LIS 677 Human Dimension in Information Systems

Fall 2010: Meets Mondays 1:00 - 3:40 p.m. in HL 2K and on UH Island in Second Life
Instructor: Dr. Diane Nahl, Professor
Office: HL 3C; Voicemail: 956-5809; Email (quickest response): nahl@hawaii.edu
Web Site: http://www2.hawaii.edu/~nahl/courses677.html
Office Hours: Email for appt.

Expanded Seminar Description
The seminar focuses on the human element in information systems through examining human
physical, cognitive, and affective abilities, behaviors, and practices in interactions with
information systems, with an emphasis on the role of affect in information system use.
Readings cover cognitive theories, research on information system use, and qualitative and
quantitative research methods in studies of technology use. This term the seminar explores and
examines current research on information needs, seeking, and use, and human-system
interaction in immersive virtual worlds.

Seminar participants work on a project of the Community Virtual Library and the American
Library Association for Banned Books Week on the Info Island Archipelago of the immersive
virtual world platform Second Life. Students collaborate with librarians, other students, and ALA
staff while studying the immersive interface of Second Life both as users and field researchers.
Students meet the librarians of Second Life and learn their roles and functions in providing
inworld library research tools and services. Students learn, practice, and research virtual
information literacy skills needed in immersive interfaces. The University of Hawaii Vice
Chancellor’s office provides classroom and office space on University of Hawaii System Island
(see above slurl). The Community Virtual Library in Second Life provides the LIS Student Union
behind the Reference Desk on Info Island International:
http://maps.secondlife.com/secondlife/Info%20Island%20International/31/245/32

Prerequisite: LIS 670 or consent.

Program Level Student Learning Outcomes
This seminar addresses the following outcomes of the LIS Program, enabling students to:

1. Demonstrate an understanding of the philosophy, principles, policies and ethics of library and
   information science and technology;

3. Apply the basic competencies and knowledge that are essential for providing, managing, and
   designing information services and programs in a variety of information environments;

5. Demonstrate theoretical understanding of and basic competencies in evaluating, selecting
   and organizing information sources;

6. Demonstrate theoretical understanding of and basic competencies in storage, retrieval,
   dissemination, utilization and evaluation of information sources;

9. Demonstrate an understanding of research techniques and methods of applying new
   knowledge as it becomes available;

10. Demonstrate the professional attitudes and the interpersonal and interdisciplinary skills
needed to communicate and collaborate with colleagues and information users;

11. Demonstrate basic competency in the latest specialized information technologies.

**Course Level Student Learning Outcomes**

Students will:

1. Create and apply evaluative criteria and utilize human-computer interaction (HCI) research methods to examine information system interfaces.

2. Critically review interdisciplinary literature on particular aspects of human-system interaction.


4. Design, conduct, analyze, and report on pilot field studies with information system/setting users.

5. Critically review and discuss selected research and theory from cognate fields (cognitive science, psychology, computer science, information science, communications, education, information technology management, and others).

6. Apply philosophical and ethical principles in designing and evaluating human-system interaction.

**Course/Teaching Philosophy**

The broad goal of the course is to help students acquire the ability to **analyze, design and evaluate information systems and settings from the users’ perspective** with methods and approaches from HCI. The seminar participants constitute a learning community since all are information system users. The seminar takes a person-centered and hands-on approach to better understanding the human-system interaction experience, and to reducing and managing **affective load**. The assignments integrate the assessment of the user experience and interaction design by involving students in applying ethnographic methods to examine holistically the “self as user” as well as “others as users,” and by involving students in creating and assessing interactive experiences in virtual environments.

In today’s information environments human information needs, seeking, reception, and use are symbiotic with information technology. The affordances provided by ICTs (information and communication technologies) enable both **engaging attention** and **expressing human will**. The Field Research Report assignment helps students to focus on the affective, cognitive, and sensorimotor demands on people in information-intensive environments. Research Design Workshops facilitate creating a pilot study, giving students experience in designing situated human studies research, and providing feedback on common assumptions about information behavior.

Research Literature Partners lead interactive sessions on significant issues in experience design, enabling students to gain a deeper understanding of a variety of approaches to studying ICT use. The Interface Assessment Journal assignment helps students focus longitudinally on one’s own concurrent user experiences to better understand the demands of situated use over time. Analyzing and critiquing personal use of systems gives students concrete experience in defining and applying measurements to system elements. Interface
Assessment Workshops facilitate exploring interface evaluation methods, behavioral filters, and affordances and services in information environments.
Professional Expectations
LIS graduate students are responsible for observing the highest standards of intellectual and personal integrity in every aspect of their careers at the University of Hawaii. The profession promotes ethical and behavioral standards in public service and dealings with colleagues. LIS students are expected to adopt these values and enact them in their interactions with fellow students, faculty, staff and professionals. Please read the Professional Expectations Notice for LIS Graduate Students at UH: http://www.hawaii.edu/slis/students/profexp.html In addition, LIS 677 students will become officially certified to conduct human studies, according to federal guidelines and the University of Hawaii Human Studies Committee procedures.

In consideration of everyone, please turn off cell phones and pagers during class.

Teaching Method
Seminars promote the exchange of ideas and to facilitate that experience, attendance and constructive participation are required. Primary emphasis is on immersive learning projects, deep reading, group discussion, critical analysis, and presentation of experiences, readings and projects. Oral, written, and interface assignments are designed to promote these activities. Guest presentations, demonstrations, Research Design Workshops, Interface Assessment Workshops, and problem-solving and evaluation exercises enliven concepts and theories presented in readings and lectures. Consult written assignment instructions (pp. 7-14) and in the Required Seminar Readings packet.

Research Methods
Among others, students will study and apply the following research methods in course assignments: Information Retrieval method to analyze search strategies and compare results; Participant-Observer method to study naturally occurring activities on socio-technical information grounds; Content Analysis of user-generated discourse to study information practices; Movement Methodologies to capture concurrent system use.

Requirements
Readings
Assigned reading from articles in information science, cognitive science, psychology, sociology, human factors, and computer science will be the focus of class discussions. Weekly discussion questions are presented in the Required Seminar Readings handout. Students will collaboratively lead weekly experiences based on readings.

Assignments and Grading

Field Research Report 35%
   Written (25%)
   Oral (10%)
Interface Assessment Journal 35%
   Written (25%)
   Oral (10%)
Literature Exercises 20%
Collaboration & Participation 10%

100%

Due Dates
One point (1) will be deducted each day for late papers and assignments. If you miss class, you are responsible for obtaining notes from classmates and handouts from the instructor. If you have an oral report due the same day as a written paper, you may turn-in the written paper one session later without penalty.

Collaboration & Participation Requirements
Active class participation is essential when discussing readings, analyzing systems, and working in groups. Collaborative class exercises and discussions are central to the seminar's purpose of examining the human dimension in information systems. Students are expected to treat exercise partners and project members with professional courtesy and respect. Research Literature Partners lead sessions on weekly readings and all members are expected to actively participate in literature exercises. It is noticeable if someone does not routinely contribute and participate. Attendance is required. You may login on occasions where you cannot attend class. Two or more absences require written reports on required readings for missed sessions. Full points (30%) awarded only if all participation requirements are met.

To accomplish these requirements, students will need to
1) Actively collaborate with seminar members and participate in class exercises.
2) Take notes from lectures and readings that address the material and promote thoughtful consideration of issues.
3) Prepare engaging discussion activities, questions, quotations, exercises, and present observations, understandings, comments, insights, and criticism.
4) Listen and learn from each other's contributions through constructive comments and reactions in discussions.
5) Create well thought-out responses and prepare required written work on time.
6) Allow your mind to delve into a topic without consulting material, it develops with practice.

Technology Requirements
This course requires you to use a computer to produce all of the written assignments. PCs are available in the open LIS Alcove HL 3 and during posted hours in HL 2K (first obtain an ICS student account—application forms available in class and the LIS office HL 2).

EMAIL: LIS students are required to obtain and use your free hawaii.edu email account and subscribe to lis-stu, the LIS internal mail list for students [If you are not on the list, send UH email to lquiroga@hawaii.edu]. Please practice professional email etiquette and do not forward your UH mail to a non-UH account. Forwarding is unprofessional because your forwarded mail often bounces to senders, typically the LIS office or the LIS Chair. Exception: because it is nearly limitless you may forward to Gmail.

You are required to have a Gmail account for this course, and to subscribe to and use the LIS 677 Google Group to post a profile picture, obtain updated seminar information, respond to requests, and for collaborative work: http://groups.google.com/group/UH-LIS-677. Students will use Google Documents to work collaboratively and submit assignments electronically.

Second Life: Students will obtain a free Second Life account and avatar to experience virtual world information affordances and services in weekly class exercises and assignments. Students are required to use a headset for voice. Students may use lab computers or their own laptop. Always bring your ICS user login to class in case you need to use lab machines. Check the SL System requirements: http://secondlife.com/corporate/sysreqs.php Allow time to install frequent SL viewer updates.
# LIS 677 Seminar Schedule

(Subject to change)

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<th>Date</th>
<th>Topics</th>
<th>Assignments &amp; Due Dates</th>
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<tr>
<td>1</td>
<td>AUG 23</td>
<td>Seminar Introduction</td>
<td>Interface Assessment Journal Standards in Research Ethics</td>
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<td>2</td>
<td>AUG 30</td>
<td>Second Life Orientation</td>
<td>Research Ethics, &amp; Human Subjects sites, Certification</td>
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<td><strong>Guest Speaker:</strong> Laura Solomon (Lebachai Vesta in SL) “Best Practices in Library Web Site Design”</td>
<td>Tutorial, SL Community Standards &amp; Terms of Service Exercise: Usability testing of SL Orientation Guide for LIS 601</td>
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<td>SEP 13</td>
<td>Method and Theory in Human Computer Interaction (HCI)</td>
<td>Nahl 2010; Nardi</td>
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<td>UX Design: Mixed Reality</td>
<td>Literature Exercise: Interface Assessment Workshop</td>
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<td>5</td>
<td>SEP 20</td>
<td>User Studies: Usability Testing Field Research project</td>
<td>Campbell; Hepburn &amp; Lewis; Kupersmith; Norlin</td>
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<td>Field Research project</td>
<td>Interface Assessment Workshop</td>
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<td><strong>1 pm</strong> VW Field Trip: “Challenged Materials” Public Library Directors</td>
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<td>BBW Sep 25 thru Oct 2</td>
<td>User Studies: Information Seeking in Virtual Worlds Field Research project</td>
<td>Ostrander</td>
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<td>Literature Exercise: Research Design Workshop</td>
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<td>Interface Assessment Workshop</td>
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<td><strong>1 pm</strong> VW Field Trip: “Challenged Materials” Public Library Directors</td>
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<td>6</td>
<td>OCT 4</td>
<td>UX Design: Affective Aspects User Studies: Web Information Behavior</td>
<td>Sharp <em>et al.</em>; Krug</td>
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<td>Literature Exercise: Research Design Workshop</td>
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<td>OCT 11</td>
<td>Affective Load in Information Behavior</td>
<td>Mentis; Nahl, 2005</td>
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<td><strong>Oct 12 &amp; 13</strong> Paths to Virtual Treasure SL Conference</td>
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<td>OCT 18</td>
<td>User Studies: Information Grounds</td>
<td>Fisher &amp; Naumer</td>
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<td>Literature Exercise: Research Design Workshop</td>
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<td>Activity Theory and Interaction Design</td>
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<td>NOV 1</td>
<td>Education in Virtual Worlds</td>
<td>deFreitas; Luo &amp; Kemp</td>
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<td>NOV 8</td>
<td>Virtual World Librarianship</td>
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<td>User-Centered Revolution</td>
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<td>16</td>
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<td>Finals Week</td>
<td><strong>DUE:</strong> Last day to turn in assignments</td>
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Interface Assessment Journal

Students will be introduced to a variety of virtual abilities and immersive learning environments that serve as information grounds for systematic self-observations of interface use. Several behavioral filters allowing students to record affective, cognitive and sensorimotor activity in adjusting to the interface will be introduced during class lab sessions and used to make observations for the Interface Assessment Journal (IAJ). Students attend a variety of SL events and may explore other virtual worlds to create IAJ entries.

Second Life Immersive Events

The Community Virtual Library and LIS Student Union groups will be creating several exhibits and activities on the Info Islands for Banned Books Week (BBW). These activities serve as a venue for LIS 677 students to join in working on an immersive project with librarians and other LIS students and to conduct observations for the Interface Assessment Journal assignment.

BBW project: September 25–October 2, 2010.
ALA BBW Resources free to use: http://www.ala.org/ala/issuesadvocacy/banned/bannedbooksweek/index.cfm

Students will join a project or create a BBW exhibit, party, activity or event that involves making necessary virtual objects, publicizing and inviting participants to attend via SL groups, producing the event, and assessing its impact on participants. This production activity establishes a VW information ground to study as a participant observer in vivo. This allows you to study the SL interface while you learn to use it for a collaborative purpose.

Potential & Scheduled BBW Projects
- “Challenged Materials” Public Library Director’s Panel, Sept. 27, 4 pm slt (1 pm Hst)
- Banned book talk about To Kill A Mockingbird by Harper Lee, Sept. 28, 6 pm slt (3 pm Hst)
- Book Debates
- Banned Book Talks
- Harry Potter dance
- Banned Books True Life Stories
- Rachelville (children’s literature), Stonewall (GLBT), Sci Fi and Mystery Manor BBW events

Immersive Tours
Visit both the Testis Tour (U. Oregon) and the International Space Station Tour (Institute for Astronomy, UHM), take the tours and create IAJ entries while using both affordances. Compare the two in a summary entry.

SL Events and Activities
Attend events and explore activities and resources in a variety of areas and create IAJ entries. UH Island and the Information Archipelago has dozens of islands, themes, and activities, and the Destination Showcase in SL highlights impressive sims.

Typical SL Activities
Students learn virtual activities in class lab exercises and outside of class. All of these skills are put to use in professional events and activities where useful information is shared and social networking in an international venue is valued. Students develop IAJ entries during activities:
- Acquiring basic skills (communicating, walking, sitting, flying, teleporting, dancing)
- Searching for information, groups, individuals, or locations inworld
- Shopping for free items ($0L, opening boxes, attaching, wearing and using)
- Creating presentations and using presentation tools (uploading, media prims, scripts)
- Managing Inventory
- Building and making interactive objects (posters, signs, booths, exhibits, etc.)
- Working with textures (images)
Interface Assessment Journal

The purpose of this assignment is to enable students to gain skill in assessing the effectiveness of information system design and use through longitudinal systematic self-observation:

- Designing outcomes assessment criteria to examine interface effectiveness.
- Studying the self as user longitudinally on natural socio-technical information ground.
- Using research concepts, methods, and statistics to analyze one's own user behavior and make useful recommendations for redesign and improvement of outcomes.
- Valuing self-observation as a useful tool for analyzing information behavior and improving system and service design.

Systematically analyze your experience with the Second Life virtual world interface according to standard and additional criteria. Keep a systematic Journal of your reactions as a user of the interface, participate in exercises using the interface, and write a report of your experiences according to criteria below, given in class, and your own additional criteria. Critique external and internal instructions on using the interface, particularly where you experience a lack of clarity and you feel uncertainty, how you coped with and resolved the confusion, etc.

The content of the IAJ will reflect your work on Second Life CVL, LIS Student Union, UH Island projects and activities, and other sims. Goals of the projects will be determined by the seminar participants, groups will form and work on various aspects to achieve project goals. The IAJ represents your personal experiences working in SL, and the report represents a content analysis of your own concurrent user-generated discourse about the immersive interface. Cite theory and method to support your findings from the required readings and from related articles.

Requirements

1. Create a Second Life account, avatar, download the software, login, and begin the first orientation exercise (follow specific instructions given in lab).

2. Explore the interface in both formal (class exercises and BBW group project) and informal (individual pursuits) situations. Keep an Interface Assessment Journal to document your personal reactions (affective, cognitive, sensorimotor) while concurrently using the interface. Make a minimum of 20 IAJ throughout the term both in and outside of lab. You may compare SL to a similar VW such as Blue Mars. The IAJ will be turned in as an appendix.

3. Appropriate behavioral filters for IAJ data gathering will be provided in lab. In addition, review and select interface evaluation criteria taken from standard texts, Web sites, published standards, research or trade literature.

4. Focus the analysis on yourself as a member of a community of users of the system and collaborating with like-users, by developing or selecting user-oriented criteria to add to the standard criteria that make sense for virtual world users.

5. Test the interface against your evaluation criteria by identifying and performing tasks that are routine for that interface.

6. Present your findings, demonstrate aspects of the interface, and lead a discussion on the merits and limitations of the design and functionality of the interface for 20 minutes. Oral presentations in Second Life will be scheduled on November 29 or December 6.
7. Submit a written analysis of your findings posted to your Web site, including a well-organized, point-by-point assessment. Submit Interface Assessment Journal Entries separately as an appendix (may exclude from Web version) Written Web report due November 15.

Data Analysis

Both statistical analysis and content analysis will be used to analyze portions of your data. After reviewing the data for recurring patterns or themes, or patterns of development like a learning curve, make selections to illustrate the findings. Statistical analyses will be kept simple (ratings and frequencies). Content analysis is used for user-generated discourse and other textual data.

Grading Criteria: Clarity of user focus in evaluation criteria; clear distinctions made between criteria; evidence of critical assessment; useful content analysis of concurrent user-generated discourse; cogent demonstration; active interaction with class in discussion and presentation; audibility; readability.
Field Research Report

The purpose of this assignment is to enable students to gain skill in assessing the effectiveness of information system design and use through:

- Designing outcomes assessment criteria to investigate interface effectiveness.
- Designing pilot projects to study system users on natural socio-technical information grounds.
- Using HCI research concepts, methods, and statistics to analyze user behavior and make useful recommendations for redesign and improvement of outcomes.
- Valuing field research as a useful tool for analyzing information behavior and improving system design.

Librarians are frequently called upon to produce data for decision-making about services to users. Strategic planning models in most institutions and accrediting bodies require librarians to focus on assessing or measuring outcomes to show the degree to which services are effective, meet strategic goals of the institution, and how service could be improved.

Pilot study projects will be conducted in teams in a Research Design Workshop environment with time set aside in class to work on the design and the analyses. Statistical analyses will be kept simple, but teams will work with spreadsheets for the raw data analysis of scores and other numerical data. Content analysis is used for user-generated discourse and other textual data.

Select an environment in Second Life where avatars are using information objects and tools. Design a small, pilot study of some of the avatar users in that environment. Upper-division undergraduates in three SL psychology classes who have signed a consent form will be available as participants in your pilot study. Their SL courses use an immersive environment above UH Island where you may conduct your study, or you may use other venues for the study and obtain signed consent forms from others.

Review the literature on relevant aspects of the avatar-user, VW system, and other parameters pertinent to your study. Gather and analyze data, and present the findings in a standard written research report and orally to the class. Relate your findings to prior research and theory in the literature review.

Although this is a team project, reports will be written individually using the format for published research articles. Members may share the same Title, Abstract, References and Methodology sections. Each person will write individual Introduction, Results, and Conclusion sections. You may choose to focus on particular aspects of the data in your individual write-up, in which case your Title and Abstract may differ.

Research with human subjects requires adherence to federal guidelines. You are required to take the tutorial and become certified before beginning this project. The tutorial and certification are free (link available in Readings). Email your Certification form to me.

Requirements

A. Describe the research project in the Introduction, including relevant features:
   1. The information system environment and its components.
   2. The role and typical activities of users in that environment.
3. What you want to look at and why. What questions you have.

4. Cite some research literature and discuss its relevance to your study. Include information found in the required readings as well as other user studies. Include tie-ins to aspects of information behavior, user-centered interaction and experience design, emotional design, affective load, and affective acceptability.

B. Describe the research design and methodology, including:

1. The information system setting and participants (number [n=], gender, age, academic status).

2. Your research design (how you structured the testing or observations).

3. Your hypotheses (your expectations of what you'll find before you gather or analyze any data) and research questions (what you want to know, you hope to answer these via the study).

4. The type of data gathered and the instrument(s) used to gather the data (Did you have them do or fill-out something? Systematic observations, pre-post results, performance exercise results, interview, questionnaire, structured self-report, log files, ratings, etc.).

5. The exact procedures you followed while gathering and analyzing the data (so that it could be replicated by another).

6. Identify any potential confounding variables or limitations that might interfere with making a correct interpretation of the data or in generalizing it.

C. Discuss the findings, the results of your analysis, including:

1. What the data reveal about the VW information system dynamic (use tables, charts, and/or graphs to represent data). Label each table, chart and graph with a number and descriptive title. Place them within the text, mention them by number and discuss each (they do not stand alone, in this case a picture is not worth a thousand words). Make sentences from data in tables and graphs to explain your results, e.g., explain what contributed to the size of a pre-post test difference.

2. Discuss implications for users, interaction and experience design, instruction and training, and outcomes assessment. Tie-in to research literature to relate your findings to other studies, to relevant aspects of VW information behavior, HCI principles, and theory in required readings.

3. Conclude with your own recommendations for further research, information services, and design practice for virtual environments.

4. Make final remarks to future students about the research process and what you learned from this assignment.

D. Formats

1. Reports should be accessible on the Web, 6-10 pages (including graphics, instruments and references), 1.5 spaced. Use a standard citation style for the field (prefer APA style). A one-page PowerPoint slide consisting of the Title, Name, Date, Course, Abstract and a graphic of major results in SL poster format with group permissions for the oral presentation.
2. Writing order varies among people, the order below works for science writing. Organize the paper under the following sub-titles:

**WRITING ORDER for REPORT SUB-TITLES**

First, revise last  
**Title** (Fully describes the project)

Last  
**Abstract** (Briefly summarizes problem, method and results)

Fifth  
**Introduction** (States the research problem and reviews relevant literature.)

Second  
**Methodology** (Describes the research design and all procedures followed.)

Third  
**Results and Discussion** (Presents analyses, charts, graphs, tables and interpretations of data.)

Fourth  
**Conclusion** (Summarizes the important findings and makes recommendations for future research and for practice. In a separate paragraph, make comments to future students on what you value about doing this research project.)

From the beginning & throughout  
**References** (Use standard style)

Prior to writing  
**Appendices** (Data gathering instruments, notecards, content analysis clusters and coding, etc.)

3. Make a 20 minute oral group presentation of the study to the class (to be scheduled in SL during class on **November 29 or December 6**). The written report is due **December 6**.

Grading Criteria: Following instructions; technical accuracy (grammar, spell checking, typos, consistency in citation/reference style); clear and well-labeled tables and graphs; coherent synthesis of data and rationale for methodology used; relevant integration of research literature; evidence of critical thinking; application of seminar concepts, theories, and models.