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Regional Social Networking IQP

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Regional Social Networking IQP

An Interactive Qualifying Project Report:
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Abstract

The goal of the Regional Social Networking IQP is to expand the usability and overall user experience of the LectureBank.org website. Since the website acts as a social media website where postdocs (postdocs) can share their research lectures with other postdocs and invite one another to lecture at their institution, similar websites were examined to see what they do well in order to foster social media communication. Interviews were conducted on graduate students, faculty members, and postdocs to get an idea of what the three groups that are potentially impacted by the website think needs to be changed or implemented to increase the website’s capabilities. The responses from the interviews will be used to add functionality to the website to enhance the user experience. These additions will be implemented in a later computer science MQP or similar computer science project.
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Introduction

One of the major components in postdoctoral research and training is presenting lectures. Lecture presentations are done in a number of venues including departmental seminars and conferences. Both of these venues provide the postdocs with the opportunity to network with other postdocs, faculty, and companies that study or work in their field. This is crucial to the postdoctoral experience, because it allows for them to learn more about their field or related fields, gain experience presenting their research as a lecture, and form the connections that lead to future opportunities within their field.

Postdocs have a number of means to communicate and network electronically including postdoctoral Facebook and LinkedIn groups, but it would benefit them to be able to communicate and aid each other with their research. The website LectureBank.org developed in a previous MQP allows for postdocs in life science fields to share information on their lectures online, invite other postdocs to present lectures about their research, and post the time and location of their lectures to encourage other postdocs, faculty, and students to come see them present and learn from their research. The website incorporates a profile page that allows for the user to post upcoming lectures, past lectures, and pdf files of their publications, a search feature that allows for the user to find occurrences of a word within the website, and also a planners page that lists the most active members and upcoming lectures. Though the website implements these three features well, in order to better serve the postdoctoral community and further increase their ability to network within the website, improvements are a necessity. Through conducting interviews, learning more about the needs of postdocs, and giving electronic tours of LectureBank.org, improvements on the website can be made to better serve the postdoctoral community and increase the website’s membership.
Literature Review/Background

Employment Aspects of the Postdoctoral Experience

The Regional Social Network IQP is important because it ties together the social and scientific aspects of the postdoctoral experience. Not only does it allow for postdocs to share their research and learn from one another, but it gives them an opportunity to communicate with like-minded people and broaden their network. Networks are the key to identifying and obtaining many jobs for postdocs, especially with the current job market. More and more postdocs have to find jobs out of their fields, and the unemployment rate for postdocs has shot up eight percent in only four years (Powell, 2012). For those postdocs who are fortunate enough to find work, a lot of times it is their networks that prove to be more beneficial to them than their knowledge (Powell, 2012). The impact of a good postdoctoral advisor is also a contributing factor to the success of a postdoc after they have completed their training, and can be the difference between them being employed or not.

The Role of an Advisor for the Growth of Postdocs

The job of the advisor is not only to guide the postdoc through their research, but to help them find the balance in their experience as a postdoc, by helping them to grow as a scientist, and also developing their professional network (National Academy of Sciences, 2000). One way advisors can go about helping their postdoc to increase in both of these areas is through the attending of professional conferences and presenting seminars. By attending one or both of these meetings, a postdoc has the opportunity to share the results of their work and network with people experienced in their field of study (National Academy of Sciences, 2000). These interactions can later turn into job opportunities, so it is imperative for a postdoc to have this experience. Advisors provide the funding for the postdoc to attend these meetings so they directly determine if the postdoc will have the opportunity to network.
with others in their field and meet potential employers. One example of the impact an advisor can have on their postdoc’s future was told by former postdoc Klaus Becker. Becker claims that the lack of support from his advisor in the area of networking, and his advisor not supporting him to attend the academic conferences, where many postdocs network, caused him to be unemployed after his postdoctoral tenure (Powell, 2012). Becker can back up his claim that this was a major factor in his not having employment due to his impressive achievements during his postdoctoral tenure, where he completed seven research papers and received a contract position from the Center for Cancer Systems Biology at Tufts University School of Medicine (Powell, 2012). The purpose of having a strong network is so that one can utilize the networks of others to aid them when they need help. Former postdoc Marisha Godek is an example of someone who benefitted from this aspect of networking. Having a good advisor, Godek received the guidance to build a strong network leading her to becoming closer to her colleagues which helped her find a position in industry working at a global medical device company (Powell, 2012). Godek informed her colleagues about the kind of work she was interested in doing, and by going to the research conferences, she built a network with those people who consulted for the very companies that she sought out (Powell, 2012).

The influence of networking during a postdoctoral tenure is clear, and the Regional Social Networking IQP may lead to one more tool postdocs can use to network, present their research, and learn.

**LectureBank.org’s Role in The Growth of Postdocs**

We anticipate that the use of LectureBank.org will prove to be a great benefit to current postdocs. Not only will the postdocs learn the most effective ways to communicate their research and gain experience giving lectures, but they will be able to network with one another, faculty, and students. Postdoc’s can also use LectureBank.org to search for local lectures within their region and attend the lecture giving
them a chance to network with other postdocs, faculty, and students within their region. One postdoc may know about a job opportunity that they do not qualify for and can share that with another postdoc in the LectureBank.org community that does fit the job’s criteria. LectureBank.org will act as an online research conference that gives all postdocs, regardless of their funding, the opportunity to learn and connect with others, which is one of the unique benefits of LectureBank.org. When viewing online lectures, there is no time constraint to view a lecture and the discussion is always open, this allows for topics discussed in 2011 to still be discussed as new information arises in that field. LectureBank.org could become a fundamental tool for postdocs if functionality to upload video lectures and host discussion boards are incorporated. Though incorporating video uploading and discussion board functionality is difficult, adding these functions will allow for LectureBank.org to best serve its community.

**Similar Websites, Other Types of Social Network Sites.**

When examining the importance of networking, social network services (SNS) show how internet communities now play a large role in the networking of people in their everyday lives. In research communities, the use of SNS is debated. Some researchers feel that the use of SNS in research is a poor means to communicating while others believe that it has benefits by allowing research communities to communicate quicker and more effectively even though the communication is not done in person (Chakraborty, 2012). As a whole SNS allow for the user to form connections with other people with similar interests, but in the science community these type of connections between people of similar interests have not been properly facilitated. In order to really aid the various scientific communities, SNS need to be created that are strictly for research scholars, that would allow for researchers to easily connect with other researchers who study similar material (Chakraborty, 2012). The researchers should
have the ability to see past research that their contacts have done and be able to learn more about the researcher from a professional standpoint. Also, participants should be able to communicate in online discussions about various research topics. Lastly, security of personal information needs to be maintained so that participants feel more comfortable about sharing their research (Chakraborty, 2012). These concepts support the idea for a website like LectureBank.org, and could supply researchers with the SNS that best fits their needs.

In order to better figure out how to market and increase the usage of the LectureBank.org website, an analysis of similar websites was done to see how the developers of this website could enhance the user experience and truly define the niche of being a lecture sharing community for postdocs. The first website examined was called posterfolio.net which is a website that allows scientists to share their research posters online, providing a platform for them to share their research with other scientists throughout the world. The concept is a great one because it allows its members to see how they can present their research in poster form by getting ideas from similar presentations done in the past. Another major benefit is posterfolio.net allows for researchers to network with each other and share feedback on the research presented in the posters. Unfortunately, when one visits the website http://posterfolio.net/ they find out that the website has yet to be launched and is over 720 days behind schedule for its release, meaning it is two years behind schedule. This brings up the question as to why such a great tool was never developed. If the website is almost 2 years behind schedule, will it ever be released? Looking at a beneficial concept that never realized its potential is vital when trying to increase and expand the capabilities of a similar website, but in order to learn how to make LectureBank.org successful, an analysis of successful niche websites is necessary.

The next website we examined was http://www.researchgate.net/. Contrary to posterfolio.net, ResearchGate.net is a widely used website that has become a great tool for researchers in various
scientific backgrounds. ResearchGate was founded in 2008 but did not begin to really take off until 2010. According to the CEO Dr. Madisch, there are three important pieces to ResearchGate for scientists. "First, he says, it lets you build your own profile within your field by posting your publications and research. If you publish, it gives you the opportunity to share datasets that weren’t in the final journal version. Second, it allows you to engage in discussion with other scientists if you’re looking for advice or suggestions on a particular topic. Finally, it allows you to keep up with the work in your field by following current publications in a more focused way." (Knapp, 2012). ResearchGate is not yet on the status of Facebook or other sites which are visited every day by users, however it is making progress. The other main challenge is getting the users to open up and share. A big problem for sites like ResearchGate and LectureBank.org is that researchers are often wary on sharing their research with concern that it might be stolen, and that researchers have very little free time and do not want to use time to figure out a new website or system. Although LectureBank.org does not yet have as many users as ResearchGate, similar problems and successes can be seen in both. Observing how ResearchGate deals with problems moving forward can provide further insight into how LectureBank.org may want to operate in the future.

Colwiz is another website that we investigated that is similar to LectureBank.org. Colwiz was launched by scientists at Oxford University. The idea for the site is that it "manages the entire research life cycle - from an initial idea, through a complex collaboration, to publication of the results." (Duke, 2011). According to the chief colwiz researcher at Oxford University, David Gavaghan, researchers are currently using a variety of different programs to communicate and work together on research (Duke, 2011). These various applications do not communicate with each other, so Colwiz is supposed to replace all of them and integrate its tools together. Colwiz has desktop applications for various operating systems, along with an online version that allows users to access its tools and information anywhere over the internet. The Colwiz system also allows you to connect with Facebook and LinkedIn
to allow for additional networking and communication. The website also has an archiving system that enables users to archive their work with two gigabytes of free storage. This work can be put into a library that others can see. In addition, it has a calendar and task feature which the user can allow others to see. Colwiz has some applications and ideas that are similar to those thought to be implemented in LectureBank.org, and to see it being used shows that the design for the website can be successful. The inner communication features could be a way to get postdocs to use the site and continue using it even though it is not primarily helping to foster more lectures. Although it is great to see these ideas are practical and functional, it shows that LectureBank.org will need to have unique functionality to allow it to differentiate from other websites and platforms.

**Diversity in Science and Engineering**

In the fields of science and engineering, domestic minorities are vastly underrepresented (National Research Council, 2011). The increase of international postdocs has raised concern for the United States since it is attempting to increase the number of domestic postdocs. The number of domestic postdocs is decreasing, in part due to the postdoc positions being filled by international postdocs, so the number of minority postdocs is becoming even less prevalent. One way to help attract and retain minorities in the STEM fields would be to raise awareness for prospective college students. (National Research Council, 2011). One way this could be done would be with lectures or presentations by postdocs about their research, in particular if these lectures are presented by members of underrepresented minority groups. The online tool that the project is based on has the potential to increase such presentations locally, regionally, and nationwide. In a recent study, it was reported that over 50 percent of postdocs were temporary visa holders (Ghaffarzadegan, et al, 2013). The portion of international scholars that are leaving the United States after coming over to study raises a wide range of concerns for the long lasting effects of spending government funds (Ghaffarzadegan, et al, 2013). The need for a strong and diverse
science and engineering workforce was a concern of several United States senators in 2006, which eventually led to a mandate in the 2007 America COMPETES Act, which was to research and explore the importance of diversity in the Science, Technology, Engineering, and Math (STEM) fields (National Research Council, 2011). For international postdocs, the STEM Jobs Act was passed by the United States House of Representatives in 2012, which offered an additional 55,000 green cards to the most highly qualified foreign graduates of American universities in STEM fields. This is an indicator of the government level of concern to keep high quality international STEM workforce in the country. (National Research Council, 2011). With the large amount of international postdocs and lack of domestic diversity in higher education, minorities face difficulty being represented in the STEM workforce.

**Why There Should be an Increase of Minorities in STEM Fields**

There are three main reasons why increasing the amount of minorities in the STEM fields should be an important asset to sustaining research in America. The first reason is that the main source for future employees in STEM fields comes from international researchers and scientists. Having such a large reliance on non-United States citizens becomes an increasingly concerning and uncertain situation. Secondly, the demographics of the United States domestic population are shifting. Since there is an uncertainty of the future workforce in America, the country should be hiring people of all demographics especially since the underrepresentation of minorities in the science and engineering fields is increasing the most in the general population. Finally, diversity is a benefit and opens up a new talent pool. (National Research Council, 2011).
Statistics of Underrepresentation

The underrepresentation of minorities in the STEM fields is something that has been occurring for a long time now. In 2006, minority groups were 28.5 percent of the national population but made up only 9.1 percent of college-educated Americans in science and engineering occupations (National Research Council, 2011). This underrepresentation stems from the progressive loss of minority participation as one proceeds up the academic ladder. "In 2007, underrepresented minorities comprised 38.8 percent of K-12 public enrollment, 33.2 percent of the U.S college age population, 26.2 percent of undergraduate enrollment, and 17.7 percent of those earning science and engineering bachelor’s degrees. In graduate school, underrepresented minorities comprise 17.7 percent of overall enrollment but are awarded just 14.6 percent of S&E master’s degrees and a miniscule 5.4 percent of S&E doctorates" (National Research Council, 2011). This further shows the need for the increase in representation in the STEM fields.
Methodology

The Process of Interviewing

The focus of this project is increasing the usage of the online lecture database, LectureBank.org. With the website being for postdocs, there was a group targeted for it, but to increase the overall experience, ideas were incorporated not only from the target audience, but also from those who could potentially inform some aspects of the target audience, such as students and faculty members. Before starting the actual interviewing, a number of conventions needed to be established. The most important of these conventions, was how the data would be collected to increase the website’s user experience. It was decided that interviews would be the best way to find out about the target audiences. Interviewing allows for the collection of data while simultaneously allowing the interviewer to display the product being impacted by the interview. This approach is important because for those who have never used the LectureBank.org website, it allows them to share their first opinions of the website with the interviewer, and helps to improve the website.

Questionnaires

Questionnaires were created to add a convention to our interviewing process so that different interviewers go through the same process when they are collecting data. Multiple questionnaires were made to target the audiences of graduate students, current postdocs, and faculty members. By having the three sample groups, an analysis of the commonalities between the groups could be made to enhance the LectureBank.org website. Some issues with the interface may come up repeatedly in the graduate student group, whereas the postdoctoral group may all find another issue to be more relevant. These commonalities and differences will give a good idea as to who wants what from the website, and allow for the developers to make the changes necessary to most effectively update the website for the
target audience.

**What to Ask Faculty, and Why**

The following section details each question asked in the faculty questionnaire. From the research conducted prior to the experiment, a hypothesis was developed that many of the faculty will have previously done a postdoc, meaning many of the questions asked to the faculty members are relevant to both faculty members and postdocs based on their prior experience. There are also several questions that are generic for all three groups that are interviewed. The first question asking “where are you from?” is simply to see if there is an area where a majority of the faculty participants are from. If there is an area where a majority of the faculty are from, it may be worthwhile to explore why there is such an abundance of postdocs originating from that specific area. The second question “where did you attend undergraduate/graduate school?” will provide an idea of the faculty member’s previous background in their education. The question regarding “What is your field of Study?” will show which areas within life sciences are most prevalent in the sample group. The results may show that the members of the same field are looking for the same opportunities in LectureBank.org and eventually the developers will be able to accommodate needs for specific life-science fields.

LectureBank.org will be a place for postdocs to network and is similar to an online professional society, which is why the questionnaire asks “Do you belong to a professional society?” Knowing involvement in professional organizations will show if they are active in one or more professional organization(s) to see if they would be actively involved in LectureBank.org and to see how large their network is. The question “Have you done any postdoctoral work?” shows if the faculty member is one who has been through the postdoc experience. If they answer “yes” data on the length of their research will be collected to examine the varying lengths of postdoctoral research. Similar to the question about participation in a professional society, another question asked will be about their involvement in a
postdoctoral community and their role or position in said community. This shows if they are interested specifically in communicating with other postdocs. By asking “Do you use ResearchGate?” analysis of their interest in sharing or receiving other people’s research through an online database can be done. The question about if they “Are in a postdoctoral Facebook group or LinkedIn group?” shows if they are interested in expanding their network through online social media. Asking about if they had presented their research as a lecture shows if they are experienced in sharing a lecture this way, and the specifics following it just give more details as to their frequency in sharing lectures, where they presented, if they were invited, and the subject matter they presented. If they have not presented their research as a lecture their interest in sharing their research will be examined.

To further examine the study of the benefits of performing lectures for the lecturer, the questionnaire asks “Do you think there are benefits for postdocs to present their research as a lecture?” including both giving the lecture to other postdocs, or any audience. Following up from the last question the questionnaire asks about the faculty member’s interest in going to a postdocs lecture to see if they would be willing to learn about new postdocs’ research. The next question sees if the applicant would prefer to see a short online video instead of going to a lecture. This is to see if it is worthwhile to implement Youtube videos in the website for shorter, synopsis style lectures that present the postdoc’s work in a broader sense. By asking “What type of opportunities can you provide for presentations? Departmental seminar series, multi-group lab meetings, journal clubs?” The preferred presentations for the interviewees can be shown to see which method is the most popular amongst the sample size. Lastly an explanation of the concept of lecturebank.org will be explained and see if they would be interested in visiting lecturebank.org, and then following up in an email or survey to see know what they would like to see from the website.
What to Ask Graduate Students, and Why

The graduate questionnaire has a lot of the same or nearly the same questions as the faculty questionnaire, so only the questions specific to the graduate questionnaire will be examined because the recurring questions have the same reasoning behind them. The only question that needs explaining is “What do you plan to do after graduate school instead?” which shows know if they plan on going into industry or working some other way after they graduate, and not becoming a postdoc. The other questions share the same goal as their counterparts in the faculty questionnaire, but are just reworded to fit the graduate questionnaire.

What to Ask Postdocs, and Why

The final questionnaire is the postdoc questionnaire which has some redundant questions which will not be examined, but also a few unique questions. The question “What is your focus for your postdoctoral work?” shows know more about the research they would be potentially sharing if they decided to join the LectureBank.org community. The question asking “Do you ask to go present or does your advisor encourage you to, or neither?” gives an idea of if the researcher is an eager networker or if their adviser is pushing them to network, or if they are not trying to network at all. The question “Would you be willing to share your CV with us?” shows if the participant sees benefit in having their cv posted on the website to show the work and research experience they have done in the past.
Results

The results brought in a lot of valuable input from the variety of people which were interviewed. As planned, the number of interviews conducted was the largest for the postdoc group containing a total of seven interviews, followed by the faculty and graduate student groups each which contained five interviews.

Timespan of Postdoctoral Research

The results for the timespan of the postdocs participants tenure was compared to the timespan of the completed postdocs done by the faculty members interviewed. Figure 1 provided very useful information because finding out a general timespan for postdoctoral research is difficult. There is no set time period for the length postdoctoral research can last, so this provides a good representation of the extremes of length that a postdoc’s tenure can range. The longest that one of the participants was a postdoc was 11 years, but this participant indicated that this was due to being part of multiple postdoctoral experiences and having special complications during them that contributed to increasing the length of their postdoctoral research. Also, it should be noted that the participant that has completed a total of 2 ½ years as a postdoc was on their second postdoc, the first one lasting a total of 3 ½ years and the current postdoc being 2 ½ years. Without taking into consideration the one extreme case, and separating the two postdocs of the participant who already completed one postdoc, the average number of years that the participants have been a postdoc was about 3 years.
Figure 1: Shows the number of years the participant has been a postdoc. Note that the participant who completed 11 years as a postdoc had multiple postdocs, none of which were ever officially completed.

All of the faculty participants interviewed were previously postdocs, which shows that the majority of faculty in the life sciences have had the experience of being postdocs. The results of the faculty’s response shown in Figure 2 resembles the results from Figure 1 since there is a wide range of answers ranging from 2-9 years. Similar to the postdoc response, the faculty member who completed a total of 9 years of postdoctoral research partook in two separate postdocs, the first being 6 years and the second 3 years. The longest postdoc timespan for a single postdoc that was completed was done by the faculty member that completed an 8 year postdoc. It seems that there is no real regularity with the number of years one is a postdoc, but the range of 3-4.5 years seems to be the norm since the mean of years from Figure 1 is about 3 years and the mean of years from Figure 2 is about 4.5 years.
Figure 2: Total number of years the participant was a postdoc. Interviewee one completed 9 years of postdoctoral research the first one lasting 6 years and the second one lasting 3 years.

**Societal Participation**

Out of all the postdocs interviewed, 86% of them are part of a professional society, 40% of the graduate students are part of a professional society, and 100% of faculty members are part of a professional society. These percentages support the hypothesis which was that as a scientist progresses in their career they are more likely to join a professional society since they have a greater network, or they see more importance in networking amongst others in their respective fields. Another important note is that some of the participants interviewed were part of multiple societies. The professional societies that the participants were members of included all of the following:

- American Society of Microbiology (2)
- American Society of Plant Biologists
- American Society for Cell Biology
- Genetics Society of America (2)
- The American Society for Biochemistry and Molecular Biology (2)
- Sigma Chi Society
- National Research System
- Biophysical Society (2)
- American Association for the Advancement of Science (2)
- American Chemical Society (2)
- Society for neurosciences (2)
- International Society for Behavioral Ecology
- Canadian Society of Zoologists
- Society for Study of Evolution
- Society for integrative and comparative Biology
- Society for the study of amphibians and reptiles
- Society for Behavioral Ecology
- Psychological Society of America
- American Society of Agricultural and Biological Engineers
- Society of General Physiologists

Figures 3 shows the number of professional societies for the postdocs interviewed, Figure 4 shows the number of professional societies for the graduate students interviewed, and Figure 5 shows the number of professional societies for the faculty interviewed.
Figure 3: Shows the total number of professional organizations for each postdoc interviewed

Figure 4: Represents the total number of professional organizations for each graduate student interviewed
Figure 5: Represents the total number of professional organizations for each postdoc interviewed

The number of professional Societies and the number of postdoctoral societies that the postdoc and faculty members participated in varied. Though both Faculty members and postdocs were active in professional societies, none of the postdocs interviewed were members of postdoctoral societies. This result was interesting because it was assumed that the postdocs would be part of some kind of postdoctoral society during their postdoc tenure. Since majority of the participants are part of a professional society and not a postdoctoral society, a followup study might analyze if the postdocs aren’t part of postdoctoral societies because there aren’t many postdoctoral societies to join, or if they find that professional societies allow for better networking due to them having a less specific community, meaning they are for all scientists that fit a certain criteria, and not just postdocs.

Only 40% of the faculty members were part of postdoctoral societies. The societies that the faculty members were members of include:

- Association of the university of Michigan
- CalTech Postdoctoral Association

The lack of faculty members involved in postdoctoral societies further suggests that there are a lack of
these types of societies. Figure 6 shows the number of postdoctoral societies for each faculty participant.

![Number of Postdoctoral Societies Faculty are in](image)

**Figure 6:** Represents the total number of postdoctoral societies for each faculty participant interviewed

Another interesting result came from the question about if postdocs were part of a postdoctoral Facebook or LinkedIn group. Though social media is a prominent way of connecting with similar individuals, the postdocs have not utilized social media for meeting other postdocs, so maybe there is no social media platform that allows them to connect with other postdocs efficiently. **Figure 7** below shows that only 14% of the participants thought they may be part of a postdoctoral Facebook or LinkedIn group. This uncertainty was because the participant thought that they signed up for such a group but never utilized it to connect with the other postdocs involved.
More faculty members partake in postdoctoral Facebook and LinkedIn groups. As shown in Figure 8, 40% of the participants are members of a postdoctoral Facebook or LinkedIn group. The increase in participation could be because of a number of reasons, one being that as advisors, faculty members may need to start postdoctoral Facebook or LinkedIn groups for their labs, another may be that they want to reach out to other postdocs for seminars or other opportunities, both of these are just hypotheses.
All of the graduate students thought they would join a postdoctoral society if they pursued postdoctoral research. Knowing that all graduate students intended to join a postdoctoral society before entering their postdoctoral research is promising. This means that if the graduate students became postdocs they would want to interact with other postdocs, but they need the right means to do that, and LectureBank.org could become one option to facilitate that once their needs are realized within the website.

**Research Analysis**

ResearchGate.net was more widely used than the postdoctoral Facebook or LinkedIn groups. Out of all of postdocs interviewed 43% used ResearchGate.net as a resource for their research as shown in figure 9. This usage is most likely due to ResearchGate.net providing a platform for the postdocs to find a plethora of research papers on topics within their field of study. Since the postdocs are studying research that is very specified, ResearchGate.net allows for them to access past research done on the same or similar topics to their own research.
More faculty members use researchgate.net than postdocs and graduate students. This may be attributed to faculty having more areas to research on since they teach classes on related, but different subjects, or them trying to build up their profile on ResearchGate by posting their own research papers.

**Figure 10** shows that 60% of faculty members use ResearchGate.net.
Lecturing Experience

Examining the lecturing experience of all the participants was essential to figuring out proper additions to make to LectureBank.org. As hypothesized, most of the participants had presented their research as a lecture, and looking at the progression from graduate student, to postdoc, to faculty member, a number of conclusions can be drawn.

Out of all the postdocs interviewed 71% of the participants have presented their research as a lecture shown in Figure 11. This finding helps to support the need for LectureBank.org because the website wants to further increase the capabilities of postdocs to present their research as a lecture, so knowing that there is already a large percentage of active lecture-giving postdocs shows the relevancy of LectureBank.org as a tool. Having a percentage of postdocs who have not lectured also shows the need for the website. Since lecturebank.org aims to make the ability of postdocs to present lectures easier, it has the potential to ensure that the majority of postdocs present lectures by encouraging and helping them to present their research through lectures. For those that presented their research as a lecture, the number of times that the participants presented ranged from 3 times to 20 times, so the postdocs experience presenting lectures varied. Generally, the postdocs that presented the most lectures had been postdocs for longer periods of time, this can be seen in the results of the lectures in Appendix B. The results of the interviews show that the postdocs have given lectures throughout the east coast of the United states, but mainly in the New England Region, which is where all of the postdocs were interviewed.
All of the faculty members interviewed have presented their research as a lecture. This result was predicted since it was assumed that faculty members would have experience lecturing about their research, especially since they all had been postdocs and most postdocs have presented lectures as shown in Figure 11. The faculty members have also presented at a multitude of venues around the world. Some faculty members have presented at very prestigious institutions including Notre Dame, Penn State, and Harvard, and a few have even presented overseas in countries including Japan, Germany, and Israel, this data is seen in the results for the faculty interviews found in Appendix B. The range of the number of presentations for the faculty members varied greatly. The least number of presentations for one of the participants was only 4 times whereas all the others participants had lectured anywhere between 10 and 70 times.

Unexpectedly, all of the graduate participants have also presented their research as a lecture. It was thought that the trend would be that the graduate students would have presented the least, then the postdocs would have presented more than the graduate students, and lastly all of the faculty would
have presented. Most of the presentations were also done in the New England region and the number of presentations were three or four for the majority of the participants with the exception of one of the participants who had presented 10 times. The graduate students interviewed all were exceptionally experienced in lecturing when compared to the postdocs. Taking into consideration that all of the graduate students interviewed were from the same institution, it may mean the graduate program there has some lecturing requirements for the graduate students that caused them to be more experienced in lecturing than the postdocs who came from various graduate and undergraduate programs. The list of schools that the postdoc participants attended are listed in the graduate results found in Appendix B. This finding brings up the concept of institutional requirements, which could also potentially play a role in the level of experience of graduates, postdocs, and faculty members. Institutional requirements should also be taken into consideration when trying to expand the LectureBank.org community, because if there is a certain number of lectures that postdocs need to present while at a particular institution, LectureBank.org can become a tool for those postdocs to schedule lectures.

Another important result came from examining if the participants were invited to present when they presented. The data collected from the postdocs was that of the 71% of postdocs that have presented, 60% of them were invited to present, this is shown in Figure 12. The postdoc who presented the most had been invited to present in the past, but contrary to the hypothesized result, the second and third most frequent presenters had not been invited to present. It was originally thought that postdocs who presented rather frequently did so since they were invited. One factor that impacted this was that the participant with the second highest number of presentations had an advisor that was against them presenting lectures, so it became difficult for that participant to get the opportunity to present lectures. Since the participant who presented up to 20 lectures was invited to present, but the second and third highest participants were not invited, it is difficult to say for certain if invitations played a big role in the number of presentations. In certain cases like with the second highest participant who
did want to present but was not encouraged to do so, an invitation to present may help get the postdoc the experience to present and gain the experience they need to effectively communicate their research as a lecture, because the invitation could either prompt the postdoc to work even harder to present their research or encourage their advisor to let them perform.

![Postdocs invited to present lectures](image)

**Figure 12: Shows the percentage of postdocs that were invited to present their lectures**

All of the faculty participants had been invited to present their research as a lecture. This finding is verified by looking at the faculty results in Appendix B. This was another anticipated finding since it was believed that faculty members should have built up a reputation in the science community, this reputation would lead to the faculty member being invited to present their research due to their respect in the science community and other researchers being interested in the results of their research.

From the graduate student results shown in Figure 13, 67% of the participants were invited to present. Since in all of the cases of the postdocs, faculty, and graduate students, majority of the lecturers were invited to present their research as a lecture it is thought that when invited to present, a scientists will be more likely to come and present a lecture on their research. This supports that having the ability to invite a postdoc to lecture should increase the number of postdocs who present lectures.
Analysis of if the participants were willing to go to a lecture presented by a postdoc revealed results that support the regional aspect of the project. All of the participants in all three groups said that they would attend a lecture presented by a postdoc as shown in the results in Appendix B, but most of the participants said that the lecture would have to fulfill certain criteria. The first being that the proximity of the lecture would determine if they would attend the lecture. If the lecture was too far away then the participants would not feel inclined to attend. The second criteria was the topic being lectured, if it was in an area very unrelated to the participants own research then they said they would feel less inclined to attend. This finding was very crucial to supporting that postdocs would like to develop a regional network and attend lectures presented by other postdocs in the area if they were about a topic similar to their own research.

Most of the postdocs were interested in watching an online lecture. As shown in Figure 14, 71% of the postdoc participants said they were interested in watching a lecture online. For those that weren’t interested in going to a lecture they said they prefered to go to an actual lecture due to having the ability to network with those in attendance.
Figure 14: Shows the percentage of postdocs that prefer to watch a video online then to attend an actual lecture.

80% of the faculty participants would watch an online lecture. This result is shown in Figure 15, and the suspected reason for the increase in faculty members who would watch an online lecture versus a postdoc who would watch an online lecture is that the faculty members have less free time to attend a lecture, so sometimes watching an online lecture provides a more time effective alternative to viewing a lecture.
Figure 15: Shows the percentage of Faculty that prefer to watch a video online then to attend an actual lecture

**Figure 16** shows that 60% of the graduate participants were interested in seeing an online lecture. It is suspected that the graduate students have more free time to attend the lectures so instead of just watching an online lecture a larger percentage of the graduates would like to attend lecture than watch an online video. Even so, the majority of the participants were interested in seeing an online lecture.

![Pie chart showing 60% yes, 40% no for graduate students who would watch an online video lecture](image)

**Figure 16: Shows the percentage of graduate students that prefer to watch a video online then to attend an actual lecture**

Another significant finding regarding lecturing was that all of the participants in the three groups thought that there were benefits to lecturing. The two most common responses were that lecturing allows for the presenter to learn how to communicate their research to various audiences and that it allows for the lecturer to get feedback on their research, this can be seen in the results in **Appendix B**.
Graduate Career Paths

Information was also collected on the career choices for the graduate students after they graduate. Figure 17 shows the percentage of graduate students that want to pursue postdoctoral research after they graduate. Gathering data on the interest of graduate students to pursue postdoctoral research after they graduate was very necessary since the LectureBank.org needs to have a constant pool of members to sustain its usefulness. 20% of the participants were sure they wanted to pursue postdoctoral, another 20% knew they didn’t want to pursue a postdoc, and the remaining 60% said that they would only pursue a postdoc if they could not attain their desired position in industry.

![Graduate students who want to pursue postdoctoral research](image)

Figure 17: Shows the percentage of graduate students that would want to pursue postdoctoral research

Data was also collected on what the desired career choices were for graduate students that were undecided about going into postdoctoral research. 67% of this group wanted to work in industry, 33% percent wanted to be research scientists, and none of the participants wanted to teach. Knowing the desired career paths for graduate students is important data because for the graduate students that later become postdocs they may still want to pursue those careers when they complete their postdoc. Knowing where postdocs want to go after their research is completed allows for the development of the
proper incentive program for LectureBank.org to establish relationships with those in industry who hire for the positions that postdocs want, this could establish LectureBank.org as a bridge between conducting postdoctoral research and getting a job in industry. The data on the career choices for the graduates is shown in Figure 18.

![Preferred choices made by Graduate students after they finish their research](image)

**Preferred choices made by Graduate students after they finish their research**

- 67% work
- 33% research
- 0% teach

**Figure 18: Shows the career choices of graduate students after they are done with graduate school**

**Presentation Locations**

After analyzing the results it was clear that the participants had lectured in a number of venues around the world. The figures below map out the many locations where the participants have presented their lectured.
Figure 19: Represents presentations in Northern Europe

Figure 20: Represents presentations in Southern Europe

Figure 21: Represents presentation in Eastern Asia

Figure 22: Represents presentation in South Asia
Figure 23: Represent the locations that the participants have presented in Western Half of North America

Figure 24: Represent the locations that participants have presented in Eastern Half of North America

Most of the locations are in the eastern half of the United States, with an even greater focus on the east
This result was expected since all of the interviews conducted were in the New England Region. An important piece to note from this data is that the participants with more experience have more opportunities to travel to present and visit many different places. The opportunity to present a lecture outside of the presenter’s region not only has the benefits that come with presenting a lecture locally, but allows for the presenter to spread their ideas and network even further than just one’s surrounding area. Also, with different cultures and perspectives, lecturing in different places can lead to insight that may have been missed when presenting to a local community.
Discussion and Suggested Implementations

After conducting interviews it was clear that a number of enhancements should be made in order to best expand and promote the LectureBank.org website. One recurring statement about the website was that it lacks a community. Websites like Facebook and LinkedIn, which focus on having an expanding and active social media community, allow for users to feel the need to stay involved and network. If Lecturebank.org is to be as successful and best help its target community, it needs to adopt some characteristics of these websites in order to best promote its purpose, but most importantly needs to add features that allow for it to best serve its target community.

The Incentive

Though this particular suggestion was made only once in a faculty interview, the concept behind it was mentioned a few times throughout the interview process and also explains the reason why websites like Facebook and LinkedIn are so prominent. Facebook and LinkedIn have incentives that make the users more inclined to partake in their communities. Facebook allows for people to connect with each other electronically, but leads to the expansion of their personal communities without having to meet in person. LinkedIn allows for people to network with other professionals and potential employers which can lead to job opportunities. The suggestion that the interviewee made for LectureBank.org is very similar to the benefits that LinkedIn has to offer. If LectureBank.org can reach out to employers and get them involved in the website, then postdocs will be more inclined to join because they will feel that their participation in the website could lead to employment, but also allows for them to experience networking amongst other postdocs. Implementing this participation from employers would increase the participation in the website and will make the participants need to post lectures in order to market
themselves to the employers. Once other postdocs see the lectures that the other participants have posted, they may feel the need to ask the participant to present at an upcoming seminar. Once they are at the location for the presentation, the participant will have another opportunity to network with the other postdocs, faculty, graduates, and employers in attendance. The employers will be able to see firsthand how some prospect employees communicate their research and if they are interested in the person, they will be able to reach out to the participants and both parties will benefit. In order to expand the website, it may prove a necessity to reach out to companies, because incentives lead to success and growth for online communities.

**Intellectual Security and Privacy**

This concept was not mentioned often in interviews, but online security is something that is important. The security in question is the security of the information being shared. Intellectual property is always a tricky issue, and with postdocs sharing their personal research and lectures, they want a way for it to not be stolen. There is a need to protect and ensure a copyright of some sort for the work that people contribute to the site. Having a disclosure statement about how the rights of each participant’s research are their own should be added to the registration process so that there is no confusion about what is allowed on the website when postdocs are registering. If users cannot feel safe sharing their work, it will dramatically decrease the amount of content created and shared by users.

Privacy is an additional topic that needs to be clearly specified on how it should function on LectureBank.org. If each member has a page where they can post work or messages, they might also want to be able to post messages or show work that can be seen only by specific members or groups. Having a privacy setting system that users can change would be versatile and inviting. Being able to set your privacy is reassuring and gives the user a sense of control. It is believed that people that use a website want to feel like they have control over their account; otherwise they will not feel comfortable
and will not want to participate as a member.

**Inner Website Communication**

Communication between users was mentioned in several interviews when asked for thoughts and ideas on LectureBank.org. Two primary types of communication were discussed, personal and public. Personal communication between users of LectureBank.org is important so that if someone likes a person’s research or lectures, they could send them a private message to discuss the possibility of inviting them to a conference or other meeting. The importance of public communication is huge as it allows for discussion to begin and further developing of ideas about someone’s research or lecture. A public commenting system would enable people to ask questions about things that a user has uploaded. This is beneficial to both parties because the creator of the content can gain experience on answering questions about their topic which would prepare them for future presentations on their topic, while the people asking questions will gain more knowledge about the topic at hand. The creator could also gain new ideas or perspectives from questions that people could make with their comments.

**The Next Step**

After completing the research phase of the project and analyzing the data, it was clear that the website needed to be updated, but also that time constraints would make it impossible to do so during this IQP. The next step for the project is for an MQP to be made that focuses briefly on expanding the data collection for the website, but mainly focuses on expanding the website’s existing functionality and implementing new functionality to better expand and increase the website’s usage. The MQP should start off by using online surveys sent out to postdocs across the country to gather information about what they would like to see from a website like LectureBank.org. The survey should include questions about which institution the postdoc is conducting research, how the postdoc has used social media in
the past with their research, and how they would like to see social media, in particular LectureBank.org, changed to best support the postdoc community. Answers from questions like these will give the new team enough direction to move forward with the project and implement new functionality, while learning more about the postdoc’s experience with social media.

After learning more about postdocs, the team should proceed to implement the different functionality deemed essential to the website’s success as found in our research and in the survey’s they sent out. The first of these necessary functionalities would be the ability to link login credentials from other websites like Facebook or LinkedIn. This will make the process of getting started in the LectureBank.org community easy, which will encourage postdocs to join.

Security needs to be a major focus on the website. There needs to be privacy options that allow for postdocs to share their lectures and other documents without worrying about theft of their research. This could be accomplished by making users only share their research with particular people and otherwise having some information about their research private, allowing users to keep track of who is seeing their research.

Another feature that would greatly benefit the community would be the ability to import an online poster for a convention. This idea would be similar to posterfolio.net and should allow for users to upload the pages on their poster in pdf format, then arrange them using drag and drop functionality to show how their poster looked or would look for a convention.

Video lecturing should be another addition. This would include real time lecture capabilities allowing someone in Maine to watch a lecture in Philadelphia with ease, but also, lectures should be able to be uploaded from websites like Youtube and from different video file formats, so that lecturers can share their past lectures to help teach other postdocs how they lecture and to give them feedback to increase their lecturing ability. The ability to give feedback can be implemented by adding discussion
boards in the website that allow for users to communicate about various topics like the focus of their research, upcoming lectures, and give advice on how to lecture.

Tutorials should be added to help new users learn more about the mission of LecureBank.org, learn about the various functionality within the website, and proper means to increase your electronic portfolio through use of this new form of social media. Lastly, if time permits, the website’s aesthetics should be revamped to be more attractive to further encourage new participation.

In addition to having this be a Computer Science MQP, there should also be a Management or Business major on the team. This final addition to the team would be tasked with developing the necessary incentive program to attract more participation in the project as well as marketing the product to various communities. This person would need to reach out to companies who want to support this network so that they can become a part of the website and use it as a means to attract more employees. The website should be pitched to businesses as a way for them to see how their potential employees communicate complicated topics and see how organized they are based off of their lecturing style. The employers will be able to attend a lecture and see how their potential recruit presents their information and will also get the opportunity to network with them directly in order to see if they are the best fit for their company. Reaching out to various institutions and professional societies would be required for this person so that the website becomes more well-known and supported throughout the country. By partnering with institutions and professional societies the LectureBank.org concept will become more recognizable and postdocs will be more informed about the services that the website has to offer them. As a whole this final person is tasked with expanding the website and allowing for the necessary incentive program to be put in place to increase the attractiveness of the website to its participants.
Factors Impacting Results

It is important to think of some of the factors that impacted the findings of the project. First, the sample sizes were small for all of the groups, and since the postdoc group had a larger sample size, though this was intended, it does affect some of the analysis done based on comparing the postdoc results to the other two groups. Another important factor to consider is that the participants were all from two institutions. Since the participants were only from two institutions the results may inaccurately represent the postdoc community since the postdocs experience could be impacted heavily by the institution where they research due to the institutions requirements for postdocs.

No diversity information was recorded in the interviews as not to identify the interviewees, but this also made an analysis of the diversity in life sciences after the graduate level impossible. Though we know where the participants are originally from, that cannot be used to properly determine their ethnic roots, but does further prove the abundance of international researchers in life sciences for higher education.

Conclusion

The need for a social media website that helps and encourages postdocs to communicate with one another and invite postdocs to present is clear. This website would also foster general communication between postdocs which seems to be lacking in other forms of social media. Making enhancements to LectureBank.org is not only necessary but key to its better marketing in the future. Once changes such as better inner-website communication and ability to upload lecture videos are implemented into the website, postdocs will be more attracted to the website and will see a need to spread the word about this website as a source to better their postdoc network and increase their skills as a lecturer. Security needs to be a focus for the additions to the website because research security is essential to any
scientist, especially a postdoc who is trying to secure their place in the scientific community. In

Conclusion Lecturebank.org is a needed service that will benefit the postdoc community and increase
the networking process for all postdocs who utilize its services.
Bibliography


Tausch, Arno. "Researchgate, RG-Scores, or a True Research Gate to Global Research? On the Limits of the RG Factor and Some Scientometric Evidence on How The current RG Score System Discriminates against Economic and Social Sciencesand against the Developing Countries." Researchgate, RG-Scores, or a True Research Gate to Global Research? On the Limits of the RG Factor and Some Scientometric Evidence on How the Current RG Score System Discriminates
Appendices

Appendix A

Questionnaires

PostDoc Questionnaire
* Required

Where are you from? *

Where did you attend undergraduate and/or graduate school? *

What is your field of study *

What is your focus for your postdoctoral work? *

Do you belong to a professional society? If so, which one(s)? *

Do you belong to a postdoctoral society, fellowship, or association? If so, do you have a special position or role? *

How long was/is your postdoctoral research? *

Do you use ResearchGate? *

Are you in a postdoctoral Facebook or LinkedIn group? *

Have you presented your research as a lecture? *

How many times have you presented?

Where have you presented?

Were you invited?

When did you present?

What was the presentation(s) for?

If you haven’t presented your research as a lecture, would you be interested in presenting it?

Do you ask to go present or does your advisor encourage you to, or neither? *

Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits? *

Do you think there are benefits for postdocs to share these lectures with other postdocs? *
Would you be interested in going to a lecture presented by a postdoc? *

Would you be willing to watch a short online lecture instead? *

What type of opportunities can you provide for presentations? Departmental seminar series, multi-group lab meetings, journal clubs? *

Would you be interested in visiting and browsing LectureBank.org? *

Would you be willing to follow up through an email or survey to let us know what you think of the website? *

Feel free to add any additional thoughts, questions or concerns

Graduate Questionnaire
* Required

Top of Form

Where are you from? *

Where did you attend undergraduate school? *

What is your field of study *

Do you belong to a professional society? If so, which one(s)? *

Do you plan to do any postdoctoral work? *

Would you consider joining a postdoctoral society, fellowship, or association?

Would you present your research as a lecture? (or have you already?)

How many times have you presented?

Where have you presented?

Were you invited?

When did you present?

What was the presentation(s) for?

If you aren't planning on doing postdoctoral work, what do you plan to do instead?

Would you be interested in going to a lecture presented by a postdoc? *

Would you be willing to watch a short online lecture instead? *

Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits? *

Do you think there are benefits for postdocs to share these lectures with other postdocs? *

46
What type of opportunities can you provide for presentations? Departmental seminar series, multi-group lab meetings, journal clubs? *

Would you be interested in visiting and browsing LectureBank.org? *

Would you be willing to follow up through an email or survey to let us know what you think of the website? *

Feel free to add any comments questions or concerns.

Faculty Questionnaire
* Required

Top of Form

Where are you from? *

Where did you attend undergraduate and/or graduate school? *

What is your field of study *

Do you belong to a professional society? If so, which one(s)? *

Have you done postdoctoral work? *

If yes, how long was your postdoctoral research?

Do you belong to a postdoctoral society, fellowship, or association? If so, do you have a special position or role?

Do you use ResearchGate?

Are you in a postdoctoral Facebook or LinkedIn group?

Have you presented your research as a lecture?

How many times have you presented?

Where have you presented?

Were you invited?

When did you present?

What was the presentation(s) for?

If you haven’t presented your research as a lecture, would you be interested in presenting it?

Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits? *

Do you think there are benefits for postdocs to share these lectures with other postdocs? *
Would you be interested in going to a lecture presented by a postdoc? *

Would you be willing to watch a short online lecture instead? *

What type of opportunities can you provide for presentations? Departmental seminar series, multi-group lab meetings, journal clubs? *

Would you be interested in visiting and browsing LectureBank.org? *

Would you be willing to follow up through an email or survey to let us know what you think of the website? *

Feel free to add any questions or concerns

Top of Form

Appendix B

Responses

<table>
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<tr>
<th>Postdoc</th>
<th>Timestamp</th>
<th>Where are you from?</th>
<th>Where did you attend undergraduate and/or graduate school?</th>
<th>What is your field of study</th>
<th>What is your focus for your postdoctoral work?</th>
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<td>Cellular Molecular Biology and Biochemistry</td>
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<td>Major</td>
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<td>much DNA - how this effects starting cancer cell lines</td>
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**Table:**

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<th>Do you belong to a postdoctoral society, fellowship, or association? If so, do you have a special position or role?</th>
<th>How long was/is your postdoctoral research?</th>
<th>Do you use ResearchGate?</th>
<th>Are you in a postdoctoral Facebook or LinkedIn group?</th>
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The Advancement of Science
3. Sigma Chi society WPI chapter
4. National research system in Mexico
| Postdoc Person E | 1/31/2014 17:46:47 | Yes | more than 11 | UMass Medical School - lecture International Cell Biology Meeting - San Francisco - presentation | No | once a year since 2002 | Have presented cell biology |
| Postdoc Person F | 3/11/2014 14:55:30 | No | N/A | N/A | N/A | N/A | N/A |
| Postdoc Person G | 3/19/2014 16:45:22 | Yes | 5-6 | UMASS | No | October 2013 | Research Progress |

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>If you haven’t presented your research as a lecture, would you be interested in presenting it?</th>
<th>Do you ask to go present or does your advisor encourage you to, or niether?</th>
<th>Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postdoc Person A</td>
<td>11/15/2013 15:06:45</td>
<td>Yes</td>
<td>Neither</td>
</tr>
<tr>
<td>Postdoc Person B</td>
<td>11/19/2013 13:17:28</td>
<td>You, Advisor</td>
<td></td>
</tr>
<tr>
<td>Postdoc Person C</td>
<td></td>
<td>You</td>
<td></td>
</tr>
<tr>
<td>Timestamp</td>
<td>Do you think there are benefits for postdocs to share these lectures with other postdocs?</td>
<td>Would you be interested in going to a lecture presented by a postdoc?</td>
<td>Would you be willing to watch a short online lecture instead?</td>
</tr>
<tr>
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<tr>
<td>Postdoc Person A</td>
<td>Yes</td>
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<tr>
<td>Postdoc Person B</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>11/19/2013 13:17:28</td>
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<tr>
<td>Postdoc Person C</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>11/22/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timestamp</td>
<td>Postdoc Person D</td>
<td>Postdoc Person E</td>
<td>Postdoc Person F</td>
</tr>
<tr>
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</tr>
<tr>
<td>12/3/2013 8:38:14</td>
<td>In interpostdocs groups they have mixed feelings, it can be a learning experience or can be a waste of time if the presenter is poor</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1/31/2014 17:46:47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/11/2014 14:55:30</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3/19/2014 16:45:22</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<table>
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<tr>
<th>Timestamp</th>
<th>Postdoc Person A</th>
<th>Postdoc Person B</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/15/2013 15:06:45</td>
<td>Would you be interested in visiting and browsing LectureBank.org?</td>
<td>Would you be willing to follow up through an email or survey to let us know what you think of the website?</td>
</tr>
<tr>
<td>11/19/2013 13:17:28</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feel free to add any additional thoughts, questions or concerns</td>
</tr>
<tr>
<td></td>
<td>Try to get more people to participate in the website. After someone gives a lecture there should be an online feedback page were people can post their comments about the lecture. Their should be both and anonymous and non anonymous discussion page/blog.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have a feature that focuses on finding talks that are local but not at your institution so that</td>
<td></td>
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</tr>
<tr>
<td>Person C</td>
<td>11/22/2013 16:49:42</td>
<td>people in the area can interact more. This would really increase the interaction between the scientific community in the area.</td>
</tr>
<tr>
<td>Postdoc Person D</td>
<td>12/3/2013 8:38:14</td>
<td>Yes</td>
</tr>
<tr>
<td>Postdoc Person E</td>
<td>1/31/2014 17:46:47</td>
<td>Yes</td>
</tr>
<tr>
<td>Postdoc Person F</td>
<td>3/11/2014 14:55:30</td>
<td>Yes</td>
</tr>
<tr>
<td>Postdoc Person G</td>
<td>3/19/2014 16:45:22</td>
<td>Yes</td>
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</table>
### Graduate

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Where are you from?</th>
<th>Where did you attend undergraduate school?</th>
<th>What is your field of study</th>
<th>Do you belong to a professional society? If so, which one(s)?</th>
<th>Do you plan to do any postdoctoral work?</th>
</tr>
</thead>
</table>
| **Graduate Student A**
| **Graduate Student B**
11/22/2013 16:34:10 | Italy | Italy University of Varese and University of Milan | Biotechnology (medical microbio) | American society of microbiology | Possibly |
| **Graduate Student C**
11/22/2013 17:01:50 | Massachusetts | University of Rhode Island | Biotech | LinkedIn | Undecided |
| **Graduate Student D**
12/3/2013 8:30:45 | Holyoak Massachusetts | Western New England College(Now University) | Biology - Citoskeleton Research | No | Yes |
| **Graduate Student E**
4/25/2014 15:08:47 | Los Angeles | UCLA | Biotech | No | No |

### Timestamp

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Would you consider joining a postdoctoral society, fellowship, or association?</th>
<th>Would you present your research as a lecture? (or have you already?)</th>
<th>How many times have you presented?</th>
<th>Where have you presented?</th>
<th>Were you invited?</th>
</tr>
</thead>
</table>
| **Graduate Student A**
11/15/2013 15:21:55 | Yes | Yes | 10 | PSA Society Meeting - Charleston South Carolina, Florida | No |
| Graduate Student B | 11/22/2013 16:34:10 | Yes | Yes |  |  |
|-------------------|---------------------|------|------|  |  |
| Graduate Student C | 11/22/2013 17:01:50 | Yes | Yes | 4 | All at WPI | Yes |
| Graduate Student D | 12/3/2013 8:30:45 | Yes | Yes | 3 | UMass Medical, university of Wisconsin, and WPI | Yes |
| Graduate Student E | 4/25/2014 15:08:47 | Yes | Yes | 4 | WPI, Cal State Fullerton, Griffles Biological |  |

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>When did you present?</th>
<th>What was the presentation(s) for?</th>
<th>If you aren't planning on doing postdoctoral work, what do you plan to do instead?</th>
<th>Would you be interested in going to a lecture presented by a postdoc?</th>
<th>Would you be willing to watch a short online lecture instead?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student B</td>
<td>11/22/2013 16:34:10</td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Graduate Student C</td>
<td>11/22/2013 17:01:50</td>
<td>once this year, twice last year and one the year before</td>
<td>For current research in biotechnology working</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Timestamp</td>
<td>Graduate Student D</td>
<td>Plant Cell Dynamics and Motility</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
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<tr>
<td>12/3/2013 8:30:45</td>
<td>June 2013 most recent</td>
<td></td>
<td></td>
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<tr>
<td>Graduate Student E</td>
<td>Methods Development</td>
<td>Industry</td>
<td>Yes</td>
<td>No</td>
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</table>

<table>
<thead>
<tr>
<th>Timestamp</th>
<th>Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits?</th>
<th>Do you think there are benefits for postdocs to share these lectures with other postdocs?</th>
<th>What type of opportunities can you provide for presentations? Departmental seminar series, multi-group lab meetings, journal clubs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student A</td>
<td>yes, If the field is related with what you are researching, you can interact and get to know some of the updated topics in the field, and can talk about lab research and procedure</td>
<td>Yes</td>
<td>Departmental seminar series are preferred, lab meetings are more formal and focus on the experimental design</td>
</tr>
<tr>
<td>11/15/2013 15:21:55</td>
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</tr>
<tr>
<td>Graduate Student B</td>
<td>communication skills, public speaking, explanation skills, opportunity to summarize research and show depth of knowledge</td>
<td>Yes</td>
<td>seminar(personal research), journal club (about another persons work), poster is favorite</td>
</tr>
<tr>
<td>11/22/2013 16:34:10</td>
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<td></td>
</tr>
<tr>
<td>Graduate Student C</td>
<td>communicating research, any practice, such as lectures, makes you a better researcher</td>
<td>Yes, networking, and relevance</td>
<td>personally like lab meetings. Better and more feedback since its less formal. seminars second.</td>
</tr>
<tr>
<td>11/22/2013 17:01:50</td>
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</tr>
<tr>
<td>Graduate Student D</td>
<td>Better to disseminate information in person</td>
<td>yes, for networking purposes</td>
<td>All three</td>
</tr>
<tr>
<td>12/3/2013 8:30:45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Student E</td>
<td>Helps with public speaking, being able to summarize your research to learn how to effectively communicate</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>4/25/2014 15:08:47</td>
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<td></td>
</tr>
<tr>
<td>Timestamp</td>
<td>Would you be interested in visiting and browsing LectureBank.org?</td>
<td>Would you be willing to follow up through an email or survey to let us know what you think of the website?</td>
<td>Feel free to add any comments questions or concerns.</td>
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<tr>
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</tr>
<tr>
<td><strong>Graduate Student A</strong>&lt;br&gt;11/15/2013 15:21:55</td>
<td>Yes</td>
<td>Yes</td>
<td>implement a calendar so that people can more easily see when the upcoming lectures are occurring. You should be able to know a lecture is happening on a day by the day in the calendar being highlighted. Have a way to interact between people interested in the lecture and the actual lecturer.</td>
</tr>
<tr>
<td><strong>Graduate Student B</strong>&lt;br&gt;11/22/2013 16:34:10</td>
<td>Yes</td>
<td>Yes</td>
<td>endorsement type of system. Other members able to like or endorse. So those with a higher known respect would be useful. Marketing and handling website traffic should be examined. Need to find a way to encourage people to participate actively, versus passively following research. If properly implemented could be like a Facebook/LinkedIn for academia. An incentive would help people feel more responsive or posting their research.</td>
</tr>
<tr>
<td><strong>Graduate Student C</strong>&lt;br&gt;11/22/2013 17:01:50</td>
<td>Yes</td>
<td>Yes</td>
<td>notification feature to follow high ups in your field for when they are scheduling a talk in your vicinity.</td>
</tr>
<tr>
<td><strong>Graduate Student D</strong>&lt;br&gt;12/3/2013 8:30:45</td>
<td>Yes</td>
<td>Yes</td>
<td>Biggest issue is no one else uses it. It needs to be marketed more, thought it was easy enough to use.</td>
</tr>
<tr>
<td><strong>Graduate Student E</strong>&lt;br&gt;4/25/2014 15:08:47</td>
<td>Yes</td>
<td>Yes</td>
<td>Advanced Search Features that allow for users to search by proximity, and by field, customizable search features. Being able to define a region, citywide, multiple cities, radius for location, user defines their region. Messaging feature. Being able to follow people and categories, that way users can get notifications based, on fields, and locations.</td>
</tr>
<tr>
<td>Timestamp</td>
<td>Where are you from?</td>
<td>Where did you attend undergraduate and/or graduate school?</td>
<td>What is your field of study</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
| **Faculty Person A**  
12/10/2013 15:10:30 | Calgary Canada                       | University of Calgary (undergrad and grad)  
PHD UMass Amherst               | Evolutionary Biology                                  | Canadian Society of Zoologists  
Society for Study of Evolution  
Society for Integrative and Comparative Biology  
Society for the study of amphibians and reptiles | Yes |
| **Faculty Person B**  
11/25/2013 9:31:01 | London Ontario, Canada                | University of Western Ontario                        | Neurobiology, ecology, and evolution | “Society for neurosciences international  
Society for Behavioral Ecology” | Yes |
| **Faculty Person C**  
12/18/2013 16:18:06 | Germany                              | Fraberk University North of Germany  
for Graduate school check website for specifics | synthetic chemistry, focus on development, sustainable methodology | American Chemical society | Yes |
| **Faculty Person D**  
1/22/2014 14:41:18 | Philadelphia                         | Bucken Hill University Cal tech for Graduate Continued at MIT when boss moved | Understanding how Transition metals are transported across cellular membranes | Biophysical society  
Society of general physiologists  
American society for biochemistry and molecular biology | Yes |
| **Faculty Person E**  
4/23/2014 14:50:16 | India                                | India - University chennai(undergraduate)  
India - Goa (Graduate)            | Neuroscience and genetics                    | Genetics Society of America | Yes |
<table>
<thead>
<tr>
<th>Faculty Person A</th>
<th>research?</th>
<th>fellowship, or association? If so, do you have a special position or role?</th>
<th>group?</th>
<th>as a lecture?</th>
<th>presented?</th>
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<tr>
<td>12/10/2013 15:10:30</td>
<td>2 and half years</td>
<td>no</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
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<td>Faculty Person B</td>
<td>6, 3 for two different postdoc experiences</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>11/25/2013 9:31:01</td>
<td>Association of the university of Michigan</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Faculty Person C</td>
<td>2 years</td>
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<td></td>
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<td>12/18/2013 16:18:06</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>19</td>
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<tr>
<td>Faculty Person D</td>
<td>5 years</td>
<td>no</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Faculty Person E</td>
<td>8 years</td>
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<tr>
<td>4/23/2014 14:50:16</td>
<td>CalTech Postdoctoral Association (PTA)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>35 - 40</td>
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</tbody>
</table>

<table>
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<tr>
<th>Timestamp</th>
<th>Where have you presented?</th>
<th>Were you invited?</th>
<th>When did you present?</th>
<th>What was the presentation(s) for?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty Person A</td>
<td>University of Arizona University of Northern Iowa Clark University WPI</td>
<td>Yes</td>
<td>two times were in 2010 one in 2008 one in 2013</td>
<td>Functional Morphology and evolution of lizards</td>
</tr>
<tr>
<td>Faculty Person B</td>
<td>11/25/2013 9:31:01</td>
<td>&quot;Penn State Cornell University Harvard UMass medical University of Toronto Gwelth University Queen University University of Minnessota University OF Texan and Austin Fordam University&quot;</td>
<td>Yes</td>
<td>from 2003 - present</td>
</tr>
<tr>
<td>Faculty Person C</td>
<td>12/18/2013 16:18:06</td>
<td>A lot were online presentation through video conferences University of Rhode Island Connecticut College WPI Notre Dame UMC Charlotte Emery University American Chemical Society Meetings Worcester State University</td>
<td>Yes</td>
<td>2009 - 2013</td>
</tr>
<tr>
<td>Faculty Person D</td>
<td>1/22/2014 14:41:18</td>
<td>Biophysical society annual meeting University of Rhode Island University of Denmark University of Aares ATPs meeting in Kyoto Japan Gordon Conference in Bitaford maine Leahi Universityty</td>
<td>Yes</td>
<td>February 2014 ranged from the last seven years</td>
</tr>
<tr>
<td>Faculty Person E</td>
<td>4/23/2014 14:50:16</td>
<td>Israel, Germany, Texas, Georgia, Worcester, Harvard University, India</td>
<td>Yes</td>
<td>2003 - 2014</td>
</tr>
<tr>
<td>Timestamp</td>
<td>If you haven't presented your research as a lecture, would you be interested in presenting it?</td>
<td>Do you think there are benefits for postdocs to present their research as a lecture? If yes, what are the benefits?</td>
<td>Do you think there are benefits for postdocs to share these lectures with other postdocs?</td>
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</tr>
<tr>
<td>Faculty Person A 12/10/2013 15:10:30</td>
<td>yes, some benefits are getting experience with that sort of format, its practice for job interviews, networking, getting the word out about yourself, disseminating your research findings</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Person B 11/25/2013 9:31:01</td>
<td>It gives them practice working on presentation and communication skills. It also allows them to build their credibility in the field and to get their name and out there and be able to have people know their face and their work. It helps with job searching as well and let employers be able to identify you. It also allows you to bounce ideas off of people and get feedback on your work.</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Person C 12/18/2013 16:18:06</td>
<td>Yes. Believes that as a postdoc one of the tasks is to develop as a scientist and to teach and mentor people regardless of where you go in academia or not. Presenting is the most important part of growing as a scientist because that is how the world sees and judges you. In order to be successful in science you have to be a good presenter.</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Person D 1/22/2014 14:41:18</td>
<td>yes, it’s helpful to present in front of people and it’s helpful to help them think about their problems in new ways, it also helps with networking</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Person E 4/23/2014 14:50:16</td>
<td>Outreach, not just to faculty search committee, but to a completely new group of students. Public Speaking and conference in front of a new crowd. It is easier to present in front of people you don’t know, but harder when you are on front of those you don’t know. Good networking experience. Adaptability, can’t present the same talk in front of every audience.</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person</td>
<td>Date/Time</td>
<td>Presented by a postdoc?</td>
<td>Online lecture instead?</td>
<td>Multi-group lab meetings, journal clubs?</td>
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<tr>
<td>Faculty Person A</td>
<td>12/10/2013 15:10:30</td>
<td>Yes</td>
<td>Yes</td>
<td>Multi-lab meetings are helpful because you can get direct feedback from close colleagues, this is helpful when preparing for a seminar at another university. Giving a presentation at another University allows for you to present information to a new group and gain feedback from an unfamiliar audience</td>
</tr>
<tr>
<td>Faculty Person B</td>
<td>11/25/2013 9:31:01</td>
<td>Yes</td>
<td>Yes</td>
<td>Could provide and has provided from all three. Likes Journal club because it offers ideas outside of the field. Lab meetings are great because they enable troubleshooting. Departmental Seminars allow people to connect afterwards about their research and network.</td>
</tr>
<tr>
<td>Faculty Person C</td>
<td>12/18/2013 16:18:06</td>
<td>Yes</td>
<td>Yes</td>
<td>Preference to Departmental seminar series, they are the most challenging, because you don't have a good idea of who is in the audience, and you need to make your research relevant to the entire audience. Enjoys seeing people's faces when they realize that what they are presenting is relevant to everyone's lives.</td>
</tr>
<tr>
<td>Faculty Person D</td>
<td>1/22/2014 14:41:18</td>
<td>Yes</td>
<td>Yes</td>
<td>Departmental seminar series, group meetings, sends groups to meetings</td>
</tr>
<tr>
<td>Faculty Person E</td>
<td>4/23/2014 14:50:16</td>
<td>Yes</td>
<td>No</td>
<td>Departmental Seminar series, because you want everyone to be there</td>
</tr>
</tbody>
</table>

Would you be interested in visiting and browsing LectureBank.org?

Would you be willing to follow up through an email or survey to let us know what you think of the website?

Feel free to add any questions or concerns

Faculty Person A | Yes | Yes | A topic search would be useful because it could specify what someone is either interested in going to see presented, or wants to give a presentation in. Have more of a teaching side to website like being able to share teaching resources because some postdocs may need to teach for the first time
so these resources could help them in this endeavor. Make sure that the website is not duplicating LinkedIn or research gate so that we have our niche, having teaching resources would be an example of defining this niche. It is important to get the word out about this to faculty because they put together who goes to seminars. May benefit the website to be able to contact faculty to get either the faculty member or their postdoc the opportunity to present their lecture or to network with them.

<table>
<thead>
<tr>
<th>Time</th>
<th>Faculty Person</th>
<th>Date</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:10:30</td>
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</tr>
<tr>
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One feature that should be added is the ability to make key words associated with your research. That way when people are searching you will come up as someone associated with the keywords. This will help when companies are searching to find employees and also when people want to find more people researching about a specific field. Also notifications should be sent when someone is presenting something about one of the keywords you marked that you were interested in. Webinar features would also be helpful because they could allow for people to post questions about the research presented in remote locations, but still being interacted with and have their questions answered.

Some sort of feedback method needs to be incorporated. People should be able to post their videos of their lectures and get feedback according to what they do well or poorly. Need to be able to have some means protecting their research and having copyright protection. one way would be to limit who can use the website to postdocs and their faculty advisors.

Should incorporate advanced search feature that allows for people to search by area of study and longevity of postdoctoral experience. Should also have notifications when new publications or new activity has been added sort of like the planners page. Needs to give people more feedback with a forum type functionality. Make Planners page
more prominent since it lets users know everything going on in the community. Latest Job postings would be a huge incentive for the website. Customized searches for job searching, sort of like job search.

Appendix C
IRB form and approval
Form

IRB Summary Sheet

Regional Social Network IQP

9/27/2013

Advisor: Luis Vidali

Author: Patrick Murphy

Author: Jared Wormley

The purpose of the Regional Social Network IQP is to increase the usability and usage of the Lecturebank.org website which acts as a community for multicultural postdoctoral scientists to communicate their research through lectures.

In order to accomplish this goal a survey will be used for the three groups of current postdoctoral scientists, undergraduate students who have the potential to be postdoctoral scientists, and professors who have completed postdoctoral research. Getting results from these three groups will allow for a
trifold approach to increasing the website for all parties who are currently involved, eligible to be involved, or will one day be involved in the lecturebank community. We will compare the results from the surveys and use the information to update the lecturebank.org website to increase its appeal and also to encourage more people to use it.

To our knowledge there are no questions that would cause risk to our human subjects. We feel that the only questions that may be under review are pertaining to asking our subjects about their personal involvement in a post-doctoral community, which includes social media like Facebook and linkedin. Another area of concern is that we are asking about specific schooling information for undergraduate, graduate, and post-doctoral research including their field of study and where they attended school. We don’t know if asking people these questions counts as too invasive and want to have our questionnaires reviewed to make sure we are adhering to all testing standards. The rough draft of Methodology and the three questionnaires are attached below.

Approval

Worcester Polytechnic Institute IRB# 1
HHS IRB # 00007374
23 October 2013
File:13-189
Re: IRB Application for Exemption #13-189 “Regional Social Network IQP”

Dear Prof. Vidali,

The WPI Institutional Review Committee (IRB) has reviewed the materials submitted in regards to the above mentioned study and has determined that this research is exempt from further IRB review and supervision under 45 CFR 46.101(b)(2): “Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and any disclosure of the human
subjects’ responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.”

This exemption covers any research and data collected under your protocol from 23 October 2013 until 22 October 2014, unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific exemption must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue.

Please contact the undersigned if you have any questions about the terms of this exemption.

Thank you for your cooperation with the WPI IRB.

Sincerely,

Kent Rissmiller

WPI IRB Chair