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Management Teaching Review
1–29
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Enhancing Learning With Alethea: An AI Academic Coach for Management Education

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Abstract

Educational technology offers significant advantages for both faculty and students. However, staying updated with the latest advancements can be daunting for faculty members. This article reviews Alethea and its embedded artificial intelligence (AI) Academic Coaching tool. Alethea is a new online platform that enhances reading skills and retention by integrating conventional reading methodologies with an AI-powered interface. While it shares some functions with McGraw Hill's AI Reader, Alethea includes additional features specifically to improve understanding and interaction in case studies. This article examines Alethea's strengths and limitations, which can be utilized for various student levels and courses. Overall, students have expressed high satisfaction with Alethea, noting its effectiveness in aiding their learning process and making complex material more accessible.

Keywords

Alethea, educational technology, artificial intelligence, case studies, student engagement, student comprehension, and student satisfaction

Case studies are widely used in management education and offer benefits like more profound learning experiences and the development of critical thinking skills (Boulocher-Passet, 2016; Zheng, 2015); yet, students may struggle to follow and

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integrate evidence in the case due to the inherent ambiguity and complexity of cases (Brennan & Ahmad, 2005). Conventionally, strategies such as highlighting, summarizing, note-taking, and articulating personal insights are best practices to increase student assimilation and retention of case study knowledge (Kiewra et al., 1991). Building upon these prior techniques, Alethea offers a novel means to boost student engagement and understanding of case studies and other readings.

Resource Description

Clarivate's Alethea aims to augment reading fluency and comprehension within a digital framework by combining the basic highlighting functionality found in many digital document readers (and digital textbooks) with an AI-driven chatbot (dubbed the "AI Academic Coach") that provides real-time, iterative feedback to learners based on an instructor's designation of key passages within a case study or text (What Is the Guided Reading Tool? 2024). With Alethea, educators could assign a case study to students and questions based on that case study. The case study could be selected from textbooks or case study publishers or be written by the instructors themselves; the instructor would merely upload the case study to Alethea, which can read and use AI to analyze the uploaded materials. The questions assigned to the case could be prepared by faculty (which can be done with input from Alethea's Faculty AI Assistant tool) or predetermined questions accompanying a case. The instructor would then indicate key instances in the assigned case study that are critical to answering the questions by highlighting specific phrases, sentences, or paragraphs in that case study within the Alethea environment. Learners are then given a blank copy of the case study and, after reviewing the case and critical thinking questions, are tasked with similarly highlighting supporting evidence for each of the questions within the case study that is necessary to answer the questions provided by the instructor. Alethea's AI Academic Coach probes the evidence highlighted by students to provide real-time, personalized feedback and advice to students on how to think through and revise their highlighted selection choices. Subsequently, students can prepare responses to the critical thinking questions with assistance from the AI Academic Coach. This feedback and "coaching" can be done iteratively until students have evidenced their understanding of case study materials by correctly aligning their highlighted text with the instructor and preparing appropriate responses to case study questions.

Beyond this AI-driven chatbot coaching and feedback, Alethea provides data aggregation functionality and associated insights. A screenshot of the interface can be seen in Figure A1. The Alethea dashboard offers various methods for tracking participation and reports of students' responses (e.g., highlighted text). In particular, a unique feature in Alethea is the heat maps, where instructors can review the extent to which multiple students picked (i.e., highlighted) similar content for their answers and whether this was in line with what the instructor designated as relevant (see Figure 1). The heat maps include a color code system (from green to yellow to red) to indicate the frequencies by which the class highlighted a given section. Instructors can use this information to identify missing concepts or issues (that the class did not highlight) that

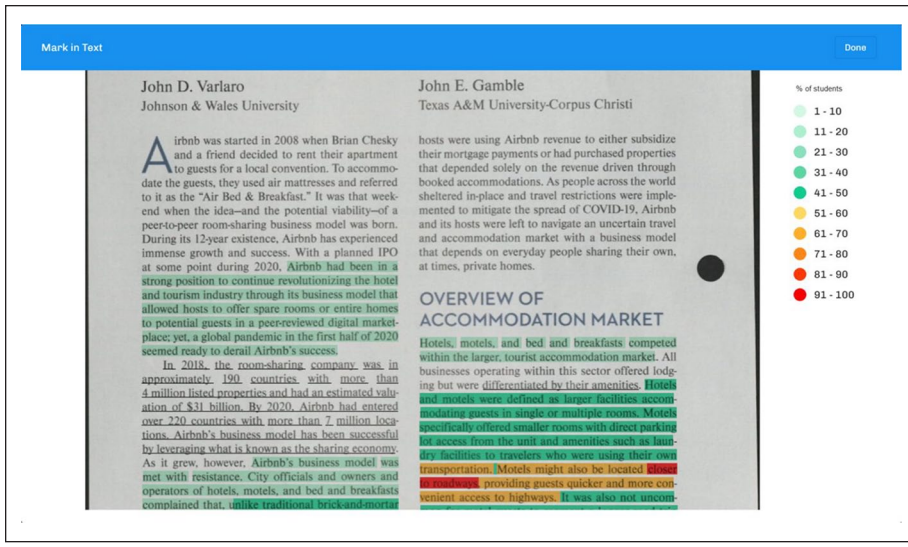

Figure 1. Screenshot of Class Heat Map.

should be addressed via classroom discussion. At the individual student level, Alethea also provides a visualization of a match between a given individual student's highlights and the instructor's highlights, offering a potential avenue for individualized feedback or assessment (see details in Appendix B). Alethea also includes analytics on average grades and their distribution, as well as details on students' punctuality for assignments (Appendix D includes a listing of additional statistics provided by Alethea).

Conveniently, Alethea integrates with the Canvas and Moodle learning management systems. Appendix A details how to enable this Canvas module and add a reading assignment with Alethea. This integration with grade books can be critical (beyond simple efficiency in grading) in structuring and organizing a course's Canvas page while enhancing students' ease of use.

Use in Teaching

We introduced Alethea in the Spring of 2024 to undergraduates in capstone business strategy classes that were delivered both synchronously online (with one section being designed as a flipped classroom) and face-to-face. Clarivate informed us that our efforts were the first attempts to use Alethea in a business school. We generally found students' disposition regarding the tool to be curious and excited. We also noticed that some students were more engaged because they liked the technology (versus traditional reading). Still, we support Clarivate's suggestion to allocate a minimum of 10% of the course grade to all Alethea assignments to motivate students to adopt the technology (given that instances where we did not provide points to use Alethea resulted

in lower adoption). However, once motivated, it seems that students appreciated such cutting-edge technology, with mean satisfaction reported as 5.88 on a 7-point Likert-type scale ($SD = 1.47$, $N = 94$).

Students access Alethea-based assignments through a Canvas (or other learning management system) module. Students start by reviewing the instructor's task instructions and questions, then read the assigned text while actively and mindfully highlighting key concepts critical to answering the instructor-provided questions. This focus on instructor-provided questions helps students stay on track. Next, students review and arrange their highlights, then converse with the Alethea AI Academic Coach chatbot. The chatbot will guide students with leading questions to help them refine their understanding by identifying critical information in the case and aid students in revising their identified key concepts. Finally, students must answer the questions in their own words by typing in the text box. They can either type an entirely original answer from scratch or incorporate/edit select insights generated by Alethea in crafting their response. Appendix B includes a more detailed walkthrough of these features, with accompanying screenshots.

To orient students to Alethea, introduce them to the platform, and share Alethea's onboarding materials. An instructor can help develop students' consistent reading habits by implementing weekly readings for active and continuous engagement. Rather than loading all reading assignments at the beginning of the semester, instructors new to Alethea should consider allowing room for continuous improvement by gradually refining assignments throughout the term. This approach enhances the learning experience for both instructors and students.

The Alethea AI Academic Coach guides students through a well-defined and structured set of study steps and offers AI-generated guidance to students and instructors. While the danger of inaccurate assessment or hallucination exists in any AI model, the closed structure of the assignment mitigates that risk (the AI model evaluates only the defined reading, not outside information from the web or other sources). The process remains fully faculty-led, with the AI model offering an enhanced level of engagement with the assigned material. This is perhaps why students have not reported any hallucinations with Alethea to us, and our efforts to elicit hallucinations were unsuccessful.

In our experience, Alethea is not a complete substitute for instructor-led discussion but a useful supplement, especially in a flipped classroom design. It incentivizes students in their initial reading and analysis of the case study materials at home, which is more effective than simply assigning the case study for traditional reading and hoping that they have read the materials before a class discussion. This approach also reduces misunderstandings and prevents students from superficially skimming the materials, compared with assigning students to read without any interactive deliverable. In this sense, using Alethea as a preliminary coach and discussant helps set the stage for a more robust, in-depth case analysis during class with the instructor. Alethea can also be extended beyond case studies to any assigned readings or textbook materials, promoting more active learning and ensuring a greater understanding and deeper reading of the content.

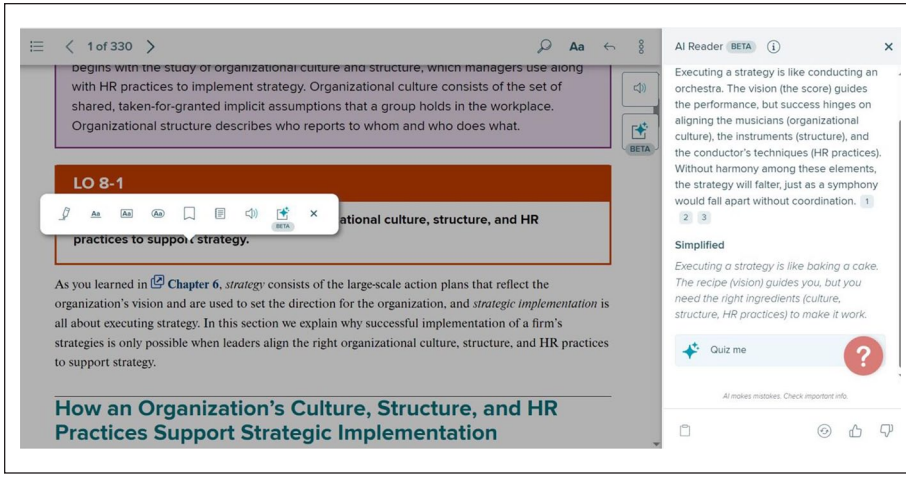

Figure 2. Screenshot of McGraw Hill's AI Reader.

Analysis and Comparison

Comparison With a Competitor Program

AI Reader, a similar product offered by academic publisher McGraw Hill, is accessed inside selected e-textbooks. While reading the textbook, students can optionally consult with the AI reader to clarify terms or concepts (see Figure 2). In addition, students can use the AI Reader to design questions to verify their understanding of these items.

For the most part, Alethea is a faculty-guided learning experience. In contrast, McGraw Hill's AI Reader is a student-guided approach, given that students initiate their interaction with the AI technology to help themselves (Appendix C provides a more detailed comparison of the two technologies). Still, both tools compare favorably in terms of validity to ChatGPT since ChatGPT's database relies on the internet and Wikipedia, which could include unreliable information.

Strengths, Limitations, and Conclusions

Alethea's AI Academic Coach is an instructor-led formative coaching and assessment tool that can enhance student engagement. The 24/7 availability of the AI chatbot in Alethea offers dynamic assistance to students at their convenience. Simultaneously, students learn the strengths and limitations of interacting with chatbots, which will prove valuable for their future careers as estimates suggest that over 50% of jobs will require the integration of AI chatbots (Wang et al., 2023).

Furthermore, Alethea can be leveraged creatively for courses with less structured content or where critical thinking is emphasized over specific content alignment. Specifically, Alethea contains a "guided reading" tool that allows students to upload texts such as articles or case studies they wish to review outside classroom

assignments. Students can create their own critical thinking questions, highlight the supporting evidence, and engage with the coach to build their critical reading and thinking skills.

We also identified some potential limitations associated with Alethea. As mentioned, AI technologies (in general) may sometimes hallucinate and provide inaccurate information, which could also be the case for Alethea. Faculty can position this as a learning opportunity by instructing students to adopt a "trust but verify" approach and research references and facts provided by Alethea (which may become a new attribute of critical thinking skills). Appendix D includes a more detailed discussion of these limitations regarding course and assignment design considerations.

Second, Alethea may struggle to integrate with other publishers' technology and course materials, given that Alethea and other educational providers are, to some extent, competitors. Specifically, Alethea is not affiliated with a textbook and is a separate program. If instructors decide to use this program, they should work with their library faculty to verify that the copyrights of the materials they select will allow them to be used in the program (see Appendix D). Furthermore, Alethea is designed for case studies, white papers, and shorter textbooks, and the highlighting/critical thinking question process does not work as smoothly with large PDFs of several hundred pages from textbooks.

In addition, the instructor cannot currently turn the AI Academic Coach off. Although students may choose whether to use the AI Academic Coach, some instructors in writing-intensive courses may find the chatbot counterproductive to teaching proper business writing, given that it generates language (based on students' highlights) that can be used to respond to the assigned question. Still, others may find that writing-intensive business courses must incorporate some AI technologies, given their ubiquity.

Change management for faculty and students is a final concern. Adopting AI tools requires time, effort, and training. To aid in this transition, we provide additional assignment and course design considerations for instructors to consider in Appendix D. Regardless of course or platform, we encourage faculty to be open to the integration of AI and to actively shape how these platforms will be incorporated into higher education through discussions in our field as well as with publishers and educational technology providers.

Appendix A

Adding Alethea in Canvas and Setup

Once you enter the module, click the (+) icon on the right-hand side of the new module. Fill in the form by first selecting "External Tool," then click "Alethea." Next, check the "Load in new tab" option and click "Add item." A link to Alethea will appear. Once you click on the link, your course on Alethea will be created, and a new

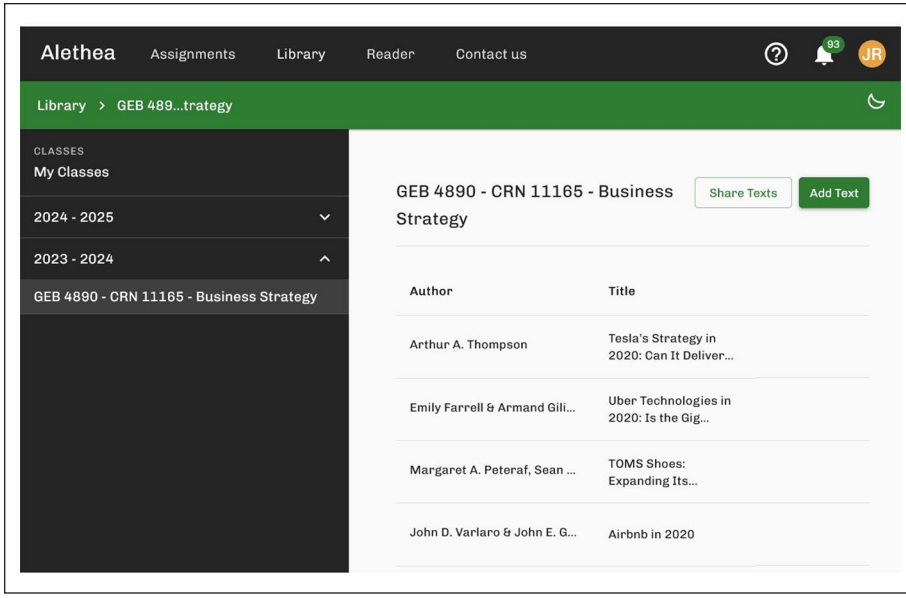

Figure A1. Screenshot of Alethea Instructor Interface.

Alethea tab will open. Your Alethea assignments, grades, and feedback will be synchronized with Canvas. Finally, publish the link.

The next thing to do is upload cases to the library by following your newly created link. The steps are (1) Go to the library page, (2) Select the relevant course on the left side panel, and (c) Click the "Add text" button on the top right to open the dialog window. See Figure A1 for a look at the interface.

Then, click "Upload file" and select a PDF, preferably natively digital rather than scanned. Fill in the author's name and title (category is optional). Click "Add text." Refresh the page if you cannot see the file in your library after a few seconds.

Appendix B

Overview of Student Interaction With Alethea

Access to Alethea is first granted to users via an e-mailed list of students sent to Alethea. The Alethea platform allows for an embedded module in Canvas and offers similar integration with other learning management platforms. Figure B1 depicts an example of a Canvas module populated with a list of case study assignments. We recommend posting the link to Alethea's student help resources directly in the Canvas module, which provides instructions for student navigation through Alethea's assignment screens. We further recommend that instructors demonstrate the basic steps in class using a sample case study. We have adapted some of the student guidance from Alethea for part of our discussion below.

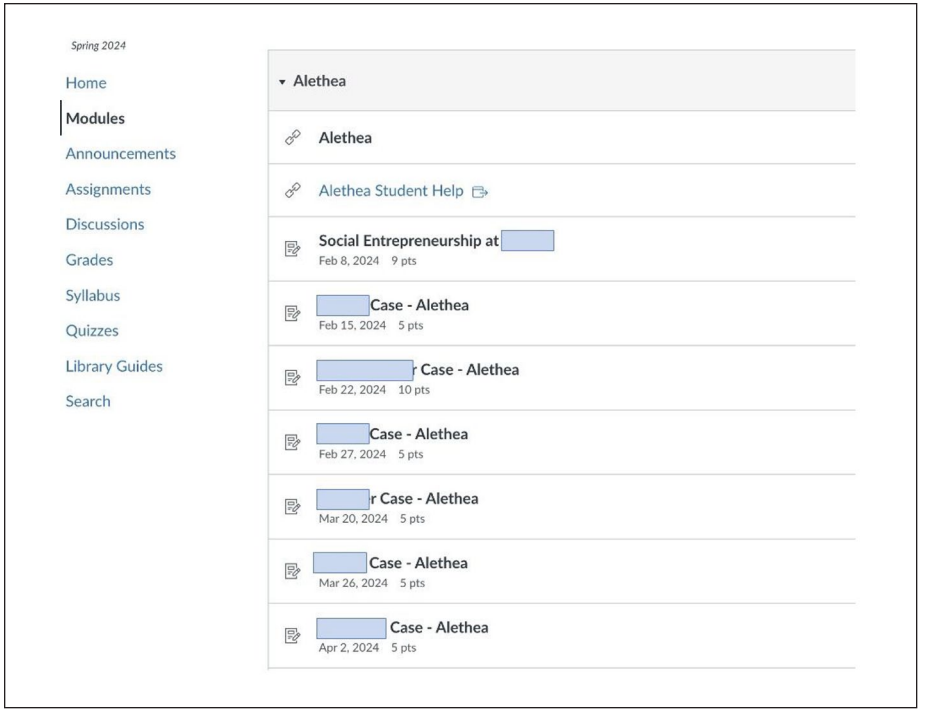

Figure B1. Alethea Canvas Module Example.

Initial Student Interaction via Highlighting an Assignment in Alethea

For each assignment, instructors will create one or more questions that students should address related to the case study or reading. The purpose is to guide students toward a more in-depth engagement with those sections of the case or reading that the instructor considers most important for classroom learning.

As shown in Figure B2, the assigned questions will be listed on the left side panel of the Alethea screen. Students start the process by selecting one of the questions from the list (Point 1 in Figure B2). Once the question is selected, students read the case or reading in the right side panel and select the text they believe is related to the assigned question. The text is automatically highlighted when selected (Point 2 in Figure B2) and saved as a card in the bottom left panel of the screen. Students can modify or delete a highlight as they work through the reading (Point 3 Figure B2), or alternatively, they can delete a highlight by clicking the bin icon in the highlight card (Point 4 in Figure B2).

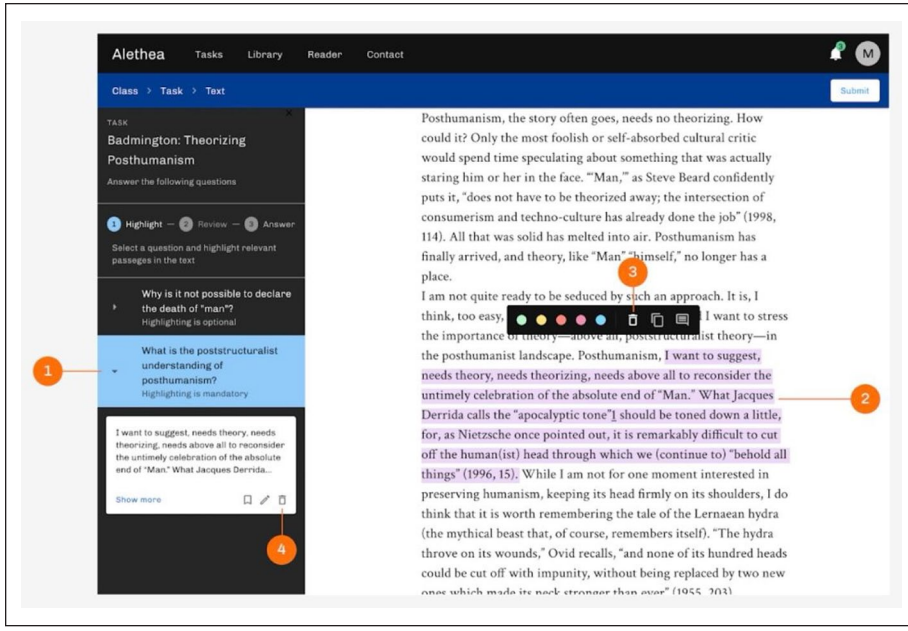

Figure B2. Highlighting Text in Alethea.

Reviewing and Rearranging Highlights for Study Support

Once students have completed reading and highlighting the full case study or assignment, they can review and rearrange their highlights to enhance their engagement with the material and prepare their responses to the study question(s). As shown in Figure B3, students can rearrange the highlight cards by dragging them up or down (Point 1 in Figure B3) and adding titles to the highlight cards using the pen icon (Point 2 in Figure B3). Once students have completed reading and studying the text, the Alethea AI Academic Coach offers AI-generated insights and advice to the assigned question(s) based on students' highlights. When ready to move to this step, students activate a chat with Alethea AI Academic Coach by clicking on the button in the bottom right corner (Point 3 in Figure B3).

Detailed Example of Alethea AI Academic Coach Interaction

Figures B4 to B15 provide a series of screenshots starting with the students' highlighting of relevant sections, and then depicting the guiding prompts generated by Alethea Coach in response to the question: "How did Reebok's corporate strategy evolve to address the challenges in the South African sporting goods industry?"

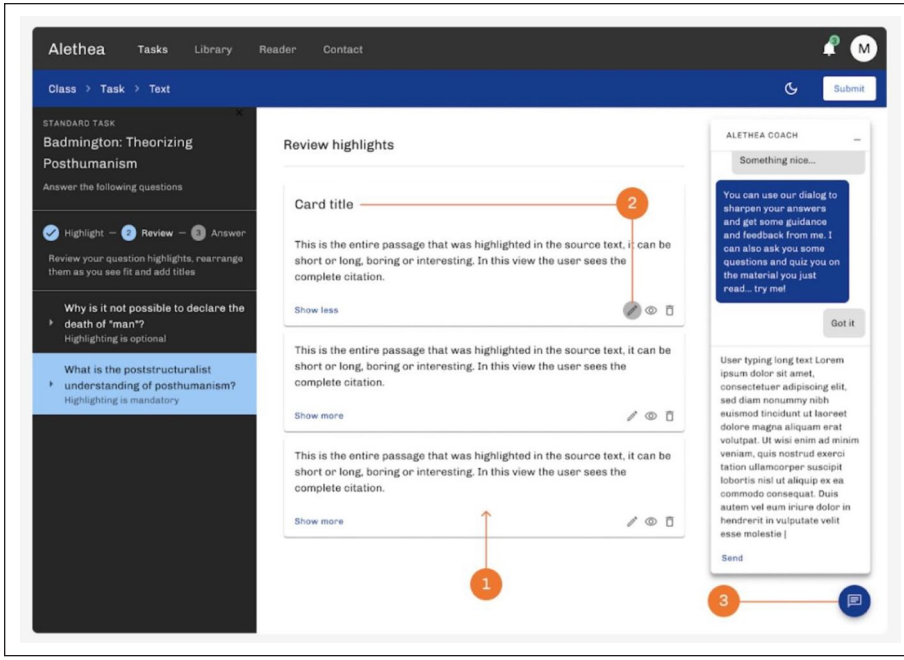

Figure B3. Studying Text Excerpts in Alethea.

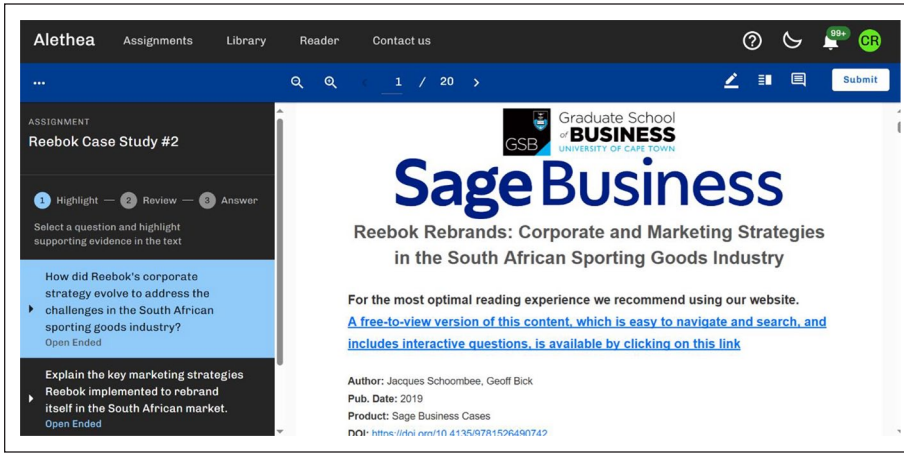

Figure B4. Initial Presentation of Case and Open-Ended Question.

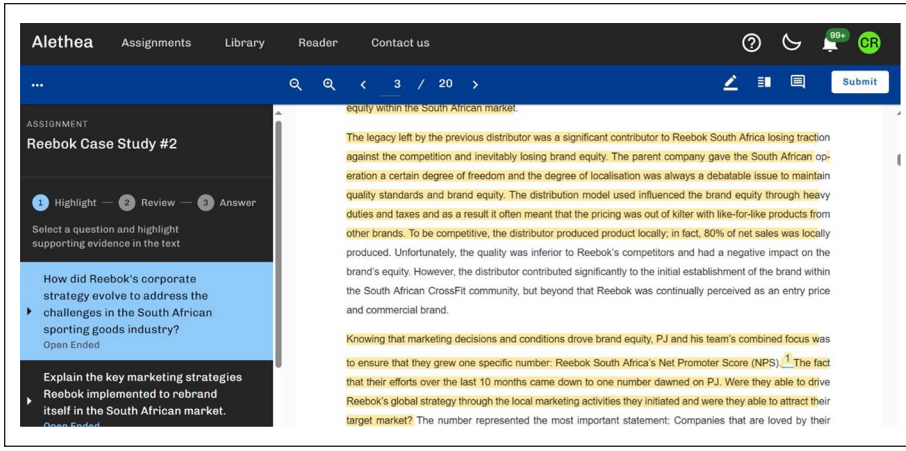

Figure B5. Highlighting Words, Phrases or Paragraphs as Supporting Evidence.

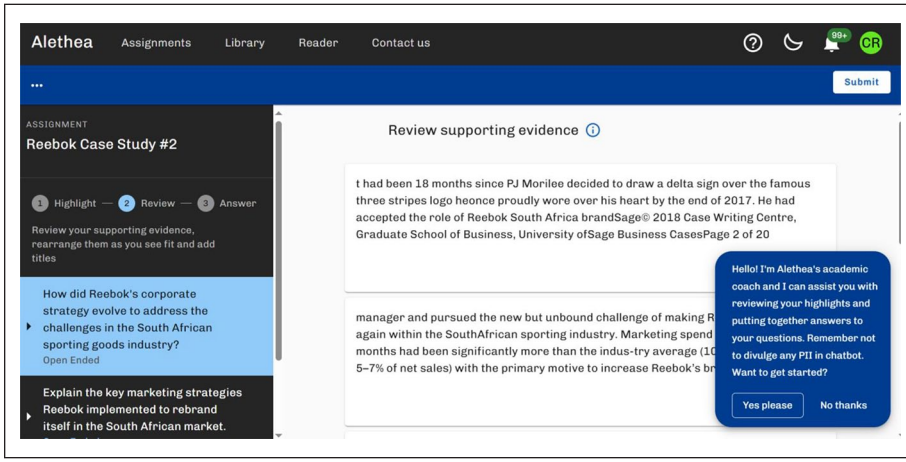

Figure B6. Initiating the Alethea AI Academic Coach.

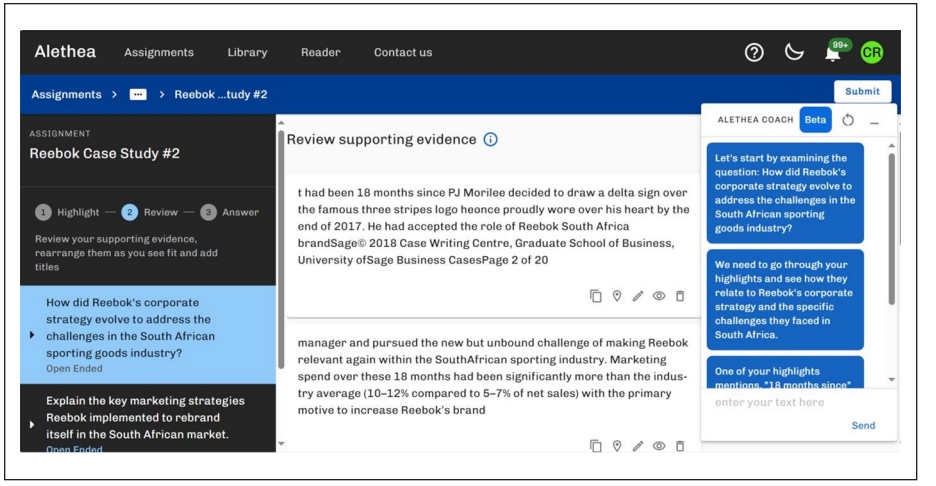

Figure B7. Initial Prompts From Alethea Academic Coach.

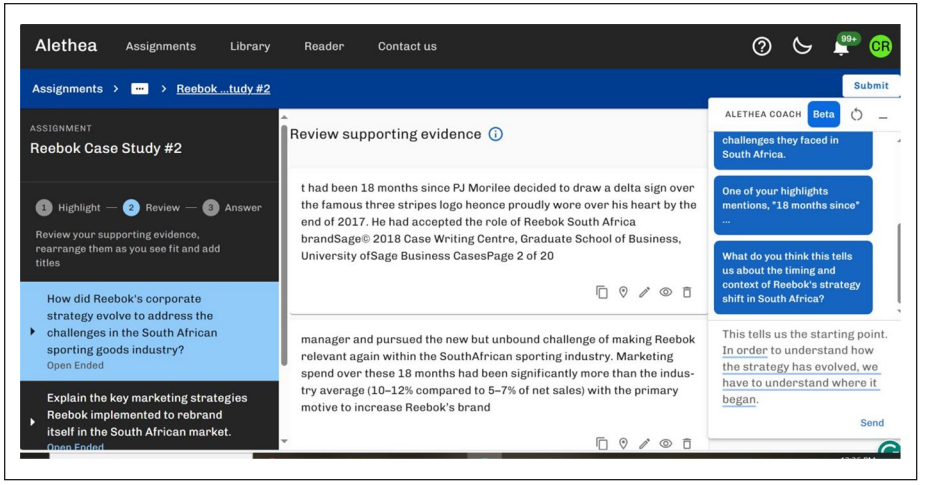

Figure B8. Initial Response to Prompt from Student.

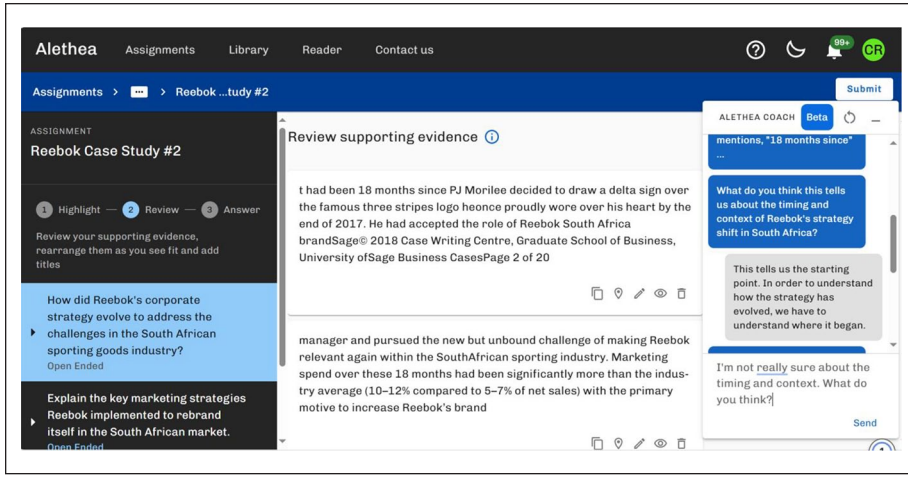

Figure B9. Follow-Up Question From Student to Alethea AI Academic Coach.

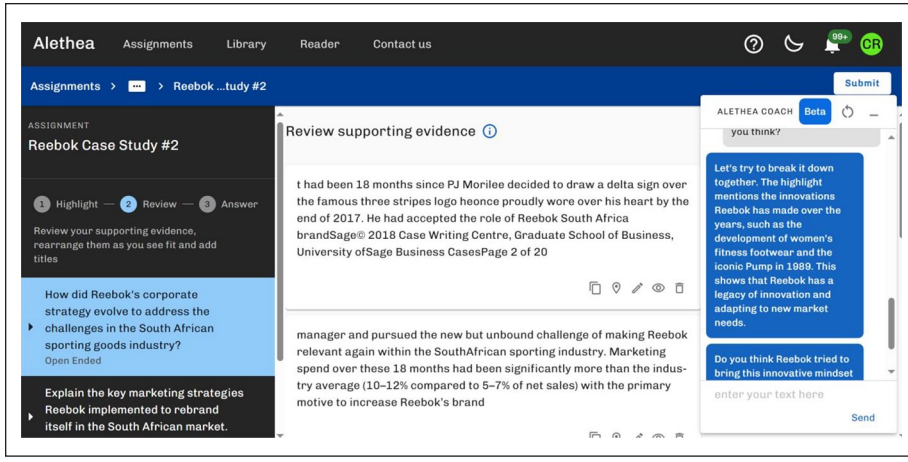

Figure B10. Follow-Up Response From Alethea AI Academic Coach.

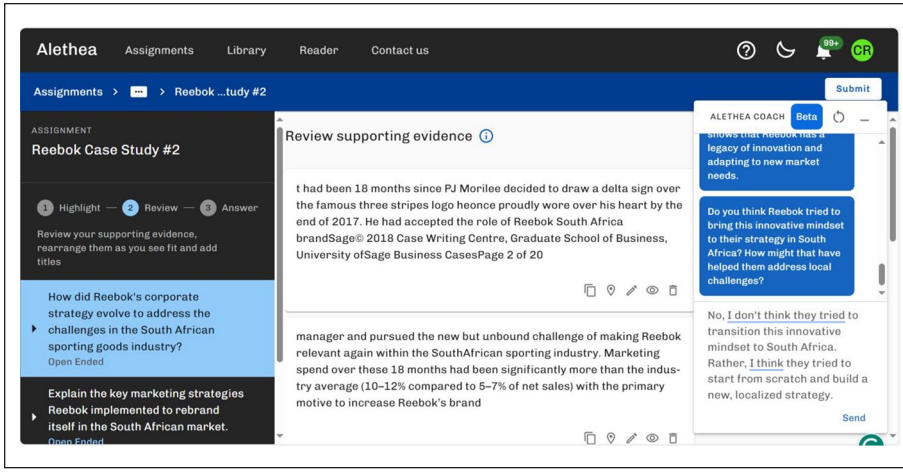

Figure B11. Additional Guiding Prompt From Alethea AI Academic Coach.

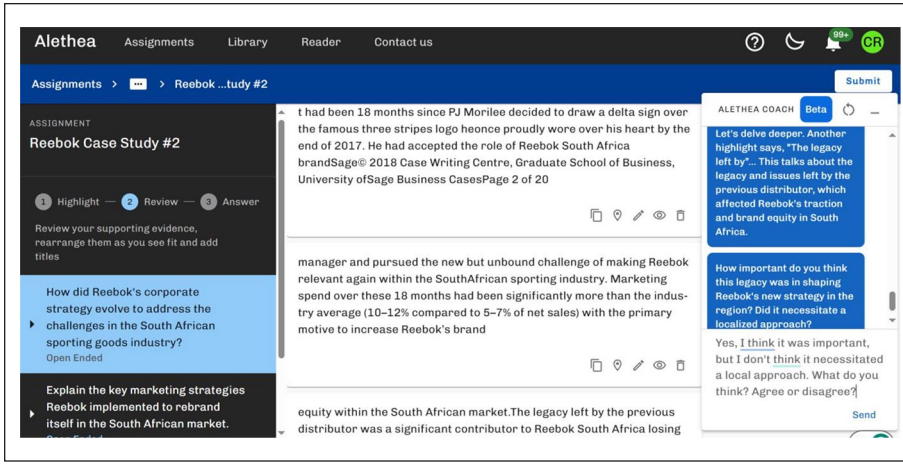

Figure B12. Alethea AI Academic Coach Using Supporting Evidence to Guide Student Toward an Evidence-Based Response in Reaction to Student Disagreement.

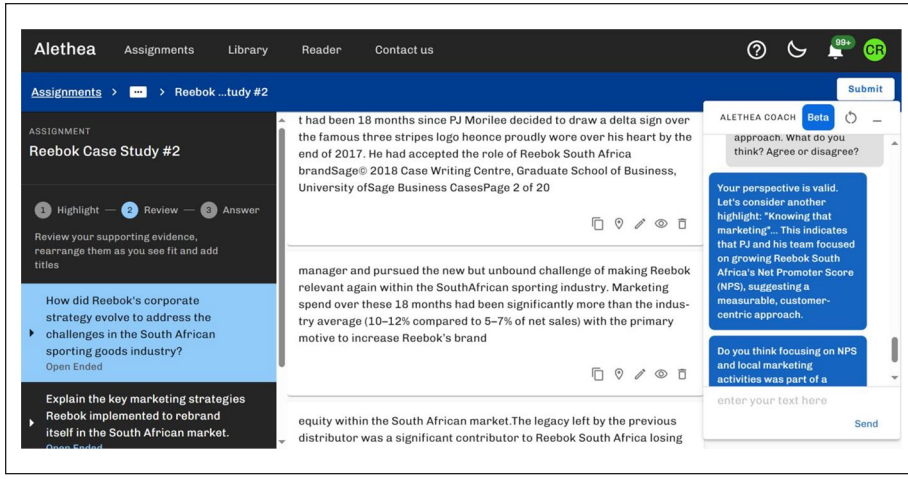

Figure B13. Helping Student Avoid Unnecessary Information, and Bringing Focus to Next Highlighted Evidence.

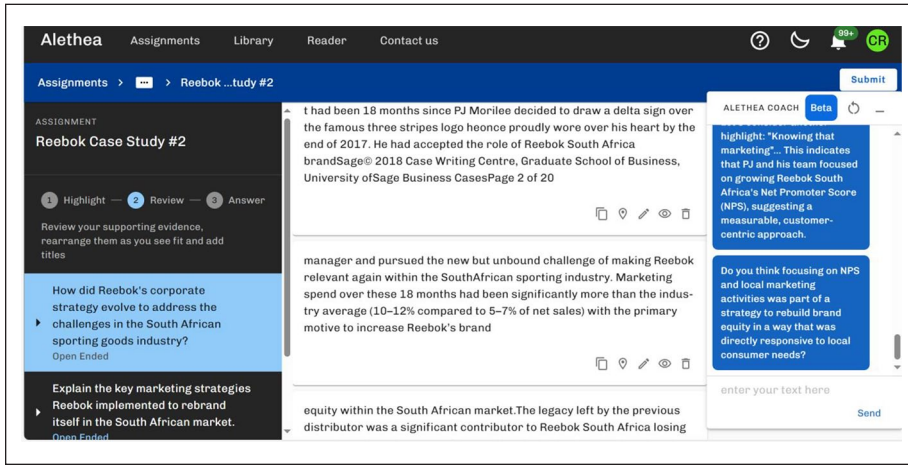

Figure B14. Guiding Students Toward a Final Response.

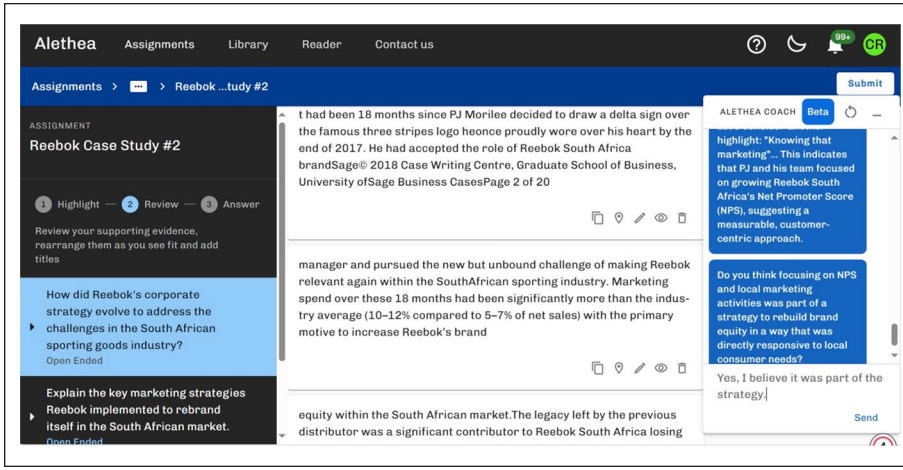

Figure B15. Student Responds.

Additional Detailed Example of Alethea AI Academic Coach Interaction

Figures B16 to B23 provide a series of screenshots depicting an interaction with the AI Academic Coach in response to the same question: "How did Reebok's corporate strategy evolve to address the challenges in the South African sporting goods industry?" However, in this example, the student attempts to elicit the AI Academic Coach to provide a direct answer and is less motivated to work through the question by themselves.

Student Answers to the Assigned Questions

Once the interactions with the AI Academic Coach are complete, a field appears where students can type their own answers to the assigned question or integrate/edit the insights generated by Alethea AI Academic Coach (Point 1 in Figure B24). Students can click on the arrow icon next to the question to have their highlights available for reference as they write their answers (Point 2 in Figure B24).

Faculty Evaluation of Student Inputs

Once an assignment has been submitted, instructors have several opportunities for evaluating student work. As shown in Figure B25, instructors can manually review each student's highlights compared with the ones prepared by the instructor (private information has been blanked out in the screenshot). Areas highlighted in blue indicate those selected by the instructor in preparation for the assignment; those in yellow

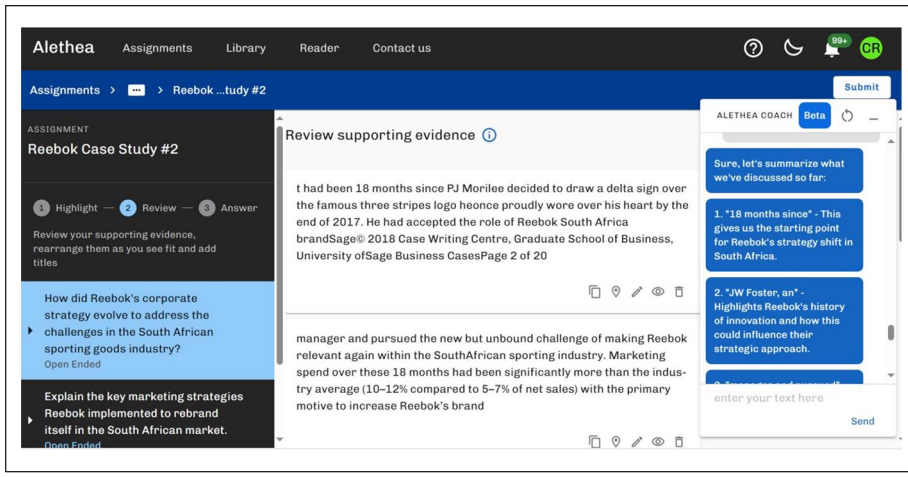

Figure B16. AI Academic Coach's Response to Student Asking for "Hints".

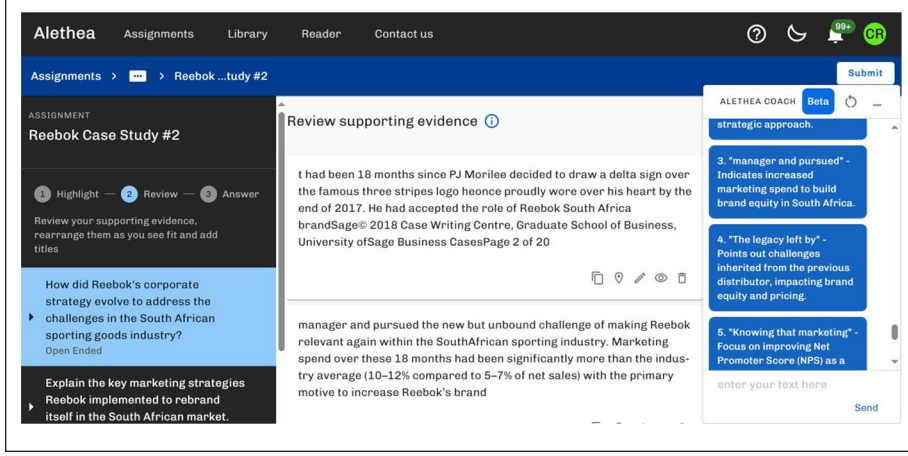

Figure B17. AI Academic Coach's Response to Student Asking for "Hints" Continued.

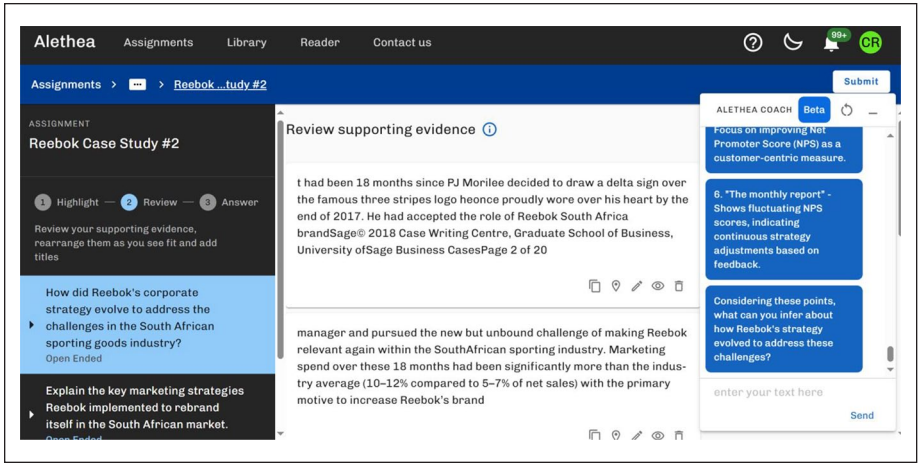

Figure B18. AI Academic Coach's Response to Student Asking for "Hints" Continued.

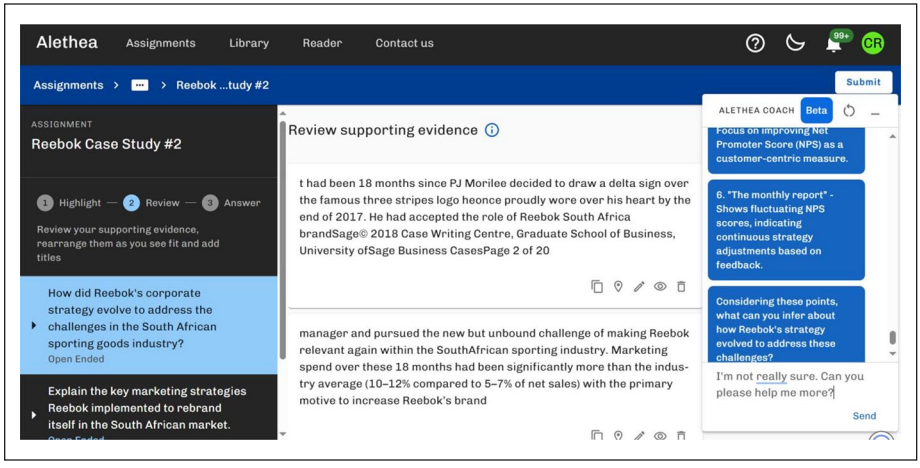

Figure B19. Student Attempt to Elicit a More Direct Answer.

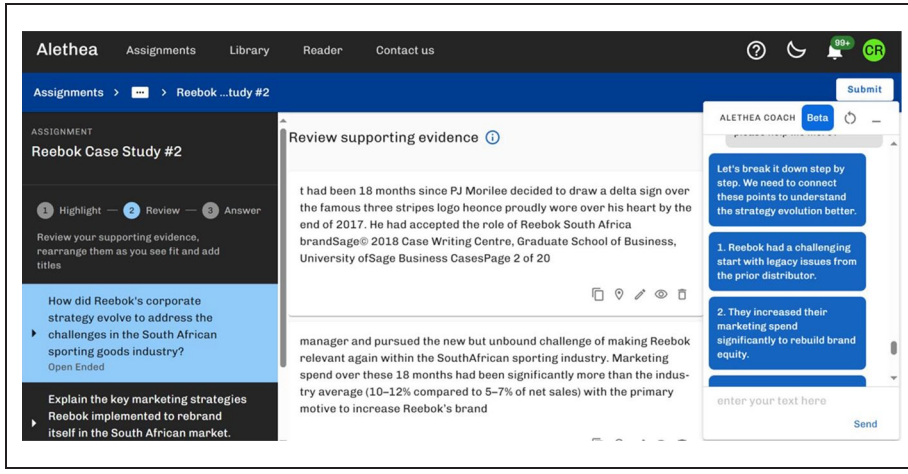

Figure B20. AI Academic Coach's Response to Student's Attempt to Elicit a More Direct Answer.

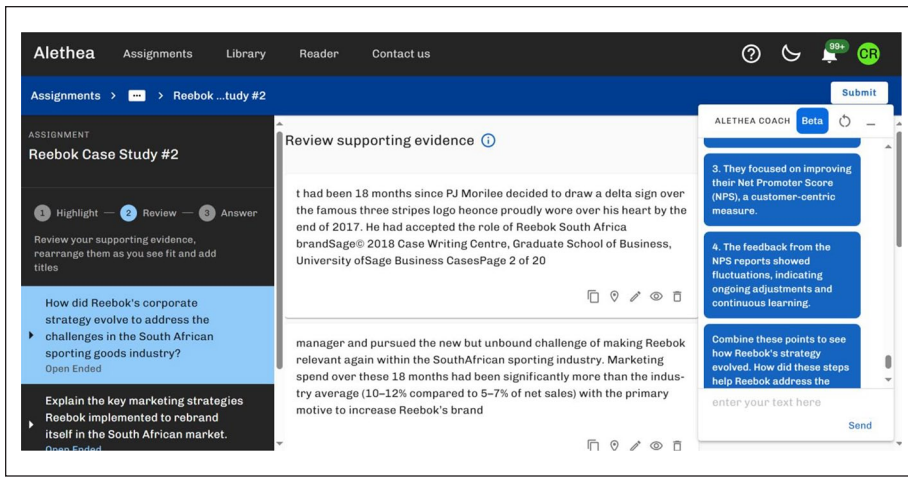

Figure B21. AI Academic Coach's Response to Student's Attempt to Elicit a More Direct Answer Continued.

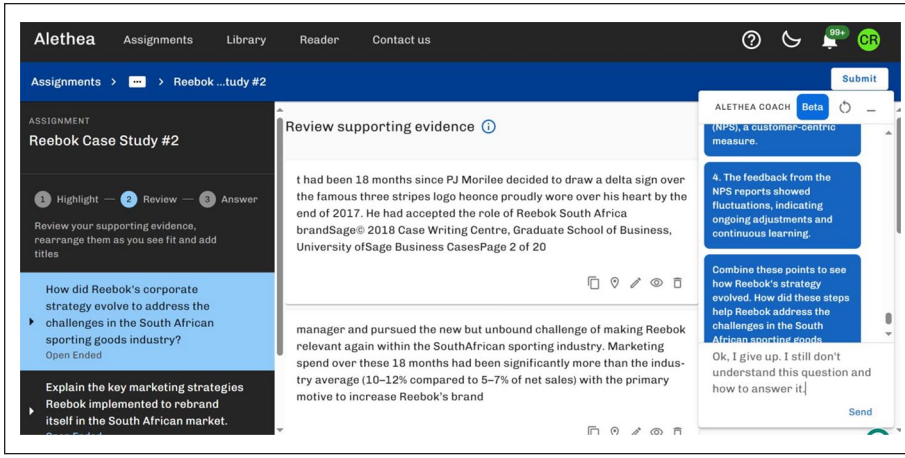

Figure B22. Student Gives Up.

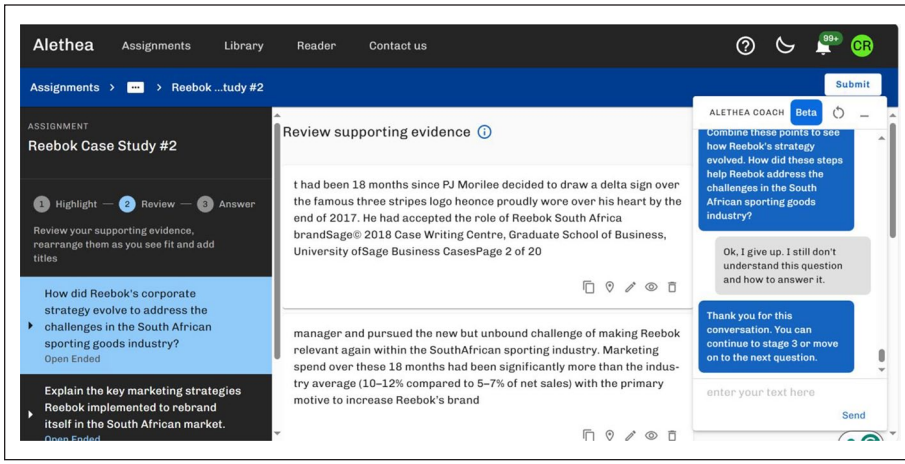

Figure B23. AI Academic Coach Concludes this Part of the Conversation.

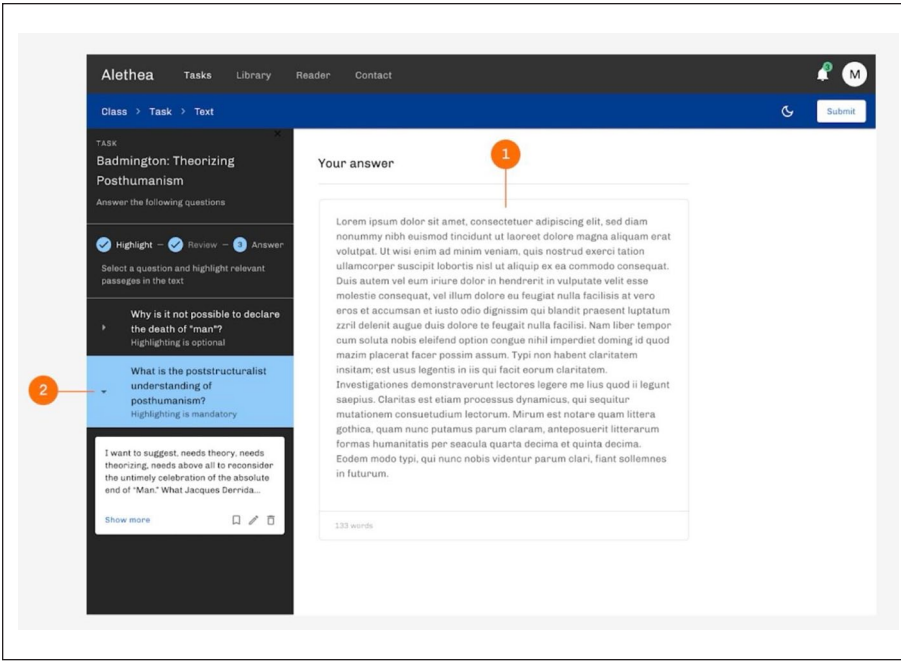

Figure B24. Answering Assigned Questions in Alethea.

show the student's highlights that do not match the instructor; and those in green indicate a match between the instructor and given student. By reviewing this screen, instructors will gain an initial visual indication of the student's ability to highlight relevant material in the case or reading. As mentioned earlier in the main text, Alethea also contains a color-coded heat map to show the percentage of students that highlighted certain passages (Figure 1). Instructors can use this information to identify missing concepts or issues among all students in class that need to be addressed via classroom discussion.

In addition to this initial visual review, the Alethea model offers an assessment of the student's highlights, as shown in Figure B26. The "27.2% match" depicted in that Figure represents the percentage match comparing the student's highlights with the instructor's highlights (the writing in the lower box is the student's submission). Depending on the assignment, faculty can provide students with detailed feedback within the Alethea screen.

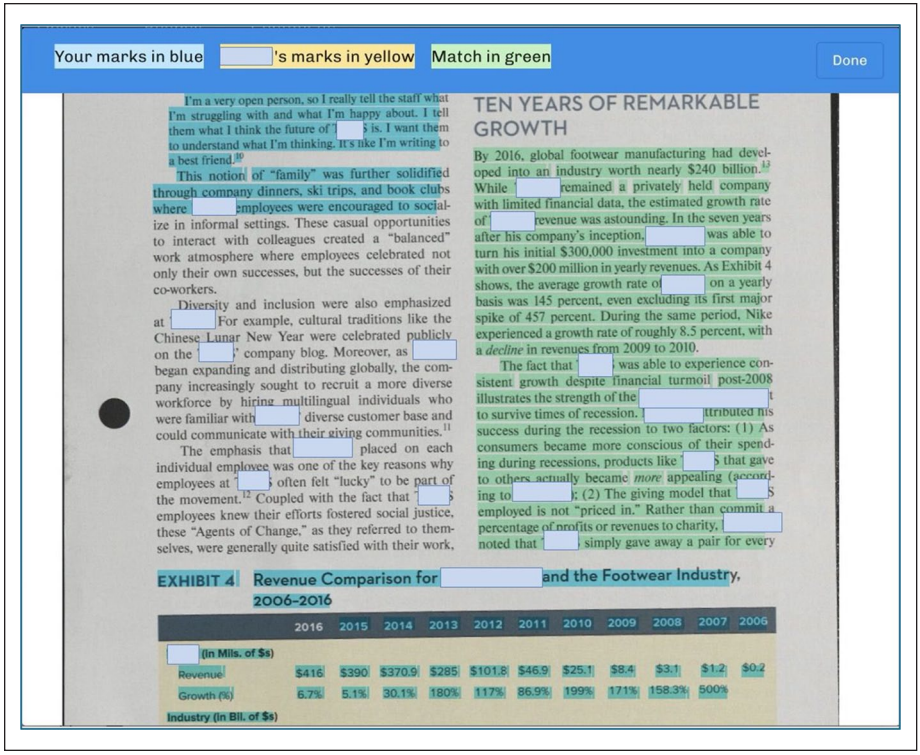

Figure B25. Evaluation of Student Highlights Compared With Faculty.

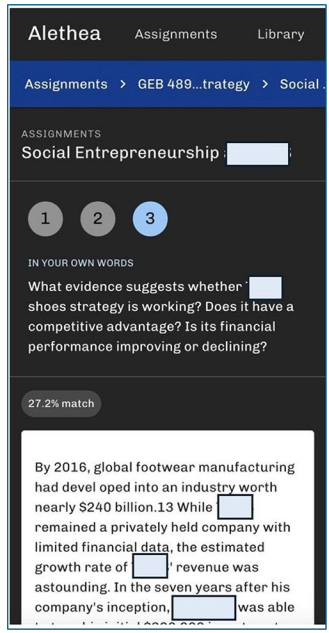

Figure B26. AI-Evaluation of Student Responses.

Appendix C

Comparison between Alethea AI Academic Coach and McGraw Hill's AI Reader

Two AI technologies that could be used in various management courses are the Alethea AI Academic Coach and McGraw Hill's AI Reader. Although these two AI technologies have divergent functions, they can also supplement each other to improve student's critical reading and thinking skills across a course's e-textbook (in the case of McGraw Hill AI Reader) and case studies/assigned readings (in the case of Alethea). Of course, other technologies exist that intend to help readers engage with text (Trinh et al., 2023), but we chose to compare Alethea with an established textbook publisher's offering as often the textbook publisher's resources are the "default" choice of instructors.

Tool: Alethea AI Academic Coach	Tool: McGraw Hill AI Reader
Location	
Alethea is directly linked to the Canvas Learning Management System, which allows assignments, due dates, and grades to flow from Alethea to Canvas.	The AI Reader resides inside the McGraw Hill e-text for specific textbooks. It is a non-gradable assignment that functions as support for learners.
Features and Functions	
The AI Academic Coach is linked to case studies and guided readings selected by the instructor.	The AI Reader is connected to the e-text provided by the publisher.
The instructor develops open-ended critical thinking questions for each case study with optional support from an AI assistant. The student logs into Alethea, highlights supporting evidence, engages with the AI Academic Coach, and prepares a thoughtful response to each critical thinking question.	The AI Reader has two primary functions. The first is to assist students in clarifying words, phrases, or paragraphs in the textbook that are confusing or difficult to comprehend. The second allows students to work with the AI to generate and re-generate multiple-choice questions that focus on specific terms, phrases, or paragraphs to practice their test-taking skills.
Strengths and Usability	
The AI Academic Coach is accessed in the LMS and encourages students to develop their critical reading and thinking skills in assessing and learning through application-oriented business case studies.	The AI Reader is a supplement aiding reading and study of the e-textbook, which fosters accessibility.
Clarivate has developed training materials for faculty and students for the AI Academic Coach.	McGraw Hill has also designed training materials for faculty and students for this tool.
Instructor-led: The AI Academic Coach allows instructors to create and modify critical thinking questions according to areas of focus and student knowledge levels.	Student-driven: McGraw Hill designs the AI Reader, yet students identify the text they wish to clarify and assess themselves by generating multiple choice quiz questions.

Appendix D

Detailed Assignment and Course Design Considerations

We deployed Alethea-based assignments in synchronous, online and traditional, in-person settings with class sizes ranging from 25 to 35 students. The course was a Business Strategy course, which was required for all graduating seniors in the business college. The Alethea case study exercise is denoted as a preclass assignment. Students review the case individually, complete the AI Academic Coach assignment, and then discuss the case study during a class session. The premise is to engage students in critical reading and thinking with the AI Academic Coach before the class session so that class time emphasizes higher-order thinking along with student-to-student and student-to-faculty engagement in complex discussions.

Sample Learning Objectives

By completing these case study assignments in Alethea, students will be able to

- Demonstrate information literacy by identifying and highlighting supporting evidence that will guide them in answering critical thinking questions.
- Display artificial intelligence (AI) literacy by collaborating with the AI Academic Coach in reviewing, analyzing, and discussing the supporting evidence.
- Evaluate and defend their responses to critical thinking questions as prompted by the AI Academic Coach.

Assignment Scope and Timing

In our case, the instructor selected eight to 10 case studies to emphasize various strategy concepts in the course including environmental scanning, competitor analysis, fiscal management, supply chain, and inventory management, along with other important topics. The case studies ranged in length from nine to 20 pages and covered a variety of industries to provide learners with broad-based learning experiences. All cases were assigned at the beginning of the semester and listed on the course syllabus. The instructor introduced the case about a week before the class discussion and established a case submission due date of the day before the class discussion, which gave the instructor time to review the results and include student responses in the class discussion as part of their preparation.

Assignment Case Selection, Reading Materials, and Critical Thinking Question Development

When faculty are preparing their reading materials to upload into Alethea, it is important to engage with library staff to ensure copyright agreements permit the use of the case studies. Our library staff recommended using the Sage Business Cases database for identifying case studies. There is a "strategic management" category there, which contains over 2,036 results. An instructor can enter a search term, like "financial management" or "crisis management," to further narrow the results and review the abstract and date and identify cases that illustrate specific topics. The file format should be either PDF or e-publication, with a size limit of 100 MB and 100 pages.

The Alethea AI Academic Coach includes an "AI Instructor Assistant" that can streamline the setup process for faculty. Drafting quality critical thinking questions can take considerable time for faculty. The instructor should log into the AI Academic Coach, enter the case title and author(s), upload the case study, and then answer the questions in the setup form.

Next, faculty will proceed to "train" the AI Academic Coach, which entails setting expectations for the interactions with students. The AI Instructor Assistant will inquire, "What kinds of questions are you looking for?" and ask faculty to select from the following list: "comprehension, analysis, interpretation, comparative, and critique." We

typically selected the "comparative" and "critique" levels, which prompt higher-order thinking. Next, the instructor is prompted to select the difficulty level on a scale of 1 to 5, with 1 being "low" and 5 being the "most challenging." Then, the faculty needs to select the number of critical thinking questions. The standard quantity is three questions; however, faculty can select from 1 to 5 and specify the question type; "open-ended" or "closed-ended."

Finally, instructors can highlight the supporting evidence inside the case so the AI Academic Coach can compare student results with faculty highlights. This feature can help faculty assess the student's level of information literacy. In addition, faculty can upload a list of key terms or concepts that the AI will use to review and evaluate the student's written responses to the critical thinking questions, which helps the faculty member assess the student's critical thinking skills.

Learning Management System Integration and Assignment Grading

Currently, Alethea can be integrated directly with Canvas and Moodle. If faculty are using other learning management systems (LMS), they can place a link to Alethea on a page inside their LMS and allow students to access Alethea via its website. By using direct integration with Alethea, assignments, due dates, and grades flow from the program into the grade book. Faculty will need to manually enter and adjust due dates and post grades without direct integration.

Grading for the AI Academic Coach assignments can be formative or summative. We used a formative assessment approach to motivate students to engage with the material before the class discussion. This means that if the students put forth a quality effort and effectively answered all the critical thinking questions, they received full credit. They received partial credit if they missed parts of the assignment or did not attempt to respond well. Alethea does not permit a "post first" approach for discussions like Canvas, as students are "conversing" with the bot rather than their peers. In addition, because the assignments consist of case studies, there are no "right or wrong" answers; instead, the assignments offer students the flexibility to adopt various approaches and perspectives, promoting a psychologically safe learning environment, which should ease the pressure to share or copy answers.

If faculty are deploying an asynchronous format and not facilitating real-time discussion in a classroom setting, either in person or online, instructors should consider adopting a summative assessment approach for the cases to motivate students to engage with the AI Academic Coach at a higher level. Moreover, to replicate the experience of classroom discussion, the instructor may consider setting up a discussion forum in Canvas, asking a separate set of questions, and requiring students to engage with their classmates and instructors in this setting.

Best Practices for Effective Implementation

When instructors design this assignment, it is important to ensure that the supporting evidence aligns with the questions and can be located within the text. We recommend

that instructors review the text and highlight the supporting evidence to verify the questions and evidence are aligned as a first step.

Instructors should consider experimenting with the AI Instructor Assistant tool to develop and modify critical thinking questions. In working with the tool, instructors need to modify the questions as written by the AI and provide oversight rather than adopting a "one and done" approach of being 100% reliant on the AI. Given the current sophistication level of AI, humans still need to provide oversight and direction and maintain a "human in the loop." If the instructor is not satisfied with the questions provided, they can ask the system to "regenerate" questions until they are satisfied.

The AI Academic Coach is designed for handling concise and focused reading, such as case studies, articles, or book chapters, to encourage consistent reading behaviors among students. Instructors should avoid uploading full-length textbooks and lengthy reading materials. Our team used case studies ranging in length from nine to 23 pages, which worked well for both the students and Alethea.

To facilitate effective case preparation, it is important to select the appropriate number of critical thinking questions, which serve as guideposts in helping students prepare for case discussion. Alethea allows the instructor to assign one to five critical thinking questions and recommends using three as a best practice. Our team used three meaningful and challenging critical thinking questions and found them sufficient for learning.

The SQ3R (Survey, Question, Read, Write, Review) Method

When instructors introduce the AI Academic Coach as a tool to promote student learning, they can concurrently present the SQ3R Reading Method. First, students should *survey* the case study by examining the main topics, headings, and keywords to determine how the reading is structured. Next, the students should review *critical thinking questions* and highlight supporting evidence in the text. Typically, in the SQ3R method, students would prepare their own questions based on their knowledge level and understanding of the topic. In this model, however, the instructor has already prepared critical thinking questions to help guide students' reading. For the third step, students should actively read the case closely to identify answers to the critical thinking questions. After reading the case, students can engage with the AI Academic Coach, which asks students about the supporting evidence they highlighted to help move them toward answering the questions. The fourth step entails *writing responses* to each of the critical thinking questions. The fifth step emphasizes that students should *review their responses* to ensure they have sufficiently addressed all the essential questions and modify or edit their responses as needed. This SQ3R method encourages students to become active readers and engage with the text at an elevated level, which, in turn, leads to higher retention and synthesis of the material (Aziz, 2020). Integrating AI at these key points in the SQ3R process is designed to facilitate active, rather than passive, student learning and engagement.

Learning Analytics

Alethea offers several statistics on student engagement and performance. For example, Alethea contains a dashboard that enables instructors to view the number of active students, the number of published assignments, student submission rates, and time spent on the case studies. Instructors can also view detailed submission information, including on-time submissions, late submissions, missed submissions, incomplete submissions, and pending submissions. Other course management tools include submission status by assignment, time allocation across various steps in the assignment process, grade averages, and distribution. Another section addresses student engagement, covering active student listings, submission status by students, and students who dropped out of the course. The student engagement level is calculated by submission rates and time spent on assignments. Instructors can review this information throughout the course to gauge engagement levels and make course corrections as needed to bolster engagement and motivation.

Ethical Considerations Related to Alethea's Adoption

Alethea operates on a large language model developed by OpenAI, which contains ChatGPT's processing power and speed. However, its domain is limited, using APIs (application programming interfaces) to include just Alethea users and faculty. Therefore, student and faculty responses are more protected than using ChatGPT. Since it relies on OpenAI's large language model, some of the common ethical considerations are present. There is a potential for hallucinations, so students and instructors are encouraged to carefully and critically check and verify the responses that are provided. When asked about potential ethical considerations, Clarivate's response included common generative AI issues like bias, transparency, and data privacy. When students and faculty work in the Alethea environment, it is important to communicate transparently that users interact with an AI, not a human.

It is also vital to remember that generative AI products may reflect bias derived from the training data used to build the system. This is a significant consideration to discuss. Another consideration is data privacy, which is a common concern for large language models. Instructors should remind students that sensitive or personal information should not be shared in generative AI products. When users begin interacting with the AI Academic Coach, a message reminds them not to share private and personal information.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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References

Aziz, I. N. (2020). Implementation of SQ3R method in improving the students' basic reading skill. *EDUCATIO: Journal of Education*, *5*(1), 97–106.

Boulocher-Passet, V. (2016, June 8–10). *Developing a teaching case study: The difficulties faced by students, as viewed by faculty* [Conference session]. 23rd International EDINEB Conference, Nice, France.

Brennan, R., & Ahmad, J. (2005). Using case studies in management education: The student perspective. *International Journal of Management Education*, *4*(3), 21–30.

Kiewra, K. A., DuBois, N. F., Christian, D., McShane, A., Meyerhoffer, M., & Roskelley, D. (1991). Note-taking functions and techniques. *Journal of Educational Psychology*, *83*(2), 240–245.

Trinh, M. P., Thomas, S. R., Wagadia, T., & Williams, C. V. (2023). Perusall—An interactive tool to facilitate online reading and discussions. *Academy of Management Learning & Education*, *22*(3), 556–558.

Wang, X., Lin, X., & Shao, B. (2023). Artificial intelligence changes the way we work: A close look at innovating with chatbots. *Journal of the Association for Information Science and Technology*, *74*(3), 339–353.

What is the Guided Reading Tool? (2024). https://alethea.zendesk.com/hc/en-us/articles/26135380234513-What-is-the-Guided-Reading-Tool

Zheng, Y. (2015). *Making connections with case studies: A student's perspective*. Canadian Engineering Education Association.