



**Archaeology 5112
Issues in Archaeological Science
2025 Winter**

Class Time: Thursdays 2:30 – 5:30 pm

Location: BB 2002

Instructor: Dr. Jessica Metcalfe

Office: BB 2001D

Email: jmetcal1@lakeheadu.ca

Office Hours: By appointment (in person or on Zoom)

Course Theme: Exploring *how* and *why* we do archaeology

Course Summary: Why do we do archaeology? How is archaeological knowledge produced? Who controls archaeological research questions, interpretations and results? Whose history are we telling? How can we work towards a more equitable and ethical archaeology? This course will delve into these subjects, asking you to try to think about science, objectivity, and archaeological research from different points of view.

Learning Objectives: By the end of this course, students will be able to

- Describe effective practices and approaches for making archaeological interpretations based on evidence and reasoning
- Analyze the evidence and intellectual reasoning underlying archaeological case studies
- Describe the purpose and practice of heart-based approaches to archaeological research
- Demonstrate skills in critical analysis of research, written and oral communication, constructive feedback, and seminar leadership
- Discuss how evidential reasoning and 'archaeologies of the heart' has relevance to their own research area

Class Format: This course is based on **readings and seminar discussions**, so completing the assigned readings before each class is crucial. We will be focusing on depth of understanding rather than breadth of knowledge: there are relatively few readings (for a grad course), so you should endeavour to understand them very well. For the first month, the instructor will lead the seminar discussions. Over the subsequent two months, most of the seminars will be student-led. This will help you develop skills in critical analysis, oral communication, 'formal' presentations, and discussion leadership. Rather than a top-down instructor-to-student learning approach, we will be learning together.

Required Resources:

- Chapman, R., Wylie, A. (2016). *Evidential Reasoning in Archaeology*. Bloomsbury, London. Estimated cost: \$78 (paperback), accessed Dec. 2024 from Amazon.ca.
- Supernant, K., Baxter, J.E., Lyons, N., Atalay, S. (Eds), 2020. *Archaeologies of the Heart*. Springer, Switzerland. Estimated cost: \$142 regular price or \$79 sale price (e-book), \$229 regular or \$93 sale price (softcover), accessed Dec. 2024 from Springer.com (USD converted to CAD).
- Additional selected readings/videos/podcasts will be posted on the course website

Evaluation

Item	Value (%)	Due Date(s)
Participation	15	Throughout the course
Student Seminars Based on Readings:		
Seminar 1 (Evidential Reasoning)	10	Feb. 6
Seminar 2 (Arch's of the Heart I)	10	Feb. 27, Mar. 6, or Mar. 13
Seminar 3 (Arch's of the Heart II)	10	Feb. 27, Mar. 6, or Mar. 13
Term Paper Stages:		
Proposal	5	Fri. Jan 24
Annotated Bibliography	5	Fri. Feb 14
Outline	10	Fri. Mar 21
Term Paper Seminar	10	Mar. 27
Term Paper	25	Fri. April 11
TOTAL	100	

Participation will be calculated based on attendance, active participation in class, preparedness (i.e., being on time, making substantive comments in class, posting to online discussion board), and online discussion posts (when requested). In-class participation includes not only speaking (asking questions, making comments, providing respectful critiques and suggestions, and contributing ideas based on your experience and your understanding of the readings), but also listening carefully and thinking about what others have said.

Student Seminars Based on Readings

Each student will lead three readings-based seminars over the course of the term. The goal of these seminars is to gain a deeper understanding of selected readings by teaching the class about them. You should not only analyze the reading you have been assigned, but also make connections with other course readings, things you have learned in other courses, and your background knowledge and experiences.

The following general points apply to all of the readings-based seminars:

- Each seminar will include a presentation followed by (or integrated with) a discussion facilitated by the presenter.
- The emphasis should be on analysis and discussion, rather than summary.

- Discussions should take up at least half of the total allocated time for the seminar. Always begin with an open discussion (i.e., ask if there are any questions), and then proceed to pose discussion questions that you have prepared in advance.
 - Advice on creating effective discussion questions will be provided separately
 - When developing discussion questions, think about what has worked well and what has not worked so well when instructors have led discussions you took part in
- Submit your PowerPoint presentation and/or speaking notes (whichever is applicable) to D2L before the start of class.
- Time limits will be dependent on the number of students in the class, and will be confirmed in the weeks prior to the seminars.
- Think critically about the content and how you can most effectively present it.
- Practice your presentations for timing and flow.

Specific requirements for the readings-based seminars are as follows:

Seminar 1: Evidential Reasoning

This goal of this seminar is to demonstrate your understanding of the first module of the course, by analyzing the evidential reasoning in a single research paper.

Instructions:

- Choose one peer-reviewed research article that you think demonstrates strong evidential reasoning (i.e., *logical arguments* derived from *empirical data*). Consider choosing an article that may be relevant to your term paper topic.
- Obtain instructor approval of your article at least one week before the seminar. Email the instructor a link or pdf of the article. Your approved article will be distributed to the class as a required reading.
- Create a Toulmin schema based on your analysis of the article's evidential reasoning. (You will learn about Toulmin argument schema in the first weeks of the course, from Chapman & Wylie, 2016).
- Prepare a brief presentation in which you review the article (i.e., summarize and critically analyze it) and explain your Toulmin's schema (around 10-15 minutes).
- When developing your presentation, think about the following questions:
 1. To what extent does the article meet Chapman & Wylie's criteria for 'robustness reasoning'?
 2. How and why does this article demonstrate 'best practices' for evidential reasoning? In what way(s) could the evidential reasoning in this article have been improved?
- Create 2 or 3 carefully-worded discussion questions for the class. These questions should invite the class to think critically about the reading, bringing to bear their prior knowledge and what we have learned in this course.
- In the discussion portion of your seminar (~15 minutes), begin by asking the class if they have any questions or comments about your presentation and/or your Toulmin's schema. Then pose the discussion questions you prepared, one

by one. Include the discussion questions (in writing) on your PowerPoint slides or in your speaking notes.

Seminars 2 and 3: Archaeologies of the Heart

Each of these seminars will be based on a single chapter from *Archaeologies of the Heart*. You must lead 2 seminars within the 3 weeks allotted to these topics (weeks 7, 8, and 9). A sign-up sheet will be provided early in the course.

Instructions:

1. Summarize and analyze your assigned chapter in a 15-20 minute presentation. Focus more on analysis; keep the summary brief because everyone should already have read the chapter. The analysis should include your assessment of the author's approaches and arguments, and analysis of key issues, concepts, and methods. The presentation should set the class up for the discussion.
2. Lead/facilitate a class discussion on the reading (~20 minutes). A key factor in facilitating a good discussion is creating effective discussion questions, so spend time determining how you want to frame your discussion and how best to articulate your questions.

Term Paper Stages:

In this course, we will explore how the **head** (intellect) and the **heart** (emotion, love, and connection) can contribute to archaeological research. In the first module of the course, we will discuss the philosophy and practice of evidential reasoning in archaeology, and in the second module we will learn about emerging ideas about archaeologies of the heart. In your term paper, you will **select a question, topic, or research area as a case study** for analyzing how **evidential reasoning** has been used to build knowledge claims related to that topic, and how **heart-based approaches** that involve care, relationality, and emotion have benefitted (or could benefit) that area of research. In other words, your term paper must critically analyze your chosen question/topic/area in 2 ways: from both 'head based' and 'heart based' perspectives. You will learn more about both these perspectives through the course readings and discussions. You should draw on what you have learned in this course as you develop and write your term paper.

To help you prepare for the term paper (and avoid leaving all the work to the end of the course), you will select your question/topic/area and prepare a short proposal within the first few weeks of the course. The instructor will provide feedback to help you ensure you pick a strong term paper topic. After receiving instructor approval for your topic, you will prepare an annotated bibliography and an outline. In the second-to-last week of the course, you will present a 'preview' of the term paper as a class seminar. Finally, you will submit the final paper during exam period.

Term Paper Proposal:

- Select a question, topic, or research area that will be the focus of your term paper. Ideally this will be a question/topic/area that has been explored by multiple research groups using a variety of methods and approaches. It should be a

question/topic/area with a reasonably extensive history of debate, in which interpretive shifts and changes in approach have occurred over time.

- You are encouraged to seek instructor feedback on your choice of topic before submitting your proposal.
- Your proposal must follow SSHRC/NSERC Master's scholarship [proposal format guidelines](#) for font size, maximum length, etc.
- Include a working title (this can change as you progress with your research)
- In the text of your proposal, summarize the topic and explain why you think it would be a good 'case study' for an analysis of both evidential reasoning and heart-based approaches.
 - Note: in many/most research areas, heart-based approaches have not been openly applied, but may be implied. In any area, there is almost certainly potential for applying heart-based approaches. If there has been no open discussion of heart-based approaches for your chosen topic, your task will be to explore what kinds of heart-based approaches could best contribute in the future.
- Include a References Cited list on a separate page. References can be formatted according to any journal or organization's citation standards.
 - State which journal or organization's format you are following at the end of the reference list, and include a link to their style guide.
 - Do not include references that are not cited in your proposal.

Annotated Bibliography

This assignment is designed to help you develop your skills in literature research and review, and to ensure that you are progressing with research for your term paper.

Instructions

1. Find 10 scholarly sources that are highly relevant to your term paper topic.
2. Provide a full citation for each reference, using an established citation format. (State which journal or organization's format guide you used at the bottom of the page, and include a link to their style guide.)
3. Beneath each reference, write an annotation that includes the following components:
 - A brief content summary (3-4 sentences), focusing on the aspects of the paper that you anticipate will be relevant to your term paper.
 - An evaluation and reflection on how the source will contribute to your research. For example: will this paper be more useful for your discussion of evidential reasoning or of heart-based approaches? What types of evidential reasoning and/or heart-based approaches were used? How might the evidential reasoning and/or heart-based approaches be improved? If no consideration was given to heart-based approaches, what potential might an archaeology of the heart have to contribute to the research?

Format:

- Organize the annotated bibliography alphabetically by the first author's last name.
- Write each annotation in paragraph format; do not use bullet points.

- Suggested length for each annotation: ~200 words (not a strict limit).

Term Paper Outline

In this assignment you will create a structured plan for your term paper by organizing your research and ideas into an outline. The outline will serve as a guide to the flow and development of your paper. This is not set in stone; it's meant to guide you in your research and in writing your paper, but it may be adjusted later as you develop your paper. The outline should include the following sections, followed by bullet points that provide some information about what will be included in each section:

- **Title:** A working title that is succinct but reflects your unique paper
- **Introduction:** Briefly introduce the background to the topic, including its significance/relevance. Identify references that will be cited in the introduction. Create a purpose statement: 'In this paper, I will....'
- **Evidential reasoning:** Summarize and cite the sources you will review in this section (analysis of evidential reasoning in relation to the topic of choice).
- **Archaeology of the heart:** Summarize and cite the sources you will review in this section (analyzing how care, emotion, and relationality have been or could be brought to bear on this research area).
- **Conclusions:** What are some preliminary conclusions based on your research thus far?
- **References Cited:** This section can and should include relevant course readings and scholarly sources identified through your independent research. Your paper should ultimately have at least 20 sources cited.
 - Chapters in Chapman & Wylie (2016) and Supernant et al. (2020) should be cited individually. That is, each chapter should be listed as a separate reference, unless you are making a general statement on a theme that reoccurs within many chapters of the book.

Format:

- Use the headings above and subheadings (as needed) to organize your outline.
- Use bullet points with brief descriptions comprised of short phrases to summarize your ideas/plan. Do not write full paragraphs in an outline.
- Provide enough details to convey the anticipated content of each section.

Term Paper Seminar

The goals of this seminar are to provide the class with a 'preview' of your term paper, and to generate a discussion on key issues relevant to your paper. This, in turn, should help you think more deeply about your term paper topic, improving the depth and quality of your final paper. Before starting your seminar, you should have received instructor approval for your topic and feedback on your proposal and annotated bibliography.

Instructions:

1. Choose one article to assign to the class as a background reading. Send the article to the instructor at least 1 week prior to the seminar date. This article will not be the *sole* focus of your seminar, but rather, will provide the class with some background to the topic and discussion, so we can have a more meaningful discussion..

2. Create a presentation that briefly summarizes your topic and critically analyzes the evidential reasoning and heart-based approaches that have been presented in previous research on your topic. Think about the following:
 - a. How has evidential reasoning been employed within this research area? Has the use of evidential reasoning changed over time? Consider the themes and approaches discussed by Chapman and Wylie (2016).
 - b. How has the 'heart' been considered in this research area? If it has not been considered at all, how do you think it could or should be considered? What benefits are there (or might there be) to adopting heart-based approaches in this research area? Consider the varied approaches discussed in *Archaeologies of the Heart* when thinking about this portion of your presentation.
3. Create 2 or 3 discussion questions to guide the discussion portion of the seminar. Make sure that your presentation and/or the assigned reading prepares the class for addressing the questions you pose.

Plan for the discussion to take up about half of the total allocated time for your seminar.

Term Paper

Your task in the term paper is to analyze the evidential reasoning and heart-based approaches (or potential for heart-based approaches) associated with your chosen research question, topic, or area. See 'Term Paper Stages', above, for further background on the term paper.

Format:

- The length of your term paper should be around 15 pages (4500 words). This does not include the title page or the references cited list.
- Your writing should be clear and concise, and your paper should follow a logical structure.
- Your paper should demonstrate strong critical thinking, research, and analytical skills (i.e., evaluating and synthesizing information, identifying limitations, considering different perspectives)
- Your paper should also demonstrate a strong understanding of the themes of this course, and how they can be applied to your research area

Important Dates for Winter 2025

First day of classes: Mon Jan 6

Add date: Fri Jan 17

Study Break: Mon Feb 17 – Fri Feb 21

Drop/Withdraw date: Fri March 7

Last day of classes: Fri Apr. 4

Exam period: Mon April 7 – Fri April 17

Instructor's grade submission deadline: April 25

Course Schedule (Subject to Modification)

Module 1: Archaeologies of the Head: Evidence and Reasoning

Week 1 – Jan. 9: Introduction to the Course

- Getting to know each other and the course expectations
- No required readings

Week 2 – Jan. 16: Evidential Reasoning in Archaeology I

- Instructor-led seminar based on Chapman & Wylie (2016):
 - Introduction (*The Paradox of Material Evidence*)
 - Chapter 1 (*Archaeological Evidence in Question: Working between the Horns of a Dilemma*)
- The day before class: Submit an online reading response to D2L (participation marks only; not graded).
 - The goal of this response is to get the ideas flowing before our in-class discussions, and to identify any areas of particular interest or confusion.
 - You are encouraged to read and comment on other students' responses prior to the start of class.

Week 3 – Jan. 23: Evidential Reasoning in Archaeology II

- Instructor-led seminar based on Chapman & Wylie (2016):
 - Chapter 2 (*Archaeological Fieldwork: Scaffolding in Practice*)
 - Chapter 3 (*Working with Old Evidence*)
- The day before class: Submit an online reading response to D2L (participation marks only; not graded). I encourage you to read and comment on other responses prior to the start of class.
- Term paper proposal is due on the Friday after class (Jan 24)

Week 4 – Jan. 30: Evidential Reasoning in Archaeology III

- Instructor-led seminar based on Chapman & Wylie (2016):
 - Chapter 4 (*External Resources: Archaeology as a Trading Zone*)
 - Conclusions (*Reflexivity Made Concrete*)
- The day before class: Submit an online reading response to D2L (participation marks only; not graded). I encourage you to read and comment on other responses prior to the start of class.
- Instructor approval for student-selected articles to be assigned as readings for next week must be obtained by today.

Week 5 – Feb. 6: Student Seminars 1, Evidential Reasoning in Archaeology

- Student-led seminars based on required readings (student selections), which will be posted the week prior to class

Module 2: Archaeologies of the Heart: Emotions, Care & Relationality

Week 6 – Feb. 13: Archaeologies of the Heart

- Instructor-led seminar based on Supernant et al. (2020):
 - Chapter 1 (Lyons & Supernant, *Introduction*)
 - Chapter 2 (Welch, *I ♥ Archaeology*)
 - Chapter 4 (Hoffman, 'We Ask Only That You Come to Us with an Open Heart and an Open Mind')
- The day before class: Submit an online reading response to D2L (participation marks only; not graded). I encourage you to read and comment on other responses prior to the start of class.
- Annotated bibliography is due on the Friday after class (Feb. 14)

Reading Week – No Classes Feb. 17 – 21.

Week 7 – Feb. 27: Archaeologies of the Heart, Student Seminars 2 & 3

- Chapter 3 (Armstrong & Anderson, *Ecologies of the Heart*)
- Chapter 5 (Surface-Evans, *I Could Feel Your Heart*)
- Chapter 6 (Rizvi, *Community-Based and Participatory Praxis...*)

Week 8 – March 6: Archaeologies of the Heart, Student Seminars 2 & 3

- Chapter 7 (Hodgetts & Kelvin, *At the Heart of the Ikaahuk Archaeology Project*)
- Chapter 9 (Baxter, *Emotional Practice and Emotional Archaeology*)
- Chapter 10 (Graesch et al., *Discard, Emotions, and Empathy on the Margins of the Waste Stream*)
- Chapter 11 (Abbott, *Lithics and Learning*)

Week 9 – March 13: Archaeologies of the Heart, Student Seminars 2 & 3

- Chapter 13 (Chang & Nowell, *Conceiving of 'Them' When Before There Was Only 'Us'*)
- Chapter 14 (van Gelder, *Who Holds your Light?*)
- Chapter 15 (Tringham, *Closely Observed Layers: Storytelling and the Heart*)

Module 3: Case Studies of Head- and/or Heart-Based Practice

Week 10 – March 20

- Instructor-led summative discussions based on:
 - Chapter 16 (Atalay, *An Archaeology Led by Strawberries*)
 - Chapter 17 (Conkey, *When Does the 'Heart' Take Over?*)
- Strategies for writing a term paper will also be discussed
- The day before class: Submit an online reading response to D2L (participation marks only; not graded). I encourage you to read and comment on other responses prior to the start of class.

- Your article selection (required reading) for the final seminar must be sent to instructor by the end-of-day today
- Outline for term paper is due on the Friday after class (March 21)

Week 11 – March 27

- Term Paper Seminars (Student-Led)

Week 12 – April 3

- First half of class: Course summary, discussion, and final paper workshop
- Second half of class: Celebration of Learning

Final Term paper is due on Friday April 11 at midnight. There will be an automatic grace period* (no late penalties) until Monday April 14 at midnight.

*You must contact the instructor in advance of the initial deadline if you wish to take advantage of the grace period. You do not need to provide a reason for requesting this extension; it will be granted with no questions asked.

Lateness Policies

- If you cannot lead your **student seminar** on the assigned date, please contact the instructor ASAP. You may receive a grade of zero if you do not meet your seminar deadline. However, I understand that emergencies do occur, so please don't hesitate to discuss your situation with me.
- For the **final paper**, there is a 2-day grace period during which there are no deductions for lateness. After the grace period, late papers will receive a deduction of 5% per calendar day, including weekends and holidays. Papers submitted more than one week (7 days) past the original due date will not be accepted without prior permission from the instructor.

General Information

Regulations – from the Lakehead University [Academic Calendar](#)

It is the responsibility of each student registered at Lakehead University to be familiar with, and comply with all the terms, requirements, regulations, policies and conditions in the Lakehead University Academic Calendar. This includes, but is not limited to, Academic Program Requirements, Academic Schedule of Dates, University and Faculty/School Policies and Regulations and the Fees and Refund Policies and Schedules.

Academic Integrity

For a range of resources related to Academic Integrity, see the [Student Conduct – Resources](#) page. A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students are strongly advised to familiarize themselves with the Student Code of Conduct - Academic Integrity ("[The Code](#)") - and, in particular, **sections 26 and 83 through 85**. Non-compliance with the Code will NOT be tolerated in this course and the Code will be adhered to in terms of disciplinary action. The Code provides a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

Use of Generative Artificial Intelligence (AI)

Generative artificial intelligence (Generative AI or GenAI) is a category of AI systems capable of generating text, images, or other media in response to prompts. These systems include ChatGPT and its variants Bing (built by OpenAI) and Bard (built by Google) among several others. Other generative AI models include artificial intelligence art systems such as Stable Diffusion, Midjourney, and DALL-E.

Inappropriate usage of Generative AI tools is captured by Section III of the Student Code of Conduct - Academic Integrity Policy, which lists a variety of acts that are considered offences under the Academic Integrity Code. While not an exhaustive list, submission of work created by or in collaboration with Generative AI tools (ChatGPT, Bard, etc.) could be categorized as Plagiarism (para 26a), Use of Unauthorized Materials (para 26b), or Falsification (para 26e), and may be in conflict with the Academic Policy quoted above.

GenAI tools can provide valuable assistance and support in academic work. However, it is essential to use them responsibly and ethically. **The following information and guidelines apply to the use of AI-based tools in this course:**

Student Responsibility – It is the responsibility of the student to understand the limitations of AI-based tools. While these tools can provide suggestions and insights, final decisions and critical thinking should come from the student's own understanding

and effort. Before submitting, review your work with this in mind. If you don't understand what type of GenAI usage is appropriate, ask the course instructor for clarification.

Formative Usage – In this class, you may use GenAI for formative, but not summative, work. That means it can be used as a “possibility engine” (brainstorm tool), a “study buddy,” a “collaboration coach,” a “guide on the side,” a “personal tutor,” a “co-designer,” etc. to help you learn course content, but it cannot be used as the primary vehicle for any work that is submitted for marks or evaluation. (See UNESCO’s “ChatGPT and Artificial Intelligence in Higher Education Quick Start Guide,” page 9, for explanations and examples of these and other roles GenAI can productively serve in a formative capacity.)

Error & Bias – AI content is created by computer algorithms that have been trained using large amounts of data. The AI learns from patterns and examples in the data to generate new content that resembles what it has been trained on. If the training data used to train the AI model is biased or limited in scope, the AI may reproduce content that is inaccurate, incomplete, offensive, and/or biased. Students should weigh this as they consider material produced by AI.

Trustworthiness – Generative AI can be vulnerable to manipulation and misuse. It can be used to generate fake news, misinformation, or deepfake content, which can have harmful consequences. Students should check AI generated content against reputable sources.

Plagiarism – Since writing and critical thinking ability are evaluated in this course, all work submitted for evaluation must be the student's original work. Using the work of others (including content curated/generated by AI) without proper citation is considered plagiarism. See “Citing Artificial Intelligence” for assistance with correct documentation.

Citation of Sources – If you use material generated by an AI program for an assignment in this course, it must be cited like any other source (with due consideration for the quality of the source, which may be judged as poor). Failure to do so will be considered a violation of academic integrity. See Student Code of Conduct – Academic Integrity.

Copyright

Students should be aware that all instructional, reference, and administrative materials prepared for this course are protected in their entirety by copyright. Students are expected to comply with this copyright by only accessing and using the course materials for personal educational use related to the course, and that the materials cannot be shared in any way, without the written authorization of the course instructor. If this copyright is infringed in anyway, students may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values.

Supports for Students – there are many resources available to support students, including:

- [Health and Wellness](#)
- [Student Success Centre](#)
- [Student Accessibility Centre](#)
- [Academic Support Zone](#) (Writing and Math Tutoring Centre)
- [Library](#)
- [Lakehead International](#)
- [Indigenous Initiatives](#)

Lakehead University is committed to achieving full **accessibility** for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact [Student Accessibility Services](#) (SC0003, 343-8047 or sas@lakeheadu.ca)

As a university student, you may sometimes **experience mental health concerns or stressful events** that interfere with your academic performance and negatively impact your daily activities. All of us can benefit from support during times of struggle. If you or anyone you know experiences academic stress, difficult life events or feelings of anxiety or depression, **Student Health and Wellness** is there to help. Their services are free for Lakehead Students and appointments are available. You can learn more about confidential mental health services available on and off campus at lakeheadu.ca/shw. Remember that getting help is a smart and courageous thing to do for yourself, for those you care about, and for those who care about you. Asking for support sooner rather than later is almost always helpful.