

**Institutional Review Board for the Use of Human Subjects in Research
GUIDELINES FOR A PROPOSAL NARRATIVE**

In your narrative, address each of the topics outlined below. Every application for IRB review must contain a proposal narrative, and failure to follow these directions will result in delays in reviewing/processing the protocol.

A. INTRODUCTION

1. Briefly describe in lay language the purpose of the proposed research and why it is important.

The project will examine the connection between student motivation and learning outcomes in introductory general education classes in geology. The key hypotheses are that: 1) The affective domain is a major control on student learning; and, 2) How we teach can significantly change students' affective behavior.

2. If student research, indicate whether for a course, thesis, dissertation, or independent research.

B. SUBJECT POPULATION

1. How many subjects will be involved in the research?

Approximately 90 students in MEA 101:003.

2. Describe how subjects will be recruited. Please provide the IRB with any recruitment materials that will be used.

Student participants will be recruited from participating introductory geology classes using the attached informed consent request. This informed consent form will be made available when the student first logs in to the online MSLQ survey. We only use data from students who have indicated that they have provided the necessary consent.

3. List specific eligibility requirements for subjects (or describe screening procedures), including those criteria that would exclude otherwise acceptable subjects.

All students participating in the courses are eligible for participation with the exception of students under 18 years of age.

4. Explain any sampling procedure that might exclude specific populations.

Students with visual impairment may not be able to complete the online survey without assistance.

5. Disclose any relationship between researcher and subjects - such as, teacher/student; employer/employee.

All of the subjects will be students in my classes.

6. Check any vulnerable populations included in study:

- minors (under age 18) - if so, have you included a line on the consent form for the parent/guardian signature
- fetuses
- pregnant women
- persons with mental, psychiatric or emotional disabilities
- persons with physical disabilities
- economically or educationally disadvantaged
- prisoners
- elderly
- students from a class taught by principal investigator
- other vulnerable population.

7. If any of the above are used, state the necessity for doing so. Please indicate the approximate age range of the minors to be involved.

As mentioned in item #1, we seek to enhance learning outcomes by addressing aspects of the affective domain in the classroom. Consequently, it becomes important to survey the students in the classroom where the specific strategies will be employed. All students will participate in the survey as part of the class. The survey will make them aware of

a range of factors that influence their learning. All students will receive a summary of their scores and advice on how to adjust their study habits to take advantage of various learning strategies.

Previous research has indicated that high scores on several of the MSLQ subscales correlate with positive student performance. Consequently, I plan to introduce specific exercises into class that will help students understand how these factors impact their learning and we will spend some class time discussing the learning process in the context of the physical geology class (and general education classes generally). These activities may include strategies such as student journals, knowledge surveys, and online quizzes that will be included as part of the class grade. Student scores on these items will be collected and sample work will be copied for later analysis. In addition, I will train a graduate student to conduct structured interviews with student volunteers from the class to have them explain their learning process in greater depth. These students will receive a modest incentive in the form of \$20 gift certificates to the campus bookstore.

I will not have access to individual student scores on the MSLQ but each student will receive a print out that summarizes their scores for their average scores for the different subscales. I plan to ask them to complete two homework assignments (see attachment) early and late in the semester that would have them review their results and explain why they scored high on two subscales and what they might do to improve scores on two of the subscales where they received a lower score. The homework provides a general overview of student learning. However, we will only conduct a deeper analysis of the results of those who give consent to be part of the research study.

C. PROCEDURES TO BE FOLLOWED

1. In lay language, describe completely all procedures to be followed during the course of the experimentation. Provide sufficient detail so that the Committee is able to assess potential risks to human subjects. Make sure to include practical details regarding how research activities will be carried out.

This is a quasi-experiment involving students in introductory geology classes at NCSU and in similar classes at other institutions. We will compare various aspects of their motivation to learn using a common survey tool, the Motivated Strategies for Learning Questionnaire (MSLQ). Variables will include teaching strategies. Students will complete an online survey twice during the semester, once around the 2nd or 3rd week and again near the completion of the semester. This is part of a multi-institutional study that will be targeting students in introductory level geology taught by participating faculty. We will compare how responses vary with class performance and various demographic factors (e.g., age, academic rank). A large sample size is critical to ensure that results will be representative. Students will complete an on-line version of the 81-question Motivated Strategies for Learning Questionnaire (MSLQ), a tool that has been used previously in many educational studies. Students will also complete a demographic survey.

Data will be collected using an online version of the MSLQ hosted by the University of North Dakota. To administer the surveys and report the results efficiently, a web-based computer application was written and hosted at the University of North Dakota Department of Geology and Geological Engineering for use by all participants on all campuses. Participating students will take the surveys (the demographic survey and the MSLQ surveys) through a web browser over a secure connection with the Apache-SSL server; responses will be stored in a database along with appropriate flags indicating the student's campus, class number, instructor, and term, together with a unique, randomly generated student code. The data files for each student that record their survey responses only contain the coded numbers. People whose job it is to analyze the student data, never see their names, only the numbers. At first login, students will be shown any notifications required by their campus' Institutional Review Board, and will have an option to agree or disagree to be part of the research study before being presented with a survey. The instructor will not know which students agreed/declined until the semester is completed and grades are submitted. All students will take the survey, but only those who electronically indicate that they give informed consent to be part of the research will be included in the subsequent analysis. Upon completing an MSLQ survey, students will be redirected to a summary web page reporting their personal results with average scores for each subscale and offering advice on improving their scores. As part of a homework assignment, students will review the summary of their results and discuss what strategies they currently use and what others they might adopt. As such, the homework provides a general overview of student learning. At the end of the semester, after grades have been submitted, the instructors will get summary MSLQ scores for the class and a list of participating students with their code numbers. The instructor will also collect samples of student work on self-regulation related exercises (e.g., online quizzes, class journal entries, knowledge surveys) conducted during the semester. After grades have been submitted, the instructor will request student academic data (SAT/ACT scores, GPA) from University Planning and Analysis for participating students. The data will be matched with student code numbers, student names will be deleted, and the files of students who gave consent will be forwarded to the researcher responsible for the statistical analysis of the data

along with student performance data from the class (class scores, scores on standard exam).

The student data will be helpful to instructors for planning intervention strategies, and will be needed when we attempt to correlate survey results with student success in each class. For example, research reveals a strong correlation between the adoption of student self-regulation strategies and performance in class. Consequently, I will be introducing additional measures in class in an effort to enhance self-regulation for all students this semester. Prior to publication of results, or at such time as required by IRB policies, student identifiers will be purged from the database, that is, the separate files with student identifiers would be deleted.

2. How much time will be required of each subject?

It will take approximately 20 minutes to complete the online survey. Homework assignments are estimated to take from 10-60 minutes.

3. In order for the IRB to completely understand the experience of the subjects in your project, please provide a detailed outline of everything subjects will experience as a result of participating in your project. Please be specific and include information on all aspects of the research, through subject recruitment and ending when the subject's role in the project is complete. All descriptions should include the informed consent process, interactions between the subjects and the researcher, and any tasks, tests, etc. that involve subjects. If the project involves more than one group of subjects (e.g. teachers and students, employees and supervisors), please make sure to provide descriptions for each subject group.

During the third week of the semester, participating students will be directed to the URL of the online survey. All students will be presented with a handout that includes information about how to access the MSLQ survey online. The students will log in to the survey from a computer of their choosing. They will identify the appropriate class and they will see the informed consent letter before they are asked to complete any part of the survey. Students will read the letter online and be asked to click a button indicating either agreeing to participate as part of the study or declining to participate. The instructor will not know which students agreed/declined until the semester is completed and grades are submitted. Students will then complete a brief demographic survey before being directed to the online MSLQ. Upon completion of the survey, the students will receive a listing of their choices as well as a standard form with information about each of the subscales and its significance to their learning. Students will be asked to complete the survey a second time, during the 14th week of the semester to assess any changes to the factors that influence their learning.

In addition, students will complete a series of exercises that contribute toward their course grade. This includes components such as weekly online Moodle quizzes that are already part of the course and homeworks designed to promote student reflection on their learning of the course content. Examples of this work might include knowledge surveys where students would rate their knowledge of a series of concepts before and after a lesson in an effort to have them assess their own learning. Students would receive grades for completion of these exercises, not for their rating of their learning. These types of exercises are designed to help students monitor their understanding of critical course concepts and can serve as study guides for exams. Grades assigned to such exercises are a minor part of the overall score for the course but are necessary to encourage participation.

D. POTENTIAL RISKS

1. State the potential risks (physical, psychological, financial, social, legal or other) connected with the proposed procedures and explain the steps taken to minimize these risks.

N/A

2. Will there be a request for information that subjects might consider to be personal or sensitive (e.g. private behavior, economic status, sexual issues, religious beliefs, or other matters that if made public might impair their self-esteem or reputation or could reasonably place the subjects at risk of criminal or civil liability)?

No

- a. If yes, please describe and explain the steps taken to minimize these risks.

- b. Could any of the study procedures produce stress or anxiety, or be considered offensive, threatening, or degrading? If yes, please describe why they are important and what arrangements have been made for handling an emotional reaction from the subject.

No

3. How will data be recorded and stored?

Data will be collected using an online version of the MSLQ hosted by the University of North Dakota. To administer the surveys and report the results efficiently, a web-based computer application was written and hosted at the University of North Dakota Department of Geology and Geological Engineering for use by all participants on all campuses. Participating students will take the surveys (the demographic survey and the MSLQ surveys) through a web browser over a secure connection with the Apache-SSL server; responses will be stored in a database along with appropriate flags indicating the student's campus, class number, instructor, and term, together with a unique, randomly generated student code. Prior to publication of results, or at such time as required by IRB policies, student identifiers will be purged from the database.

- a. How will identifiers be used in study notes and other materials?

Results from individual students will not be identified. Results will be presented as group data (for example, per class or demographic group).

- b. How will reports will be written, in aggregate terms, or will individual responses be described?

Reports will be written in aggregate terms.

4. If audio or videotaping is done how will the tapes be stored and how/when will the tapes be destroyed at the conclusion of the study.

N/A

5. Is there any deception of the human subjects involved in this study? If yes, please describe why it is necessary and describe the debriefing procedures that have been arranged.

No.

E. POTENTIAL BENEFITS

This does not include any form of compensation for participation.

1. What, if any, direct benefit is to be gained by the subject? If no direct benefit is expected, but indirect benefit may be expected (knowledge may be gained that could help others), please explain.

We anticipate that the students will become more aware of some of the factors that affect their learning. We have created a related homework assignment to enhance student awareness of these factors. Otherwise there are no anticipated benefits.

F. COMPENSATION

1. Explain compensation provisions if the subject withdraws prior to completion of the study.

Students will not be compensated with the exception of those that participate in structured interviews. Those students will receive a \$20 gift certificate to the campus bookstore.

2. If class credit will be given, list the amount and alternative ways to earn the same amount of credit.

Students will be awarded a score for completing the relevant homework assignments related to completion of the study. As all students will complete the home works, regardless of whether they agree to be part of the research study, there are no alternative exercises offered.

G COLLABORATORS

1. If you anticipate that additional investigators (other than those named on **Cover Page**) may be involved in this research, list them here indicating their institution, department and phone number.

This research is part of an NSF CCLI proposal that is currently under consideration for funding, pending IRB approvals. There are six schools involved (U. of Colorado, U. of North Dakota, CSU Chico, Macalester College, N. Hennepin CC, and NCSU), all have their own faculty who as independently submitting IRB requests at their home institutions. Over the previous two years we have collected approximately 800 paired pre/post surveys from students in similar classes at all six institutions. Approximately 180 of those students were at NCSU. Previous results show general consistency in scores for students at the participating institutions.

2. Will anyone besides the PI or the research team have access to the data (including completed surveys) from the moment they are collected until they are destroyed.

The only participant with potential access to the NCSU data would be the Dr. Ronald Matheney, University of North Dakota Department of Geology and Geological Engineering, (701-777-4569). Dr. Matheney wrote the code for the online survey tool. Dr. Jennifer Stempien, will be involved in the statistical analysis of the results and will therefore have access to data from all institutions but all student data will be listed by code so there is no opportunity to connect the specific data to a particular student.

H. CONFLICT OF INTEREST

1. Do you have a significant financial interest or other conflict of interest in the sponsor of this project? No
2. Does your current conflicts of interest management plan include this relationship and is it being properly followed? N/A

I. ADDITIONAL INFORMATION

1. If a questionnaire, survey or interview instrument is to be used, attach a copy to this proposal.
2. Attach a copy of the informed consent form to this proposal.
3. Please provide any additional materials that may aid the IRB in making its decision.

J. HUMAN SUBJECT ETHICS TRAINING

*Please consider taking the [Collaborative Institutional Training Initiative](#) (CITI), a free, comprehensive ethics training program for researchers conducting research with human subjects. Just click on the underlined link.

North Carolina State University
INFORMED CONSENT FORM for RESEARCH

This form is valid from September 1, 2010 to September 1, 2011

Title of Study Geoscience Affective Research Network (GARNET)

Principal Investigator David McConnell (MEAS)

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above. You should not participate in this study if you are under 18 years of age.

What is the purpose of this study?

This project is collaborative effort between researchers at NCSU, U. of North Dakota, U. of Colorado, California State U. at Chico, Macalester College, N. Hennepin CC and Mesa CC. The project will examine the connection between student motivation and learning outcomes in introductory general education classes in geology. The key hypotheses are that: 1) The affective domain is a major control on student learning; and, 2) Students who monitor and regulate their affective beliefs, and can enhance their capacity learn course material.

What will happen if you take part in the study?

As part of your normal coursework, you will complete an 81-question online survey, Motivated Strategies for Learning Questionnaire twice during the semester. You will be asked to take the same survey twice to see if your perspectives on the class have changed over the time interval between surveys. The survey will take approximately 20 minutes to complete each time. In addition, you will also be asked to complete a brief online Demographic Survey one time. If you agree to participate in this study, you will be asked to allow the researchers to analyze your responses on these surveys and compare the results with information from your academic record. More specifically, you are giving permission for some of your course materials (e.g., homeworks), course grades, grade point average, and SAT/ACT scores to be compared with survey responses after the course is over and after grades have been submitted to the University. Students that volunteer to participate, may be also be offered an opportunity to participate in a 30-minute interviews with a graduate student to discuss their learning strategies. The instructor will not have access to individual student survey responses or will not know who has accepted or declined participation in this study, during the semester, or until grades are submitted at the end of the semester.

Risks

There are no risks associated with this study. Participation or lack of participation will have no impact on your course grade.

Benefits

We anticipate that the participating students will become more aware of some of the factors that affect their learning. More broadly, this work will help faculty to become more aware of the factors that impact student learning and thus to identify the most appropriate teaching methods to use to achieve specific class learning goals.

Confidentiality

The information in the study and academic records will be kept strictly confidential. Personal data and individual responses to surveys will be accessible only to the researchers collaborating in this study. Data will be stored securely in a database where each student will be identified by a random code number assigned to you when you register online to take the survey. A code number will also be used to replace your name on data from your academic records. Master lists linking your name and code numbers will be stored separately in a secure database. No reference will be made in oral or written reports which could link you to the study.

Compensation

You will receive credit for completing the related homework assignments regardless of whether you agree or not to be part of the research study. Students who participate in interviews will receive a \$20 gift certificate to the campus bookstore.

What if you have questions about this study?

If you have questions at any time about the study or the procedures, you may contact the researcher, Dr. David McConnell at (919) xxx-xxxx or david_mcconnell@ncsu.edu.

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, (919/515-4514), or Carol Mickelson, IRB Coordinator; Box 7514, NCSU Campus (919/515-7515).

Consent To Participate

As part of your normal coursework, you will complete an 81-question online survey, Motivated Strategies for Learning Questionnaire twice during the semester. If you agree to participate in this study, you will be asked to allow the researchers to analyze your responses on these surveys and compare the results with information from your academic record after the course is over and after grades have been submitted to the University.

“I have read and understand the above information. I understand that I have the option to ACCEPT or DECLINE to participate in this study. By choosing to participate in the study, I agree with the understanding that I may withdraw at any time.”

I am at least 18 years old and agree to participate in the study described above.

I decline to participate in the study described above.

(These two statements will be presented to students with radio buttons they would activate to either agree or decline to be included in the research study.)

