

Procedures for Graduate Research and Thesis: Writing the Research Proposal & Thesis

HCI GRADUATE PROGRAM

Indiana University School of Informatics

535 West Michigan Street
Indianapolis, IN 46202
Indiana University - Purdue University, Indianapolis

(IUPUI)

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HCI GRADUATE FACULTY

NAME	EMAIL	POSITION/SCHOOL	Ph.D.
Dr. Anthony Faiola	afaiola@iupui.edu	Assoc. Director, HCI Assoc. Professor, Informatics	Purdue University
Dr. Karl MacDorman	kmacdorm@iupui.edu	Assoc. Professor, Informatics	Cambridge University
Dr. Mark Larew	mblarew@INDesign-LLC.com	Assistant Professor (Adjunct), Informatics Informatics	Yale University
Dr. Josette Jones*	jofjones@iupui.edu	Assistant Professor, Informatics	University of Wisconsin-Madison
Joe Defazio*	jdefazio@iupui.edu	Assistant Professor, Interim Assoc. Dir. NM	Indiana University (ABD)
Malika Mahoui*	mmahoui@iupui.edu	Assistant Professor, Informatics	University of Montpellier II, France
Xuan Ma*	xuma@indiana.edu	Adjunct Lecturer, School of Library & Information Science	Indiana University (PhD Candidate)
Edgar Huang*	ehuang@iupui.edu	Associate Professor, Informatics	Indiana University
Mathew Palakal *	mpalakal@cs.iupui.edu	Professor and Associate Dean Graduate Studies & Research	Concordia University

* Faculty who only serve on thesis committees.

I. Getting Started with Graduate Work

Graduate Research

Graduate research, leading to a written thesis, is a scholarly exercise, the primary purpose of which is the advancement of theoretical knowledge within the discipline of human-computer interaction (HCI). Thus, the focus of an HCI master's thesis* is not a project per se, but an original contribution to the discipline of HCI. Graduate students should carefully consider how they might make such a contribution to form the basis of a thesis proposal. It is advisable to consider possible research topics during the first two semesters in the HCI program so that coursework may be organized to contribute to the final thesis research.

Thesis Advisor

The graduate student must select an advisor to supervise his or her final research and thesis by the end of the first semester of study, that is, before completing the course INFO I542 HCI Design 1. (The thesis advisor usually also acts as chairperson of the student's thesis committee.) Selection of the advisor is arrived at through discussions with the Associate Director of the HCI Graduate Program to determine the best match between the student's research topic and the backgrounds of faculty members. The thesis advisor should normally have a primary or adjunct faculty appointment in the School of Informatics. In some cases, an advisor may be selected from faculty in another school at IUPUI or IUB. In other unusual cases, a professional who holds an industrial position in a related field may also serve as advisor. If a person from industry is selected, they must hold a master's degree or higher in a discipline related to the thesis topic. In each case, selection of the advisor and chairperson must be approved by the Associate Director of the HCI Graduate Program.

Thesis Committee

The Thesis Committee must have at least three members, one of whom is the student's thesis advisor, who usually also serves as chairperson. By the completion of INFO I590 HCI Design 2, the student and the thesis advisor must agree on the selection of two additional committee members. The persons selected must be knowledgeable in the student's research area. They need not be from the School of Informatics (IUPUI or IUB) and may hold an industrial position. A maximum of one person from industry may be on the student's committee and must hold a master's degree or higher. That individual must also have an appropriate background to assess the student's research and thesis. Finally, selecting committee members that are local to central Indiana may prove advantageous to the student because committee members may need to meet in person.

Responsibility of the Thesis advisor

The thesis advisor will give direction to the student's research to fulfill the requirements for a Master's of Science in HCI. The thesis advisor may also defer to other members of the committee, if their expertise can better direct the student through any problems. The thesis advisor, usually acting as chair of the committee, will also take "responsibility" to setup meetings or any other forms of communication necessary to discuss the progress of the student's thesis research, including the final thesis presentation. The advisor will also oversee and approve the final version of the student's thesis.

Responsibility of the Thesis Committee Members

The other thesis committee members will work with the chairperson to oversee the completion of the student's research project and thesis. Committee members must be accessible to the student in order to

* What distinguishes the Masters thesis and the Ph.D. dissertation is that the doctoral dissertation must be "highly original" and produce a "substantial contribution" to the discipline of study. In the case of doctoral research, the student is posed with greater challenges. These challenges can include (but are not limited to) meeting a higher standard of excellence while working more independently from their chief advisor(s)

provide direction throughout the process. Upon agreeing to sit on the student's committee, an email confirming agreement should be sent to the student.

Selecting a Research Topic & Completing the Initial Proposal for Research *(Completed by the end of HCI 1 or shortly thereafter)*

In consultation with the thesis advisor, the graduate student must decide on an action plan suitable for graduate research. This will include the research topic and a detailed timeline for each phase of the research up to the date of submitting the bound thesis to the Associate Dean for Graduate Studies and Research. A research topic must be decided by the completion of HCI 1, but modification of the topic may occur throughout the completion of HCI 2. Once the topic is agreed upon by the Associate Director and thesis advisor, an email must be sent to each party confirming the decision.

The selection of a research topic will occur through the following process:

1. Each student, upon entering the HCI program, will receive a list of research topics, pre-developed by the HCI faculty. The topics will consist of areas of research familiar to the HCI faculty. Other topic areas that have the potential to provide the student a novel area of research will also be provided.
2. Students may formulate their own research topic under that direction of the Associate Director and thesis advisor. However, students are advised that their area of research must comply with the standards set by the HCI faculty regarding what constitutes research. This matter is discussed in more detail in sections II and III.
3. By the completion of HCI 1, all students will submit their research topic by preparing and submitting to their thesis advisor in written form: (See the Appendix A-1 below.)
 - a. Name (Full – first and last)
 - b. Anticipated date of graduation
 - c. The title of their research topic, including a main title and subtitle,
 - d. An abstract of their research topic that explains the specific purpose of the research, in 100-200 words.
 - e. The research question and sub-questions or a main question leading to one or more hypotheses.

The form (Appendix A-1) should be emailed to the advisor to establish a record. A dialogue should continue between the student and advisor until they agree on the final version of the thesis title, paragraph, and research questions. Once there is an agreement, the advisor **MUST** send a letter of confirmation to the student so they can proceed with the more extended research proposal, as outlined by Appendix A.

Preparing the Research Proposal *(Completed by the end of HCI 2 or shortly thereafter)*

A portion of HCI 2 will consist of helping the student to prepare the research proposal, which must be submitted to and approved by the thesis advisor. (See Appendix A, pp. 8-9; Research Proposal for organization and content.) By the completion of HCI 2, each student must have their thesis research proposal completed up to the end of the methodology section. The document should be approximately 1500-2000 words, not including the title page, abstract, contents, and references. To keep the document within this general limit, students will have to give considerable reflection to what exactly they want to do. Their writing style must be concise. This will not be the time for too many details, as in the expanded thesis, but it must clarify exactly what the student is interested to doing. The sections of the proposal, as outlined in Appendix B, will include:

- I. Introduction (Purpose Statement)
- II. Background
- III. Methodology

The thesis proposal, when completed, will serve as a framework for the first three sections of the student's final thesis. As the document develops, there will inevitably be modifications, but the primary structure of the thesis (up to the methods section) will be completed. The process of writing the proposal for research may take numerous iterations to receive approval by the advisor. Regardless of who is teaching HCI 2, the student and the HCI 2 instructor will work together with the thesis advisor to perfect the proposal. Once the document is approved, it will be provided to the thesis committee for their response. However, the advisor has the final authority to approve or reject the thesis research proposal.

Thesis One: What Must Be Completed

The purpose of Thesis One is to expand the originally approved thesis proposal into the final thesis and to prepare for the final HCI study. By the end of Thesis One, students should have their thesis completed up to the end of the methodology section and be ready to carry out their HCI experiment. At the initiation of Thesis One, students will meet with their advisor to agree upon a timeline to complete their research. Once a timeline is agreed upon by both parties, a formal email must be sent to the advisor by the student to confirm their agreement to the terms and conditions of what must be completed according to a specified timeline. The student will be responsible for completing each stage according to this timeline. Failure to complete all the required portions of the thesis on time and according to a standard deemed appropriate for an HCI thesis will result in either an Incomplete or a grade that reflects the quality of the document.

Finally, by the completion of Thesis One, the student must receive approval from the Institutional Review Boards (IRB) to be sure they are in compliance with federal regulations related to the use of human subjects. To receive approval by the end of Thesis One, students must submit their application to the IRB office as early in the semester as possible. No study using human subjects can be performed until this approval arrives in paper form from the IRB office. The process of approval can take from 2 to 6 weeks, depending on the level of research (exempt or expedite) and the number of changes the IRB review board expects. Please see Appendix D for more details.

Thesis Two: What Must Be Completed

Upon completion of Thesis One with a grade of B or higher, students will be allowed to register for Thesis Two. The same process of overseeing and assessing their progress step-by-step will take place. The primary purpose of Thesis Two will be to conduct the proposed research and complete the thesis. The final thesis should consist of no more than 20,000 words, not including the front materials, table of contents, abstract, references, and appendices. If students feel a need to produce a rather short or lengthy thesis, they should remain in consultation with their advisor as to the reason. In other words, students should not work to extend their thesis merely to produce bulk, neither should their thesis lack the necessary detail to clearly articulate the purpose of their research and the extent of their findings. In sum, the process may take the form of many types of activities, including user testing, field work, prototype design and testing, data collection, and data analysis. The concluding portion of Thesis Two will consist of selecting appropriate statistical methods, formulating the results of the study, and writing a clear and conclusive discussion. This process will demand that the student stay in close communication with his or her thesis advisor because of the complexity of issues that may arise.

Intent to Graduate

The graduate student must file an "Intent to Graduate" form with the Recorder of the School of Informatics at least six months prior to graduation. In each step of completing the thesis, the student should remain in contact with the Associate Director of the HCI Graduate Program and

their thesis advisor to assure that all steps toward graduation are being taken in a timely fashion.

II. Research Questions and Hypotheses

The first stage of graduate research, leading to thesis completion, is to determine the specific topic on which you will focus. From this point, the statement of purpose should set out the central direction for the research. Next, one or more clear and concise research questions or hypotheses must be formed. Questions and hypotheses provide a specific clarification of the statement of purpose. In either case, a comparison between two or more groups is made in terms of a dependent variable or as a relationship of two or more independent and dependent variables, and the significance of the relationship is evaluated.

Research Questions

Research questions are generally written into qualitative type studies. Research questions consist of a broad question followed by several related sub-questions. For example, studies consisting of ethnographic research would entail observing users interacting with some form of technology while collecting primarily narrative data. Based on the research question and the study, the student should arrive at some *approximation* of scientific truth[†]. Ethnographic studies are a valid form of inquiry leading to findings that do not necessarily demand the rigor of inferential or descriptive statistics.

Research Hypotheses

Research hypotheses are generally written into quantitative studies; however, one may start the inquiry with a question. In master's theses or doctoral dissertations, advisors often recommend hypotheses, because they represent the classical form of raising questions. A hypothesis must be proved or disproved by an accepted experimental methodology. The study is expected to arrive at some approximation of scientific truth through these steps: 1) a comprehensive search of existing knowledge on the topic found through a literature review, 2) a rigorous and well-formulated methodology that provides sound logic for arriving at the intended results, 3) controlled observation, which includes a precise form of data collection, 4) verifiable results, including an appropriate form of statistical analysis of the data, and 5) discussion that summarizes the results relative to the originally stated hypotheses and the existing body of relevant knowledge on the subject[‡].

III. Research Design

Based on a given research hypothesis or program, students will devise a design for research. Research design provides the glue that holds the research project together. A design is used to structure the way the research will be carried out. For example, it will show all of the major parts of the project: the sample group(s), measures, treatments or programs, and methods of

[†] Often times, when quantitative data is collected in a study based on a research question, descriptive statistics are used to arrive at a measurable outcome to support this approximation. Descriptive statistics constitute a set of techniques to summarize, organize, and present quantitative data sets numerically in tables or visually in figures, charts, and graphs. Examples of descriptive statistics include frequencies; percentages; measures of central tendency, such as mean (average), mode (most frequent value), and median (middle value); measures of variability, such as the variance or its square root, the standard deviation, range (maximum and minimum), inter-quartile range, and absolute deviation; and measures of correlation, such as linear correlation or rank correlation. Data is first collected and classified. If classes are subjectively defined, it may be necessary to have more than one judge, and further statistics are required to show consistency in judgment. Data is then summarized in the above measures and presented numerically and visually. If measures of statistical significance, such as student's t-test or ANOVA, show that there is sufficient data to draw conclusions about the population from which the data is sampled, inferential statistics may also be applied.

[‡] In most every case, quantitative data is collected in a study based on a hypothesis, with inferential statistics being used to arrive at a measurable outcome to support the hypothesis. Inferential statistics are concerned with testing hypotheses on samples, with the hope that these hypotheses, if true of the sample, will be true and generalize to the population. The most common in inferential statistics test whether two different variable are related to each other through correlation and the Chi-Square test.

assignment. Each part works together to arrive at addressing the central research question or hypothesis. All students must take one research design course in order to adequately carry out their research. A research design course (INFO I575 Informatics Research Design) is offered by the School of Informatics, which all students are recommended to take.

It is also advantageous for students to understand the difference between basic and applied research and where their research project falls. In most cases, HCI research falls within the applied category of research. However, there are some cases where an in-depth study is investigating the nature of some aspect of HCI that has no immediate application to technology per se. Below are the two basic definitions of research. Knowing where your research stands may help better identify your research goals and outcomes of your study.

Basic Research

Basic (or pure) research is driven by a scientist's interest (curiosity) in a scientific question or line of inquiry. The main motivation is to expand human knowledge. It is not to create or invent something, i.e., there is no obvious commercial value to the discoveries that result from basic research. Most scientists believe that a basic, fundamental understanding of all branches of science is needed for progress. Basic research lays down the foundation for the applied research that follows. It is conducted without a practical end in mind although it can have unexpected results that point to practical applications. For example, basic science investigations probe for answers to questions such as how the earth was formed. A basic research question in HCI might be, what is a particular user groups' cognitive response to a given technology? Another example might be; when teenagers use online chat programs, do they change their behavior of communication or pattern of interaction?

Applied Research

Applied (practical or industrial) research is designed to solve practical problems of the modern world, rather than to acquire knowledge for knowledge's sake. One might say that the goal of the applied scientist is to improve the human condition. Applied research is performed to solve specific and practical problems. It can be exploratory, but often it is descriptive. Common areas of applied research include electronics, informatics, computer science (HCI), and process engineering. For example, applied researchers may investigate ways to innovate database design for online e-commerce, or arrive at a solution of a particular interaction problem with international web sites for Americans, or improve the usability of a particular feature of a particular software program.

A Cross between Basic and Applied Research

There are many instances when the distinction between basic and applied research is not clear. It is not unusual for researchers to present their project in such a light as to pigeon-hole it into either applied or basic research. Some say that the difference between basic and applied research lies in the time span between research and reasonably foreseeable practical applications. In the case of HCI, students should have a general idea of what type of research they are doing.

Ethnography: An Alternative to Statistical Validation

If students decide to depend on ethnography to obtain their thesis research findings, the process will demand a considerable degree of commitment to immersing oneself within a social context. Ethnographic approaches to IT research have been considered by HCI professionals since the early 1990's as a viable means of informing the system design process. The advent of this method for

system design caused technologists to seriously consider the aspect of context regarding human-computer interaction (Nardi, 1996). Ethnography requires an explicit study of participants at a very early stage of the design process (Crabtree et al., 2000). Ethnography is a form of exploratory fieldwork that includes: 1) immersive participatory observation and 2) interpretative methods of analysis that are organized. The method is qualitative, with an emphasis on the informants/users/observer's experience.

Interpretive research, done with ethnography, has historically been considered an invalid means to secure data while studying information systems. However, Hemmings and Crabtree (2002) state that the appeal of ethnography follows the recognition by designers that the development of software increasingly relies upon social circumstances. This suggests that formal performance testing may systematically deconstruct human action in the work place, but in so doing may obscure or misrepresent the empirical process within a particular socially organized environment; failing to give adequate attention to the social nature of work. On the other hand, the focus of ethnography is on "social practices which enable the very processes which analytic methods identify, but which they decontextualize" (Hughes, et al., 1994, p. 430).

IV. Recommendations for Research Models

Graduate students have the choice of either experimental-based research (EBR) or product-based research (PBR). In either case, a thesis will be written based on some form of empirical[§] research. Both EBR and PBR are intended as an opportunity to learn how to perform graduate-level research with respect to an HCI-related problem.

Experimental-Based Research (EBR)

EBR seeks to answer specific questions or hypotheses as an outcome of a chosen research design. The work is an investigation of an original topic in HCI. The writing of a thesis requires the scholarly exposition and documentation of a problem. In some cases this may lead to a new solution to the problem and to original results. EBR must be theoretically grounded, and therefore will require a literature review related to the chosen problem domain. The research should include an empirical study consisting of a given technology with human interaction, usually related to some aspect of human cognition or behavior. In most cases, EBR would be related to basic research, with no immediate commercial application or outcome.

Product-Based Research (PBR)

The PBR also seeks to answer specific questions or hypotheses as an outcome of a chosen research design. The PBR option enables graduate students to combine original research with the creation of a particular product. The standards by which the product is judged are no less demanding than those of EBR, and the thesis is expected to rank with professional work in the area and to be useful to academics, practitioners, and students. The PBR option is designed for students who have a research interest to respond to a particular applied real-world problem with respect of a product. Although the focus of the PBR will be on arriving at a solution to a given problem of an interactive product, a theoretical foundation must be established to provide relevance to the undertaking. The student must prepare a description of the problem, the proposed software product with a solution of theoretical import, and a practical outcome. In many cases, PRB would be related to applied research, and be of direct value to improving the product under study.

V. Thesis Preparation, Defense, Binding, and Submission

Once the research is completed, the graduate student must prepare their thesis. See the Appendices for thesis organization and format, including the cover page for thesis committee signatures.

Thesis Editing and Proof Reading

It is the responsibility of the student to submit a professionally written thesis to the committee. Neither the thesis advisor nor any committee member is responsible for proof reading or to act as editor for the student. In many cases, graduate students hire professional editors to proof their theses for grammar, syntax, typographical errors, and general clarity and the logical flow of ideas. Students may take advantage of the IUPUI Writing Lab Center to assist them in the early stages of the

[§] Empirical research is any activity that uses direct or indirect observation as its test of reality. The empirical researcher attempts to describe accurately the interaction between his instrument and the entity being observed. The instrument may be as simple as the human eye or as complex as an online tracking system that measures user performance time. The researcher is expected to calibrate his/her instrument by applying it to known standard objects and documenting the results before applying it to unknown objects. In practice, the accumulation of evidence for or against any particular theory involves a detailed plan resulting in a research design for the collection of empirical data (Wikipedia).

preparation of their thesis. However, students must be advised that the Writing Lab should not be used in lieu of a professional editor. The expense of hiring a professional editor will serve to produce a well written thesis. Students should consider the employment of a professional editor as a normal course expense.

Students should also be advised that their thesis may be rejected based on a lack of professional execution, regardless of the quality and substance of the research. In other words, although the content of the thesis may meet a professional standard approved by the committee, if it lacks clarity, logic, and grammatical correctness, the thesis will be rejected and the student risks not meeting the deadlines set for graduation.

Thesis Review

The graduate student must submit their thesis to the thesis committee that was selected (once the individuals have agreed to serve on it) for review and approval. Typically, the thesis advisor and the members of the committee will make suggestions for revising the thesis while the thesis is in the process of being written. The advisor should walk the student through the outline and written form of the thesis to assure that the approach meets academic and professional standards. After changes are made by the committee to the thesis, a copy must be submitted to the Office of the Dean and/or the Graduate Program Director for review. (The thesis should not be in a bound state at this time.) When final changes are made and the thesis preparation is complete, the student is ready to defend their thesis.

The Oral Defense of the Thesis

As a consummation of the research and thesis, all students must formally present and defend their thesis. After approval by the thesis committee, the graduate student sets up a time for thesis defense in the last semester of their graduate work. The graduate student will make an oral defense of the thesis to the committee at a public seminar with other interested attendees. The seminar will consist of two parts, an open and closed session. After the candidate has had an opportunity to discuss the research findings with the audience and the committee, general questions may be raised for the candidate to expound more specifically on particular problems, issues, or research related topics. Following the open session, the general public will be excused and the committee will have an opportunity to ask more specific and probing questions regarding the student's research. The closed session is necessary for the committee to make any final recommendations, enhancements or changes to the thesis before it is bound and handed in to the Dean's office before graduation.

Thesis Formatting Guidelines

The thesis must adhere to the format specified in the IU Guide to Theses and Dissertations. This includes Table of Contents, Tables of Figures, References, Appendices, etc. Please see - A Guide to the Preparation of Theses and Dissertations, at <http://www.indiana.edu/~grdschl/thesisGuide.php>

In addition to the online Guide mentioned above, the thesis should be in all 12 point Times Roman. All headings and subheads must follow the APA format. All use of citations within the document and references in the Reference section must adhere to the APA format. Past theses can be used to guide the preparation process. Students should contact their advisor if they are unclear about thesis formatting.

Thesis Binding

Once the final changes have been made, the final thesis is signed by the committee members, and the

thesis is ready for binding.

Students should contact National Library Bindery to get the exact prices of binding their thesis. (See Figure 2.) They should also be advised that the price increases based on the quickness of turn around required. One week is the normal turn around time for a thesis order to be completed, but discussing this with the management of the bindery is VERY important. Students should be warned that it is their responsibility to get their thesis to the bindery on time in order to meet the deadline for submission to the Dean's office.

Thesis Bindery: National Library Bindery **55 South State Avenue, Indianapolis, IN 46201 (317) 636-5606**

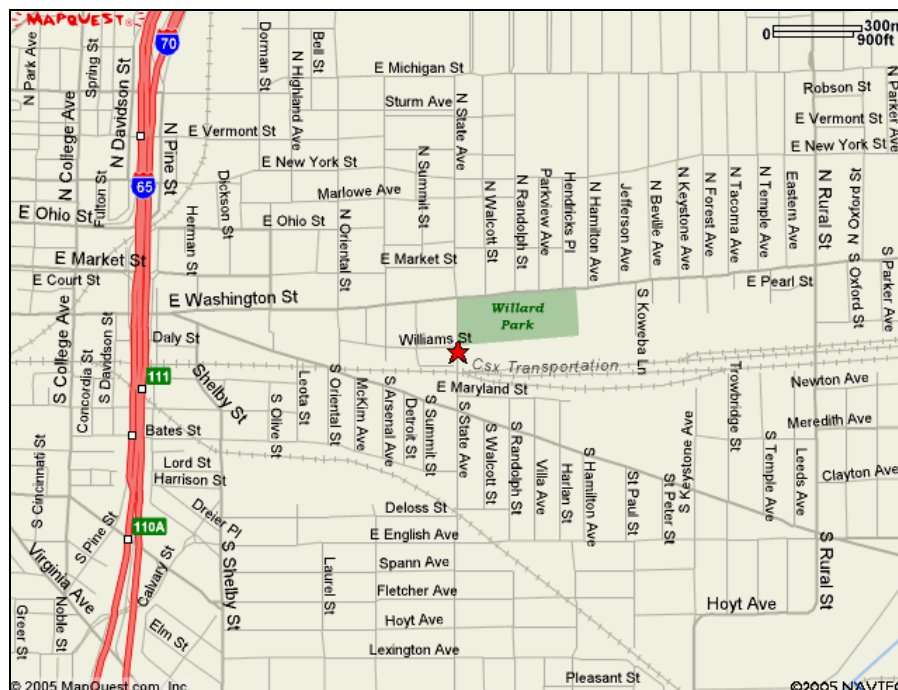


Figure 2. Map of the National Library Bindery

Note: This is a bindery company that the School of Informatics recommends, but you are not limited to it. You may use any bindery that you choose as long as they use the binding method approved by Indiana University. Thesis binding usually takes a week to a month.

Final Thesis Submission

1. Two bound copies are required. The student must submit one to the School of Informatics Associate Dean for Graduate Studies and Research and one to the graduate student's thesis advisor. An additional bound copy may be desired for the student and/or the HCI Graduate Program Director, but this is optional. All bound copies must be printed on 100% cotton rag paper, one-sided printing only. The final bound thesis must have the student's curriculum vitae included in the appendix. Unbound (e.g., coil bound) copies must also be distributed to the other members of the thesis committee.
2. Finally, a digital version of the thesis on **CD-ROM must** be submitted to the School of Informatics Office of Graduate Studies for posting online by the IUPUI University Library, along with a signed public permission (release) form.]

3. Once all materials are submitted, the Associate Dean for Graduate Studies and Research will notify the School Recorder. The School Recorder will process the graduate student's graduation if everything else is in order. For more information concerning this matter, please contact the Graduate Program Coordinator in the Office of Graduate Studies.
4. **NOTE: It is very important to know that graduation will NOT be approved until a BOUND copy of the student's thesis is delivered to the Associate Dean for Graduate Studies and Research in the School of Informatics.**

Appendix A-1
INITIAL RESEARCH SHORT PROPOSAL

Student Name

John Xa Doe

Anticipated Graduation

(Month and Year)

December 2008

Research Title & Subtitle

Cross-cultural cognition:
An investigation of designer thinking on web site design

Thesis Proposal Abstract

(Max. 200 words, one paragraph)

Cross-cultural web design and usability research takes as its theoretical underpinning cross-cultural communication, cultural anthropology, and cognitive science. The focus of research is to explore the cross-cultural design of online information and its impact on the social context of international users. Because empirical research continues to show evidence of cultural differences in cognition, the current study is intended to show how culture shapes the cognitive style of Web designers. Using subjects from diverse cultures, performance and preference measures will be collected online and off to identify designer cognitive styles and user preferences. The study will explore ways to measure culturally-mediated differences in how people think in different cultures when designing web sites, online information, or software.

Research Questions

(1-3 with sub-questions if necessary)

1. Does the cultural-context of web designers determine how they design information for the web?
2. Do the cultural cognitive styles of Web designers, as reflected in the Web content they design, cause cross-cultural users to have higher degrees of performance?
3. Do the cultural cognitive styles of Web designers, as reflected in the Web content they design, cause cross-cultural users to have specific preferences toward Web sites created by designers from their own culture?

ADVISOR APPROVAL

Thesis Advisor / Chair

Signature

Date

Student Name

Signature

Date

Appendix A-2
THESIS (FULL) PROPOSAL

FORMAT FOR THE COVER PAGE

INDIANA UNIVERSITY SCHOOL OF INFORMATICS
Human-Computer Interaction Program
Graduate Thesis Proposal

Thesis Title
Thesis Subtitle

Student Name
Student Email

Date of Proposal Submission: _____

Date of Graduation: _____

SUPERVISORY COMMITTEE APPROVAL

Thesis Advisor / Chair

Signature

Date

Thesis Committee Member 2

Signature

Date

Thesis Committee Member 3

Signature

Date

STUDENT CONFIRMATION

Student Name

Signature

Date

Appendix B
THESIS RESEARCH PROPOSAL OUTLINE

CONTENTS

I. ABSTRACT

II. INTRODUCTION

A. Introduction to subject (Brief background of the topic and the problem space.)

B. Importance of subject (Why is the topic of your research valuable.)

C. Intention of the study (Intended contribution to the HCI discipline.)

III. LITERATURE REVIEW

A. History and related research of the topic

(A condensed literature review that will be expanded in the final thesis.)

B. Research questions or hypotheses

(The literature review should naturally and logically lead the reader to the research question or hypothesis.)

IV. METHODOLOGY (Including the overall research design)

A. Participants (Who and number of persons in the study)

B. Treatment or Procedures (How the study will be carried out and the general description of the technology to be studied)

C. Data Analysis (Type of data to be collected)

- Method of data analysis

V. REFERENCES

VI. APPENDICES

This is the outline that **MUST** be adhered to for proposing your thesis research. Under each of the sections and subsections, students should provide the necessary information. In addition to the cover page, contents, and references, the proposal should range from 1500-2000 words (double-spaced, 12 pt.).

Appendix C
FORMAT FOR FINAL THESIS

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Introduction to Subject		1
Importance of Subject		1
Related Research		2
Intended Project Focus		3
Chapter Two: LITERATURE REVIEW		4
Introduction (Related research, Current practice or understanding)		4
Research Question(s) and/or Hypotheses		19
Chapter Three: METHODOLOGY (Research Design)		20
Participants		20
Treatments		30
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Appendix D

Institutional Review Boards (IRB) Approval

All research conducted at Indiana University-Purdue University Indianapolis (IUPUI) involving human subjects must be reviewed and approved by its respective campus research IRB risk review board. The boards review research plans and monitor ongoing research to insure full compliance with federal regulations and University policies. Protocol submission and requests for approval of research to each of these boards involve *separate procedures*. Therefore, it is important that the investigator initiate each procedure well in advance of any deadlines to allow adequate time for the review and approval process.

All HCI graduate students must be in IRB compliance by submitting the necessary applications to the IRB Advisory Board with enough time before beginning their research. Please see the IRB site, which has all necessary information and forms: http://www.iupui.edu/~resgrad/spon/rescom_human_menu.htm

An IRB Usability Packet has been prepared to help expedite the process for all students. The packet includes a range of usability instruments for collecting quantitative and qualitative data. A list of the packet contents are listed below.

IRB Usability Packet: Tools for Assessing Software and Web Sites

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