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Measuring the Growth of Science Teaching Efficacy of Participants in the INSPIRE Program

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MEASURING THE GROWTH OF SCIENCE TEACHING EFFICACY OF PARTICIPANTS IN THE INSPIRE PROGRAM

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Date Dr. Jessica Moon, Director, University Honors Program

Introduction

Lack of student engagement in science, technology, engineering and mathematics (STEM) fields became an area of major concern for the United States around 2005 due to decreasing competitiveness of the United States with other countries (The Federal STEM Education Portfolio, 2011). Since then, individual states have put initiatives into place to directly improve student interest in STEM fields and to indirectly increase the robustness of our STEM workforce. Two especially intensive programs have been put into place in Massachusetts (UMass Donahue Institute, Research and Evaluation Group, 2011) and Iowa (The Governor's STEM Advisory Council).

The Iowa Near Space Project Integrating Research and Education (INSPIRE) Program at the University of Northern Iowa was specifically implemented to fulfill some of these needs. This program is designed to give pre-service teachers experience in designing, building, launching and retrieving a high altitude balloon (HAB) capsule. This is intended to give them the confidence to implement the program in their school, increase student interest in STEM and thereby increase the United States' competitiveness in STEM fields. INSPIRE is an inter-disciplinary high altitude ballooning (HAB) project that seeks to engage pre-service teachers in furthering their content knowledge in science, technology, engineering and mathematics (STEM), and to promote STEM engagement in their future students.

Purpose

The purpose of this research project is to measure the growth of INSPRE participant's comfort in teaching scientific concepts, as measured through science teaching self-efficacy (as defined on page 6). It will also function to measure the effect of the program in general.

This research aligns with the goals of Iowa's Governor STEM Advisory Council by creating authentic opportunities for pre-service teachers to participate in and later utilize the experience to increase their students' interest and achievement in STEM (Governor's STEM Advisory Council, 2012). This project also aligns with goals of the Iowa Mathematics and Science Education Partnership by helping to create higher quality mathematics and science teachers in Iowa (Iowa Mathematics and Science Education Partnership, 2012).

Literature Review

A 2011 study found that students pursuing post-secondary degrees in STEM fields primarily became interested in STEM during their high school years (Microsoft, 2011). Relatively little research has been conducted to see if HAB projects can enhance students' understanding and excitement in STEM careers.

High altitude ballooning provides opportunities to work with commercially available products to create near-space projects that explore engineering, biology, atmospheric science, geography and other STEM related fields. High altitude balloons are used to launch satellite capsules weighing no more than 12 pounds and with no single element weighing more than 6 pounds. These satellite capsules can be made using readily available hardware and typically reach an altitude of 30 to 35 kilometers. The creation of a capsule allows for experience in design, construction, and flight of materials being sent to near-space. The capsule must be also able to tolerate extreme cold temperatures, low pressure and high cosmic radiation (Larson, Armstrong and Hiscock, 2009).

High altitude balloons consist of six main parts: the primary antenna, command capsule, payload capsule, parachute recovery system, cut-down system and the latex atmospheric weather balloon. Within the payload capsule is the primary radio tracking system. This consists of a GPS antenna and an encoding system to convert the GPS data in Automatic Packet Reporting System format and feed it into a Ham radio, which broadcasts the data to the ground using the primary antenna (Larson et. al, 2009). When constructing a balloon, all of these main components, plus the many small parts that make them up, must be put together from scratch and also must be tested multiple times.

Building these balloons require acquiring new skills and intense planning and logistics. It is also an intricate inter-disciplinary project incorporating aspects of all STEM related fields (J.C. LaCombe, E.L. Wang, M. Nicolescu, P. Rivera, and B. Poe, 2007). It has been proposed that interdisciplinary studies can be useful when taking into account multiple disciplines' perspectives in order to create a more comprehensive understanding of a topic. Interdisciplinary projects can be used to promote a general and liberal education, for the production of new knowledge, and also to create stronger ties between distinct disciplines (Newell, 2001). The INSPIRE project aims to accomplish these goals using the inter-disciplinary approach. By bringing social science education and science education majors together, the gap across the separate colleges can be bridged and also the knowledge of our future educators can be furthered. This project also allows for future educators to gain a broader knowledge in the field of science and gives them opportunities to pass this on to their future students.

High altitude balloons are useful within the classroom due to the fact they are relatively inexpensive. According to Dr. John Ophus, director of the INSPIRE program, once initial supplies are purchased for $1000 to $1500, a launch costs approximately 300 dollars. Students participating in the program will be given the initial equipment necessary to launch their own HAB and also will have access to the expertise of professors from the University of Northern Iowa. Teachers will also gain skills planning an interdisciplinary project within their school. This will be useful due to the fact some of them may be the only science or social science teacher in their school. Within this project students will also establish connections with professors at the University of Northern Iowa and with the Geographic Alliance of Iowa.

The purpose of the INSPIRE project is to directly expand the content knowledge of future educators and indirectly affect their confidence to be able to teach science. This confidence in their ability to teach is also known as their science teaching efficacy belief. In my research I measured their initial confidence in their ability to teach science as well as their confidence in their ability to teach science after completing the INSPIRE program. I also recorded their perceptions of benefits from participating in this program. I measured these aspects using two separate methods: Interviews and the Science Teaching Efficacy Belief Instrument (STEBI-B). The STEBI-B is a survey based on Bandura's theory of social learning that is given to pre-service teachers. Bandura's theory of social learning states that people are motivated to perform an action if they believe it will have a positive outcome and if they believe they will succeed (Bleicher, 2004). A copy of the STEBI-B can be found in Appendix A.

The STEBI-B is composed of two sections and answers are given as a likert scale from 5 (strongly agree) to 1 (strongly disagree). The two sections that compose this survey are Personal Science Teaching Efficacy Belief (PSTE) and Science Teaching Outcome Expectancy (STOE). Combined, these two scores can be used to make conclusions of measurable change in teaching self-efficacy of participants at various points in time. STOE portion of the survey is used to measure the future outcome expectancy of pre-service teachers in the science classroom. Specifically, the STOE measures a pre-service teacher's belief in their potential to affect students' science learning positively. The PSTE portion of the survey measures a pre-service teacher's belief in their ability to assume the role of the science teacher. Together these measure self-efficacy (Bleicher, 2004).

Self-efficacy can be defined as a person's belief in their own ability to perform adequately in order to influence events affecting their lives. This belief can affect emotions, thoughts, motivations and behaviors. A person with high science teaching efficacy believes they have the skills needed to teach and will approach science teaching with confidence (Bleicher, 2004).

There are many factors that affect science teaching efficacy; one that is relevant to my research is content knowledge. Specifically, limited content knowledge has been linked to low science teaching efficacy. This low science teaching efficacy can lead to teachers avoiding teaching science in the classroom and student engagement being limited as a result (Joseph, 2010).

Research Questions

Do pre-service science and social science teachers have an increase in belief of science teaching efficacy as a result of the INSPIRE program?

Do pre-service science and social science teachers participating in the INSPIRE program experience an increase in comfort level when working with science, technology and engineering concepts?

Methodology

Before beginning our project, an Internal Review Board (IRB) proposal was submitted for the methodology and was approved.

The INSPIRE class began in August 2012 at the beginning of the fall 2012 semester. In early November, the class took the STEBI-B. This survey was the same for the whole class, but respondents marked their survey with "SCI" for science teaching or "SS" for social science teaching. In late March the INSPIRE class took the STEBI-B as a post-test. Again, it was the same for the whole class but respondents marked their survey with "SCI" or "SS". Along with the second survey, there was an online survey with open-responses. To view these questions, see Appendix B.

The survey was issued to every participant in the program, but three participants were not included in results due to a lack of pre-STEBI-B or post-STEBI-B. This small sample size led to the data being non-parametric. To account for this, a Wilcoxon Signed-Ranks test was used to analyze the data. A Wilcoxon-Signed Ranks test is used for small sample sizes that contain two related sets of data (McDonald, J.H., 2009). In this case, the two related sets of data were the pre and posttest.

The survey participants were majority traditional students, all female, and typical Midwestern demographics (Caucasian, middle class, English language speakers). Five of the students were social science education majors and three of the students were science education majors.

Results

Based on the scores from the STEBI-B taken by participants in November and mid-March, a Wilcoxon Signed Ranks Test showed a significant increase when measuring participants' pretest and posttest scores using the STEBI-B ($Z= -2.032$, $p=0.042$). Participants' scores ranged from 55-92 on the pretest and from 69-98 on the posttest. The pretest mean was 77.5 ± 12.095 and the posttest mean was 83.75 ± 9.780. STEBI-B scores can range from 23-115.

The STEBI-B scores were then broken down into their PSTE and STOE components. A Wilcoxon Signed-Rank test did not find a significant increase between PSTE pretest scores and PSTE posttest scores ($Z= -0.954$, $p=0.340$). Participants' scores ranged from 29-57 on the pretest and from 39-60 on the posttest. The pretest average was 46.88 ± 9.628 and the posttest average was 49.00 ± 7.071. The total points available on the PSTE range from 13-65.

A Wilcoxon Signed-Rank test also did not find a significant difference between STOE pretest scores and STOE posttest scores ($Z=-.1863$, $p=0.063$). Participants' scores ranged from 26-39 in the pretest and from 30-41 on the posttest. The pretest average was 30.63 ± 4.470 and the posttest average was 34.75±3.694. The total points available on the STOE range from 10-50.

Student	Pretest Total	Posttest Total	Pretest PSTE	Posttest PSTE	Pretest STOE	Posttest STOE	Discipline
Student 1	77	81	51	48	26	33	SS
Student 2	73	79	41	48	32	31	SS
Student 3	81	93	50	52	31	41	SS
Student 4	69	69	39	39	30	30	SS
Student 5	55	74	29	40	26	34	SS
Student 6	92	87	53	50	39	37	SCI
Student 7	91	98	57	60	34	38	SCI
Student 8	82	89	55	55	27	34	SCI

Figure 1. INSPIRE Participant scores on pre and post versions of the STEBI-B instrument.

In the online survey, students posted a variety of answers. In regard to the first question, "How has this project helped you in regards to your confidence in your content knowledge?", four of the eight students felt this program had helped them specifically in the geographical content knowledge, and three of the eight students felt the program gave them activities or ideas for activities they could use in a future classroom.

Question number two, "How has this project helped you in regards to your confidence in your pedagogical knowledge?" yielded few commonalities, but students aspects such as: confidence regarding the Iowa Core and lesson planning, confidence gain in teaching students about the concepts in this class, and using this class as a model for group work in future classrooms.

When asked what the most beneficial part of the program was, three students mentioned a cross-disciplinary aspect, three students mentioned a collaboration aspect, and three students mentioned knowledge gained. A quote from one student states, "The team work that I have experienced in this course has been a good model for reflection as to how group work can be organized and implemented."

In regard to what students would change about the program, the most consistent answer was the wish for more HAB launches or launches earlier in the program. Three students entered this response. As one student said, "The only thing I would have changed about the program is that a launch would have taken place already; however, I realize that it out of our instructors control."

In question number five, "Has your ability to work in a group improved as a result of participating in this program?", seven of the eight students felt their collaboration and team work skills had improved as a result of this program. One student was unsure whether the program had improved his/her skills due to the fact that he/she worked well in groups before. One student stated, "I would have to say that my ability to work in a group has definitely improved as a result of participating in this program."

When asked to apply the work the class did to Bloom's taxonomy, three students were able to apply a concept to 4 or 5 of the levels and the other five applied 0 to 2 concepts. Also, when asked about their comfort level with science, technology and engineering concepts, 100 percent of students felt more comfortable or much more comfortable than when they began the program. This question specifically answered my second research question, which asked if participants of the INSPIRE program experienced an increase in comfort level when working with science, technology and engineering concepts.

Discussion

First, I would like to readdress my research questions. These questioned whether pre-service science and social science teachers have an increase in science teaching self-efficacy as a result of the program, as well as if these pre-service teachers experience an increase in comfort level when working with science, technology, and engineering concepts as a result of the program.

To address my first question, it is relevant to look at the scores of the STEBI-B and the related Wilcoxon Signed-Rank test. First of all, the Wilcoxon Signed-Rank test showed the pretest and posttest STEBI-B scores to be significantly different. This was an anticipated result. Not only were participants part of the INSPIRE program, which worked to increase their knowledge in science, technology and engineering, but they also were continuing on in their education as pre-service teachers. Therefore, it is not surprising that students felt more comfortable in their role as future teachers. Something that is surprising though, is the fact that the two components that make up the STEBI-B saw no significant change while the score overall did. The STOE results were close to significant ($p=0.063$), and it is likely that while both scores changed slightly it was not enough for either to be significant but enough from each that the total scores were significantly different. Small sample size…

Another important thing to note is the range in all three components of the STEBI-B (Total, PSTE, STOE) decreased from pretest to posttest. The actual numbers show that the students who were least confident in their science teaching self-efficacy increased by the most points while students who came in with a foundation for high science teaching self-efficacy increased by less points. The results of the STEBI-B, in general, supported my first research question.

Besides the STEBI-B scores, I wanted to dig deeper into how the participants viewed the program. This was done through the online survey. The first question in regard to content knowledge revealed that participants found the geography aspect of the program to be very helpful. This is not surprising considering the majority of participants were pre-service social science teachers. Students also felt this program gave them ideas for activities within the classroom. One student responded,

> "I have learned more about the concepts of flight. The tissue paper balloons were the best project to be able to physically complete a project and see the results. The Google Earth activities were also helpful, and they will be useful in a classroom someday."

In regard to their pedagogical knowledge, there were few common themes among students. This could be due to the fact that the pedagogical aspect of high altitude balloons was not emphasized as much as the content aspect. This was due to the fact that most participants had relatively little knowledge about high altitude balloons when entering the program and it was important to build their foundational knowledge.

Participants felt there were many beneficial aspects of the program. When questioned about it, many wrote down multiple aspects. One that many students agreed upon, was the cross disciplinary portion of the class. Students also agreed they benefitted from collaboration within the program. These two aspects together are important because one main goal of the program is specifically designed to promote collaboration between science and social science.

Students also felt they benefitted by an increase in knowledge. As mentioned before, increased content knowledge is linked to increased teaching self-efficacy.

Many participants expressed a desire for the program to have more launches and had been able to launch earlier. Launches in the first semester were cancelled due to a helium shortage and later due to weather and launches in the second semester are scheduled for April 13 or April 27.

The majority of participants felt their collaboration skills were enhanced as a result of the program. This is not a surprising effect due to the fact that the majority of class periods were spent working in groups building capsules and participating in group activities. In the words of one student, "I think my ability to work in a group has improved because I know how to work when everyone is willing to contribute as opposed to when no one wants to work together."

The final open ended question regarded Bloom's taxonomy. Three students were able to apply four to five of the concepts discussed in class and five were able to apply zero to two of the concepts discussed in class. It is not surprising that there was a distinction between students in how many concepts they were able to apply due to the variety of ages participating in the program. Two of the students could be considered non-traditional students and while the other students are in the same age range, they differ in their point in their education.

In the multiple choice questions, 100 percent of participants answered that they were either more comfortable or much more comfortable with science, technology and engineering concepts. These questions were asked separately. This result is not surprising because the majority of participants had little exposure to these disciplines before this program, and these disciplines were explicitly focused on in the program.

Limitations

This program experienced a few limitations. One the group of students was relatively small. Two, the students were all relatively the same age, all female, and from similar Midwestern backgrounds. The homogeneity of the group could have led to skewed results. Student growth may also have been limited due to the fact there was no launch during the school year. A fall launch would have given students an experience to base their work off of, and a spring launch would have given students a culminating experience for their hard work. Couldn't control for other material they may have encountered in other classes. Unfortunately, the weather did not cooperate and there was no launch.

Future Studies

While the results of this study found evidence the pre-service teachers experienced growth in many areas, it would be beneficial to follow this cohort as they continue in their high altitude ballooning endeavor. The group of students that took the class in the 2012-2013 school year will be continuing on in the program for at least one more school year (2013-2014), and another group will be starting the program in 2013-2014. This continuation of the program will allow for a more thorough collection of data.

Significance

Based on the results of this study, pre-service teachers participating in the INSPIRE Program at UNI experience increased efficacy, increased collaboration skills and were exposed to new concepts. They also forged new relationships with professors, students of different disciplines than their own, and with future teachers like themselves.

It is also especially exciting to note 100% of students felt more comfortable working with science technology and engineering concepts than when they began the course. This increase is especially important because of the recent release of the Next Generation Science Standards that were recently released. These standards implement engineering concepts into all classrooms, which is something many teachers are not familiar or comfortable with. When our future teachers are exposed to these engineering concepts, they are given the opportunity to be better prepared teachers as well.

By giving our future teachers the confidence and tools to excite our nation's students about STEM, we are potentially improving our nation's workforce at the same time. These future teachers will be given the resources to implement their HAB project in middle schools and high schools across the nation. According to a 2011 survey, college students pursuing STEM careers report they discovered their interest in STEM primarily in the high school years and occasionally in the middle school years (Microsoft, 2011). This evidence shows how important it is that we properly equip our future teachers to peak interest in STEM during these crucial years.

References

Bleicher (2004). Revisiting the STEBI-B: Measuring self-efficacy in preservice elementary teachers. *School Science and Mathematics. 104(8)*, 383-391.

Dembo and Gibson (1985). Teachers' sense of efficacy: an important factor in school improvement. *The Elementary School Journal. 86 (2),* 173-184.

Federal Inventory of STEM Education, Fast-Track Action Committee, Committee on STEM Education (2011). The federal science, technology, engineering, and mathematics (STEM) education portfolio.

Iowa Mathematics and Science Education Partnership. (2012). Retrieved from: http://www.iowamathscience.org/

J.C. LaCombe, E.L. Wang, M. Nicolescu, P. Rivera, and B. Poe (2007). Design experiences with a student satellite program. Proceedings of *The American Society for Engineering Education Pacific Southwest Annual Conference.*

Jobs for the Future (2007). The STEM workforce challenge: the role of the public workforce system in a national solution for a competitive science, technology, engineering, and mathematics (STEM) workforce.

Joseph (2010). Does intention matter? Assessing the science teaching efficacy beliefs of pre-service teachers as compared to the general student population. *Electronic Journal of Science Education. 14(1),* 1-14.

Larson, Armstrong, and Hiscock. (2009). The first frontier: high altitude ballooning as a platform for student research in science and engineering. *American Journal of Physics. 77(6)*, 489-497.

McDonald, J.H.(2009). Handbook of Biological Statistics (2nd ed.). pp. 198-201. Sparky House Publishing. Baltimore, Maryland.

Microsoft, (2011). Microsoft releases national survey findings on how to inspire the next generation of doctors, scientists, software developers and engineers. Retrieved from: http://www.microsoft.com/en-us/news/press/2011/sep11/09-07MSSTEMSurveyPR.aspx

National Science and Technology CouncilGovernor's STEM Advisory Council, (2012). IowaSTEM.gov. Retrieved from: https://openup.iowa.gov/board/STEM+AdvisoryCouncil/194/

Newell, (2001). A theory of interdisciplinary studies. *Issues in Integrative studies. 19*, 1-25.

Next Generation Science Standards (2013). Final next generation science standards released. http://www.nextgenscience.org/final-next-generation-science-standards-released

UMass Donahue Institute, Research and Evaluation Group (2011). Increasing student interest in science, technology, engineering, and math (STEM): Massachusetts STEM pipeline fund programs using promising practices.

Appendix A: Online Survey

1. How has this project helped you in regards to your content knowledge? (open-ended response)

2. How has this project helped you in regards to your pedagogical knowledge? (open-ended response)

3. What has been the most beneficial part of this program? (open-ended response)

4. What would you change about the program? (open-ended response)

5. Has your ability to work in a group improved as a result of participating in this program? (open-ended response)

6. Using Bloom's Taxonomy, can you provide an example from this class that fits into each tier? If so, please write it in the blanks below. If not, leave them blank. The levels of Bloom's Taxonomy for the Cognitive Domain are: Knowledge, Comprehension, Application, Analyzing, Synthesis, Evaluation. (open-ended response)

7. How comfortable are you working with the Science concepts from this class (Ex: Tissue paper balloon, GPS/ Nerf Gun Triangulation)?
    a. Much less comfortable than when I began the class
    b. Less comfortable than when I began the class
    c. No change from when I began the class
    d. More comfortable than when I began the class
    e. Much more comfortable than when I began the class

8. How comfortable are you working with the Technology concepts from this class (Ex: Google Earth, Balloon tracking software, Hobo software)?
    a. Much less comfortable than when I began the class
    b. Less comfortable than when I began the class
    c. No change from when I began the class
    d. More comfortable than when I began the class
    e. Much more comfortable than when I began the class

9. How comfortable are you working with the Engineering concepts from this class (Ex: Soldering, Capsule Construction)?
    a. Much less comfortable than when I began the class
    b. Less comfortable than when I began the class
    c. No change from when I began the class
    d. More comfortable than when I began the class
    e. Much more comfortable than when I began the class

10. Are there any other comments you would like to include? (open-ended response)

Appendix B: STEBI-B

Please indicate the degree to which you agree or disagree with each statement below by circling the appropriate letters to the right of each statement.

SA = STRONGLY AGREE

A = AGREE

UN = UNCERTAIN

D = DISAGREE

SD = STRONGLY DISAGREE

1. When a student does better than usual in science, it is often because the teacher exerted a little extra effort.	SA	A	UN	D	SD
2. I will continually find better ways to teach science.	SA	A	UN	D	SD
3. Even if I try very hard, I will not teach science as well as I will most subjects.	SA	A	UN	D	SD
4. When the science grades of students improve, it is often due to their teacher having found a more effective teaching approach.	SA	A	UN	D	SD
5. I know the steps necessary to teach science concepts effectively.	SA	A	UN	D	SD

6. I will not be very effective in monitoring science experiments.	SA	A	UN	D	SD
7. If students are underachieving in science, it is most likely due to ineffective science teaching.	SA	A	UN	D	SD
8. I will generally teach science ineffectively.	SA	A	UN	D	SD
9. The inadequacy of a student's science background can be overcome by good teaching.	SA	A	UN	D	SD
10. The low achievement of some students cannot generally be blamed on their teachers.	SA	A	UN	D	SD
11. When a low-achieving child progresses in science, it is usually due to extra attention given by the teacher.	SA	A	UN	D	SD
12. I understand science concepts well enough to be effective in teaching science.	SA	A	UN	D	SD
13. Increased effort in science teaching produces little change in some students' science achievement.	SA	A	UN	D	SD
14. The teacher is generally responsible for the achievement of students in science.	SA	A	UN	D	SD
15. Students' achievement in science is directly related to their teacher's effectiveness in science teaching.	SA	A	UN	D	SD
16. If parents comment that their child is showing more interest in science at school, it is probably due to the performance of the child's teacher.	SA	A	UN	D	SD
17. I will find it difficult to explain to students why science experiments work.	SA	A	UN	D	SD

18. I will typically be able to answer students' science questions.	SA	A	UN	D	SD
19. I wonder if I will have necessary skills to teach science.	SA	A	UN	D	SD
20. Given a choice, I will not invite the principal to evaluate my science teaching.	SA	A	UN	D	SD
21. When a student has difficulty understanding a science concept, I will usually be at a loss as to how to help the student understand it better.	SA	A	UN	D	SD
22. When teaching science, I will usually welcome student questions.	SA	A	UN	D	SD
23. I do not know what to do to turn students on to science.	SA	A	UN	D	SD

Office of Sponsored Programs

University of Northern Iowa

Human Participants Review Committee
UNI Institutional Review Board (IRB)
213 East Bartlett Hall

John Ophus
Department of Biology
0421

Re: IRB 12-0152

Dear Dr. Ophus:

Your study, **Iowa Near-Space Project Integrating Research and Education (The INSPIRE Project)**, has been approved by the UNI IRB effective **2/5/13**, following a review of your application performed by **IRB member, William Clohesy, Ph.D.** You may begin enrolling subjects in your project.

Modifications: If you need to make changes to your study procedures, samples, or sites, you must request approval of the change before continuing with the research. Changes requiring approval are those that may increase the social, emotional, physical, legal, or privacy risks to participants. Your request may be sent to me by mail or email.

Problems and Adverse Events: If during the study you observe any problems or events pertaining to participation in your study that are *serious* and *unexpected* (e.g., you did not include them in your IRB materials as a potential risk), you must report this to the IRB within 10 days. Examples include unexpected injury or emotional stress, missteps in the consent documentation, or breaches of confidentiality. You may send this information to me by mail or email.

Expiration Date: Your study is **Exempt from continuing review**.

Closure: Your study is Exempt from standard reporting and you do not need to submit a Project Closure form.

Forms: Information and all IRB forms are available online at http://www.uni.edu/rsp/protection-human-research-participants.

If you have any questions about Human Participants Review policies or procedures, please contact me at 319.273.6148 or at anita.gordon@uni.edu. Best wishes for your project success.

Sincerely,

Anita M. Gordon, Ph.D.
IRB Administrator

Cc Loren Thalacker, Co-PI