debate on student work repositories has been recently addressed by Trinity University, the University of California and the University of Buffalo. Trinity University encountered issues of privacy, longevity and archiving format when their library began the process of archiving student works through the University’s institutional repository (Nolan, 2006). The debate reached the University of California when the institution explored including student works in their repository in order to enhance scholarly communication (Michaels, 2009). The importance of archiving student works has been recognized by numerous higher learning institutions and the issue has worked its way to the forefront of educational debates. An information literacy course at the University of Buffalo uses the archiving of its students’ research as an incentive to produce their best work. The students within the course archive their research projects, adding permanence to the hard work they have completed (Hollister, 2009). The broader debate on repositories of student research has been furthered by these institutions and the literature published analyzing the topic. Many colleges and universities are pioneering
student archives and our project aims to connect Lafayette College to today’s digital archival revolution. We believe the interdisciplinary nature of engineering studies makes a student research archive of works within the department a perfect candidate for Lafayette’s pilot student digital repository.

Our project began with discussing the need for an implemented database with engineering studies faculty members to gauge their interest and support. We gained the involvement of a key member of the engineering studies department and confirmed that the need for an archive of student work ensured the continuation of our project. Our goal was to construct a central, organized, and legitimate location where information on Engineering Studies student research and course projects could be accessed. Along the way we employed the knowledge and skills of the Lafayette College Skillman Library Staff as well as members of the college’s IT Services.

The final step was originally to be the implementation of a Digital Repository for student work within the Engineering Studies Department. This was to include the infrastructure set up alongside uploading past projects or sample data. We were optimistic that our project would bridge the gap between previous knowledge and current learners while avoiding the inefficiencies of reinventing the wheel in future class and community projects.

**METHODS**

**IT Services (Tuesday 3/19/12 at 11:00am)**
The IT staff members we met with, John O’Keefe, Courtney Bentley, and Ken Newquist, were very helpful in refining the practical options for our project. They pointed out the existing archiving infrastructure used by the Library, the DSpace Digital Repository. Through this meeting, our group narrowed down three alternatives for our project: a word press site, DSpace MIT open source, and a ground up future solution if we found difficulties with the first two. Word press has limitations of migration resistance, though Courtney mentioned “SiteSucker,” a service that takes snapshots of web pages, as a potential solution to the archiving resistance. DSpace was also found to be complex in terms of maintenance which is a concern for future viability of the project. It was recommended that a permanent archive space was needed in the future and that IT would support us in providing a short term physical product for our project given the limited timeframe with a deadline of April. The digital repository already used by the library was highly recommended and we promised to keep IT updated on our progress.

**Engineering Studies Faculty - Professor Veshosky (Wednesday 3/20/12 at 1:00pm)**
We met with Professor Veshosky to obtain a faculty perspective on the project. We highlighted IT Service’s recommendation for a consistent project output format, such as PDF, for the viability of our document management system in the long run. This was supported by the professor who also promised to provide past theses and student research such as EGRS 480 reports and the New Orleans project report for our access on an S:Drive folder. He also recommended contacting Professor Mary Wilford Hunt to seek
possible content and support for our project. It was agreed that the EGRS Program Chair would be an ideal candidate to be charged with coordinating, delegating and supervising document updates on the online archive.

We also met with Professor Cohen who reiterated faculty support for such an online archive infrastructure and promised future content and student work. He stressed that it would be students responsibility to determine which project reports were worth citing, relieving us of the need to specify whether each uploaded report was citable or not.

**Library Staff (Thursday 3/21/12 at 9:30am)**
Diane Shaw and Lijuan Xu met with us on behalf of the Library. There was a general consensus on the need for a long term infrastructure to handle online archives though emphasis was placed on FERPA compliant (student privacy) and user friendly interfaces. This meeting resulting in ruling out DSpace as a viable option because it is complex, difficult to update, and caters mostly to faculty work. A word press site with PDF links to uploaded works was recommended for the short term. As groundwork for the future transition to a digital archive, we will be making a collection of old material/projects and categorizing them with respective information tags and meta data. This will facilitate the continuation of our project; our content need only then be moved to a regular database by the following group. An ideal online archive was described as one with a robust search functionality using lists or categories, images or blobs, and easy to update. We were also advised to contact Eric Lowes from Special Collections to gain more information about DSpace. Other observations gained from this meeting were the fact that the library site is going through redesign and the existence of an ongoing shift of archives, both physical and digital, to preserve important documents including historic student work. The need to use forms to obtain student permission before making available their private work was reiterated. We also confirmed that it was possible to display a poster for our final project in the library if we contacted the relevant channels in time.

**Special Collections - Eric Luhrs (Tuesday 4/10/12 at 2:00pm)**
Eric Luhrs met with us to discuss the future opportunities within reach of our Engineering Studies Student Research Archive. It was his opinion that our project could easily translate into a Digital Repository for selected student work and become a candidate for a pilot repository at Lafayette College with the support of faculty within the Engineering Studies Department. Eric highlighted some of the challenges of curating student work such as ensuring the work included is of high quality to represent the respective department and Lafayette College.

**Meetings Follow-up**
We emailed all the parties we met with to update them on the progress of our project and thank them for their time.

**CONCLUSIONS AND OUTCOMES**
Our group has created a digital Engineering Studies Student Research Archive for works completed by students within Lafayette’s engineering studies department. The WordPress site is hosted by Lafayette College’s Sites, located at http://sites.lafayette.edu/esarchive, and can be accessed by all of the college’s students and faculty members. The archive is comprised of work completed through EGRS courses that is uploaded in a concise and consistent format. Each post contains the title, author, abstract and file link for the respective project. The archival policy for our site requires all students submitting work to the site to sign a waiver that complies with FERPA. This allows the archive to make available works previously protected under each student’s educational rights.

Maintenance for the Engineering Studies Student Research Archive will be taken care of by the Department Chair who will absorb the responsibility of uploading new project posts.

Our group has also created a poster to display in Lafayette’s Skillman Library. The poster showcases the website and highlights its purpose along with some interesting and useful site features. Increasing awareness of the archive's existence with the student body will greatly improve the chances of its success now and in the future. For this reason, we have created a poster to display within the library during the end of this semester to spread the word about Lafayette’s new resource for students and faculty: the digital Engineering Studies Student Research Archive.

**Recommended next steps**

Moving forward, faculty and engineering studies department buy-in are necessary so as to build the support needed to anchor the project within the institution of Lafayette. One possibility of further engagement is a student group or organization continuing the project through implementing a database in the future (one to three years from now) with help from Eric Luhrs to create a pilot digital archive for departmental student work. The recommended approach is a faculty implemented merit based filtering of work so that students are rewarded for submitting great and outstanding work to the digital repository. Thus official faculty members should act as quality filters to choose works that would represent the engineering department and Lafayette College in the pilot repository. Higher quality project selection is relevant in maintaining name affiliation of the digital repository with Lafayette’s brand. A revised FERPA waiver, preferably under careful approval of Lafayette lawyers or any other lawyer would help protect the archive implementers, the faculty and school from future litigations by students should their work be publicly accessible. Overall, the success of digital archives for student work at Lafayette hinges on bottoms up faculty support and demand for Library and IT Services implementation of relevant infrastructure.

**Appendices**

Appendix A: Annotated Bibliography
Appendix A: Spring 2012 Project Annotated Bibliography


This article highlights some standards for functional digital collections. Throughout the implementation of our student archive project, we received advice from curators at the school emphasising the need for following certain protocol such as consistent output format, use of metadata and preservation of high quality content. Such standards encourage maximizing the use of archives preserving good material and ensuring that it is still easily searchable through consistent metadata. We hope to use classification by course using WordPress categories while adding the use of keywords/metadata such as sustainability or solar energy on our final product. Therefore referencing this source will allow us to follow common and effective curation methods so as to have a function archive of student work.


This guide provides great insight into the technical and functional process of implementing institutional repositories. Understanding both the technical and nontechnical aspects of archives is important for the success implementation of our project, an archive for student work. We hope to use the technical understand to our advantage through setting up a final student work archive that will be easy to transform into an advanced pilot digital/institutional repository at Lafayette with limited conflicts if we set up our project the right way. Aspects such as content output, documentation or metadata and search functionality allow for quick and efficient search and update of a specific range of archive content saving the curator time in the longrun. Our classification using categories would make it easy to find projects under EGRS 451 or those completed in Spring 2011 and under a specific faculty.


A great archive or digital repository balances the safe storage of curated work with the ease of access through search functionality. Thus setting up a digital archive that offers both curation and access is at the forefront of our project. We will use the Berkeley Electronic Press as a learning example of successful implementation of digital archives to benefit students. This archive features a wide range of content but manages to organize it in a consistent format that makes it easy to search and find content. The structure also allows for increased scalability through the use of the existing infrastructure to add new content, categories, departments and scholarly work without disrupting the existing infrastructure. At the center of this project is the use of open access or open standards policies that maintain free access and availability of content to both students and faculty. We hope to implement some of
the useful features such as search and scalability in our final student archive for engineering studies students at Lafayette.


This article describes the importance of a consistent and dependable access to data currently stored in different research centers. I believe this parallels the work Brian and I are undertaking in attempting to provide Lafayette College with a comprehensive and cohesive database for Engineering Studies research and projects. This work is limited in that it focuses on the Knowledge Grid, a software program that will sort the data making it easier to mine. Even with this limitation, this source outlines the same problem of creating consistent project output. We attempt to tackle this problem in our project by using *pdf file formats which will help my group to gain support for our project.


Scholarly work is increasingly being archived in a digital format, as opposed to within physical repositories. Our library at Lafayette College is currently in the midst of a digital revolution itself, preparing for and implementing the conversion of historical and important works into a digital form to be stored. This article addresses issues of access and preservation of scholarly records and the issue of digitally archiving work in order to maximize research opportunities. I believe this highlights the challenges our project has faced during our attempts to include student works in the undergoing digital preservation revolution.


This report focuses on the role of student engagement in their over all college experience. Trends and research for past decades is analyzed to portray correlations between supporting responsible student involvement and great college experiences. Examples of programs that encourage responsible student involvement are explored. Lafayette fosters student research and promotes it as part of the student faculty relationship. Our database for student research stands to benefit from such extensive reports on the value for encouraging responsible student participation. This can be achieved if students are aware that there research has value, is archived for future use, distribution and reference. Despite being general college research, our database is intended to be a central place for student work, and this requires student involvement in using the resource and contributing to it, hence the learning experience. In addition, AASHE is a great organization documenting sustainability projects, ideas and practices among various colleges and is thus a reputable source.

This article showcases the increased use of digital repositories on a national level. Links to existing digital repositories are provided. This article is a great recourse to our project for creating a student research database or website in that it provides a variety of information on the access, legal and practical implementation challenges.


Education relies heavily on the ability to research, learn from, and continue previous works. The concept of free and easy access to information is steadily moving to include the work completed by students. This article analyzes the Digital Archive of course ULC–257, an exhibition of student research projects. This article directly relates to the purpose of our project by demonstrating the value of showcasing student work through the effective use of a digital repository in their information technology course.


This report focuses on the need for more creativity in fostering student research and involvement. Both empirical and conceptual research findings are presented to portray the value of student engagement in developing support based projects in various colleges. The article will help lay the background for our project as the Engineering program at Lafayette is a Liberal Arts (interdisciplinary) program that depends on creativity and student involvement in solving real world problems. Thus, in using this article, we hope to show that creating a student work database can encourage students to put more effort into their projects knowing that they will be archived for future use.


This is a report of a three year report supported by the European Commission under the ALFA Program to evaluate the advantages of digital and electronic publishing and archiving through journal website for both student and faculty use in Latin America. The conclusion is that full results can only be realized if the electronic format is embraced with careful consideration for peer review and quality control. The use of past student research by future students can only highlight the use of peer education. This report is also peer reviewed, adding an extra layer of credibility. This article can be used to make the argument that Lafayette can not lag behind in creating an electronic platform that
supports student research especially in the Engineering Studies program.


This article highlights research done over twenty years on the benefits of online availability of research. In particular is the ease of access and the increased citation of scientific publications. This article also focuses on the relevance of indexing and the need to find information quickly, issues important to our database project. Factors like online sharing, linking, emailing and recently social sharing are covered increasing content discovery. This article will help set a strong background on the need for online/database archives for student research. The article is a strong basis for our project as it extends trends in archiving to scientific research over two decades in the twenty first century.


This article explores the use of Wikis (web based editing and archiving platforms) in classroom for course comprehension. The value of archiving student contributions and ease of access to course related material is highlighted. We therefore hope that this article will provide the context of experimentation with electronic archives and services like Moodle at Lafayette, in creating engaging course experiences. The current technology available makes it possible to have online archives for student work and foster student engagement. The article is limited in that it looks only at Wikis in the context of a few experiments. However, the basis of student work archiving and public access is explored and shows the national debate and use of electronic archives.


This article argues for the need for institutional repositories and digital archives in preserving work. This is in support of our project which seeks to create a central portal for student work.


A virtual library serves many educational purposes. Uninhibited access to previous work promotes the continuation of furthered research, which is an aspect we are highlighting in our project to create a virtual database. This article outlines the first steps taken to computerize research and speaks to the exact purpose of our course project. However, this article is limited by the publication date. The knowledge in this article is dated, but I believe it will still prove useful to outline the basic principles behind our project and the
steps we will take to create our version of a virtual library for engineering studies research and projects.


This research paper is a perfect example of exactly the work our group is completing through our project. This paper was completed to analyze the inclusion of student works within the institutional repository at the University of California and makes a case for the importance of including student works to enhance scholarly communication. This paper is relevant, recent and supportive of our project goals and I believe it will prove useful when our group compiles our memo for the implementation of an archive of student works at Lafayette College.


This article is about a series of steps taken by Trinity University library to implement a digital repository for student work. Issues discussed are privacy, copyright, longevity, politics and actual archiving format. The article is relevant because it offers a librarian’s perspective on the value and challenges of documenting student work. This will help us understand some of the challenges we have faced in our project such as the divide on how valuable student work archiving is.


This article provides information on institutional repositories that focus on student works within small institutions. Lafayette College falls under this category and could relate to some of the benefits and challenges experienced by small institutions when initiating and implementing an institutional repository outlined by the research reported.


This article describes the new methods of development for exploring data. These methods can be applied to future project updates as our projects is aim to create a new, virtual database for students, faculty and community members where they can access previous work within the Engineering Studies department. This article is current, relevant and describes data-mining techniques that I believe will be of service to us when gathering and creating the criteria for work to include on our site.

LinkedBlog is a Linked Data extension for WordPress blogs and could be a useful tool to include when creating our database. This article describes how LinkedBlogs are used to link information contained in blog entries in a format that makes it easily stored. This article describes the issues of this method, its usability and performance. This article was published only two years ago and could provide Brian and I with another way to present the amount of information we plan to include in our database.


This article describes the MentorBlog project, where they explore the use of blogs to foster the mentoring process and facilitate the flow of information. Aspects of blogs, such as their permanency, flexibility and immediacy, are discussed in relation to their usefulness in the education process. I believe this information will prove useful when exploring different possibilities for the final product of our project. This article shows the relevance of blogs and WordPress sites in filling the void for electronic archives. Our final product will be a searchable site with categories and metadata that students can access on and off campus.