

Application For Approval To Use Human Research Subjects

1 Application Narrative

1.1 Brief Rationale For The Proposed Research

A basic statistics course, Elementary Statistical Methods (Statistics 301), given at Purdue University North Central (PU/NC), is presently being conducted over the Internet. It appears as though the use of the Internet allows students to successfully complete requirements and interact with the subject matter and instructor at times convenient to them rather than in a regular “real-time” classroom setting, in other words, to allow asynchronous learning. To more objectively evaluate this Internet approach to learning, it is hoped that a statistical study can be undertaken to compare classroom performance with Internet performance.

1.2 Specific Procedures To Be Followed

This study would involve a random division of the classroom statistics students into classroom students and Internet students for as many as three one week periods out of the 16 weeks of the term. By chance, some students may not be assigned to receive any Internet teaching, while others may be asked to be Internet students for all three of the one week periods. Internet students would be expected to not attend class, to receive all instruction over the Internet, on computers at PU/NC campus, if need be, for the one week periods they have been assigned.

This statistical study would compare homework, quiz and final scores of classroom students with the same scores of Internet students.

No extra credit and/or inducements will be used in the study. In fact, both classroom students and Internet students will be treated in as similar a manner as is possible as far as grading and office/telephone hours is concerned.

By necessity, the investigator would also be the instructor of the statistics course that is being studied.

This study will, if permitted, take place in the Spring 1999 term as well as the Fall 1999 and Spring 2000 terms.

1.3 Type Of Subjects To Be Employed

The type of subject employed in this study will be the students who take the Spring 1999, Fall 1999 and Spring 2000 classes in Statistics 301 at PU/NC.

No effort will be made to influence either the ethnic or gender make-up of the class.

A student may drop out of the study (and remain in the class) at any point during the term without penalty.

1.4 Procedures For Recruitment Of Subjects

Students will be told of the statistical study before entering the course, by the academic advisors.

Students will be told of the statistical study during the first two lectures of the academic term. Research participant consent forms will be distributed during these first two lectures.

Students will be asked, if they wish to participate in the study, to return their signed research participant consent forms to the instructor by the third lecture.

1.5 Procedures For Payment of Subjects

No subjects will be paid during this study.

1.6 Confidentiality

Any work published as a consequence of this study will not identify individual students. All records concerning this study which identify an individual student could appear on the computer in my office, on my computer at home or on a Zip disk. This data will be kept for an indefinite period of time.

1.7 Potential Risk to Subjects

Investigator is Instructor

It is a concern that the investigator is also the instructor of the course. Because of this, the students could view the study as being non-voluntary, as being coerced into participating in the study. This may have a detrimental effect on a student's grades.

Random Assignment

Random assignment prevents a student from choosing whether they wish to be either a classroom student or an Internet student. A student will be asked to receive instruction in a different way and, in particular, be asked to not attend class, but to receive instruction solely from the Internet on a computer. This may have a detrimental effect on a student's grades.

1.8 Benefits To Be Gained By The Individual And/Or Society

If this study showed that Internet performance was comparable or, at least, not too much worse than classroom performance, than this would lend credibility to asynchronous learning over the Internet. It would, at PU/NC, in particular, allow students who live and work in the general area of PU/NC but who, because of work schedules, are not able to find the time to physically attend weekly classes, to complete their degree requirements at times more convenient to their schedules.

1.9 Investigator's Evaluation Of The Risk-Benefit Ratio

Investigator is Instructor

The ideal situation would be to ask a faculty member, other than the investigator, to teach the statistics course, with both the classroom and Internet students. Furthermore, it would be best if a third party assigned the students at random to both the classroom and the Internet, and so allowed the investigator to assess the two groups without knowing which group was which, until *after* the results of the statistical analysis were known.

This just does not seem to be possible at PU/NC. It would be difficult to ask one of the other few faculty members in the Mathematics and Physics Section at PU/NC, none of whom are both statisticians and who are experienced enough in the specific way the Internet is being used, to teach the classroom/Internet statistics course, to allow the investigator to assess the course from an outside point of view. It would be awkward, at best, to ask one of the statisticians from the West Lafayette campus, 50 miles to south of PU/NC, to conduct the course. The investigator appears to be the only individual at the PU/NC campus qualified enough to carry out both the course and the statistical study.

Random Selection

Random assignment offsets any possible confounding factors which might influence the conclusions of the study. For example, random assignment would eliminate the possibility that academically or technologically superior students opt for Internet instruction over classroom instruction, say, and so bias the results of the study in favor of the Internet students.

The random assignment is designed to be as non-intrusive as possible. Rather than assign students to classroom and Internet methods for the *entire* term of 16 weeks, they are assigned for *at most three* weeks of the 16 week term. The relevant weekly homeworks and quizzes results would be used for comparison purposes.

If random assignment is not used, an observed study analysis could be used but would be more complicated and most likely less valid than the randomized experiment

suggested here. In an observed study, to control for the possibility that academically superior students opt for Internet instruction over classroom instruction, say, it would be necessary to identify and compare the better and also the poorer students in both the classroom and Internet groups. Not only would it be necessary to control for academic ability, but also it would be necessary to control for any other extraneous factors which may be thought to influence how a student performs in a classroom.

An observed study might be possible if the number of students were large and if complete (elaborate) information was known about these students. At PU/NC, we have neither of these two: the class sizes are small (20 to 30 students) and many students are, for the most part, part-time older commuter students taking a few courses. It is probable, at the very least, a very carefully designed, elaborate and intrusive questionnaire, used over multiple years, would be necessary as part of any kind of an observed study.

1.10 Procedures to Obtain Informed Consent

Copies of the Informed Consent form, attached, will be distributed to the students during the first two lectures. After having had the opportunity to read these forms over at home, the students will be asked to sign and return this forms by the third lecture.

1.11 Written Copy Of Informed Consent Form Provided To Subject

Please see the attached Research Consent Form.

1.12 Supporting Documents

There is a supporting letter from the Section chair, Dr. Chilukuri, which was attached in the first application.

No questionnaires will be used in this study. The tests and homeworks given during the study are the same tests and homeworks ordinarily given as a part of the Statistics 301 course. These tests and homeworks will be provided if required.

RESEARCH PARTICIPANT CONSENT FORM
Interactive Use of the Internet for Teaching Statistics
Jonathan Kuhn
Mathematics and Physics Section, PU/NC

Purpose of Research

This statistical study would compare homework, quiz and final scores of a group of classroom students with the same scores of a group of Internet students to be able to evaluate the Internet teaching method that will be used this term in the Statistics 301 (Division 1) course.

Specific Procedures to be Used and Duration of Participation

This study would involve a random division of the Statistics 301 students into classroom students and Internet students for as many as three one week periods out of the 16 weeks of the term. By chance, some students may not be assigned to receive any Internet teaching, while others may be asked to be Internet students for all three of the one week periods. Internet students would be expected to not attend class, to receive all instruction over the Internet, on computers at PU/NC campus, if need be, for the one week periods they have been assigned.

Benefits to the Individual

No student will be paid during this study. No extra credit and/or inducements will be used in the study. However, the test and homework scores of each group of students, classroom and Internet, will be adjusted so that neither group fares worse than the other.

Confidentiality

Any work published as a consequence of this study will not identify individual students. All records concerning this study which identify an individual student could appear on the computer in my office, on my computer at home or on a Zip disk. This data will be kept for an indefinite period of time.

Voluntary Nature of Participation

You do not have to participate in this research project. If you do agree to participate, you can withdraw your participation at any time without penalty.

Human Subject Statement

If you have any questions about this research project, contact

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(219) 785-5563 (work) or (616) 556-9856 (home)

If there are concerns about the treatment of research participants, contact the Committee on the Use of Human Research Subjects at Purdue University, ENAD 328, West Lafayette, Indiana. 47907. The phone number for the Committee's secretary is (765) 494-5940.

I HAVE HAD THE OPPORTUNITY TO READ THIS CONSENT FORM, ASK QUESTIONS ABOUT THE RESEARCH PROJECT AND AM PREPARED TO PARTICIPATE IN THIS PROJECT.

Participant's Signature

Date

Participant's Name

Researcher's Signature

Date