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A Critical Thinking Guide for Discussion Board Forums

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A Critical Thinking Guide for Discussion Board Forums

by

Jessica Nordness

A Portfolio Paper

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Abstract

This portfolio aims to demonstrate the development of a training guide for discussion board forums for undergraduate students at St. Cloud State University. The purpose of this training guide is to help students understand different types of questioning, as well as, how to critically think and respond to discussion board questions by objectively considering different points of view. To develop background knowledge, the researcher explored topics such as: surface learning versus deeper learning, critical thinking in online learning, higher order thinking and learning, as well as, the role of questions. This portfolio comprises of a training guide that has two modules, and an interactive game. The first module, shows students how to recognize different models of questions, and the second module shows students how to develop responses that use objective and higher order thinking.

Keywords: discussion board forums, critical thinking, surface learning, deep learning, higher order thinking.

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Chapter 1: Introduction

Theme

In the fall of 2013 the National Center of Education Statistics found roughly 5.5 million college students, which equates to about 27% of students, took a minimum of one distance education course (2016). This data showed that since 1997-1998 there had been an increase of 3.8 million students who participated in online learning and projected that the number of participants would only grow in future years. According to the U.S. Department of Education, learners benefit from taking online courses because they are given more activities that help them to have multiple perspectives regarding the subject matter content, and exposure to more resources to expand their knowledge base. Learners also spent more time studying, and as a result had slightly better outcomes than their counterparts on tests (Oliver, 2014). Additionally, students who participate in online learning have longer to reflect and articulate their thoughts and responses than in traditional environments and can complete their work from anywhere that has access to the Internet.

A priority in higher education that corresponds with this increased participation of online learning is to provide quality-learning opportunities through the Internet, in which complex and higher order thinking can occur.

To accomplish this however, educators must focus on the process of learning and extend their methodologies beyond teaching students what to know and what to do in their area of study (Fraser & Greenhalgh, 2001), and utilize higher levels of thinking such as analyzing, evaluating and creating (Anderson & Krathwhol, 2001). This might include, educators affording students the opportunity to create knowledge and meaning through real world application, and to

collaborate to further develop critical thinking skills (Palloff & Pratt, 2005). It also requires an online learning environment that can support open discussions, critical evaluation of content, questioning assumptions, reflection, providing evidence and construing an argument (Herrington & Oliver, 2000) and such processes of learning can be applied through discussion forums, problem-based or inquiry lesson plans, presentations, case studies, blogging/ journaling, etc. In the revised version of Bloom's Taxonomy of Learning there are six domains: understanding, remembering, applying, analyzing, evaluating and creating (Atherton, 2013). Often, when it comes to online/e-learning or learning using electronic media, often using the Internet (Heuristic, n.d) teachers focus on declarative or didactic learning in which the three lower domains of Bloom's taxonomy are addressed remembering, understanding and applying (Lombardi, 2007). How can higher order learning such as: analyzing, evaluating, and creating- be displayed in online classes? Could providing a guide for how to respond to discussion board questions compel undergraduate students to show higher order thinking more often? This project will include a two-part guide that will show undergraduate students how to recognize different types of questions, and how to support their response by objectively considering various points of view. This guide will be disseminated using a learning module created on Adobe Captivate.

Problem Statement

In the era of mobile technologies, the Internet and online classes, universities and colleges are turning their attention to creating more opportunities to utilize online learning or e-learning. While e-learning can be used to advance students' learning it is also an idea that has generated anxiety at universities due to competition and tight finances (Ward, 2012).

According to the Minnesota Office of Higher Education student enrollment at state universities

in Minnesota has fallen in recent years; with student enrollment totaling 122,471 in 2011 and has decreased to 103,086 in 2015 (2016). With less enrollment, Minnesota State Universities are face with budget cuts and creating cost-saving initiatives to counter financial concerns. On a national scale, for-profit universities such as the University of Phoenix, have attracted thousands of students and their money, with the appeal of online classes (Ward, 2012) and have provided serious competition to state schools. This issue reinforces why it is essential for academic institutions to offer more online classes. Additionally, for Minnesota State Colleges and Universities, it is important to offer online classes that are not only meaningful, but that utilize higher order thinking.

According to *Findings From The Study of Deeper Learning*, students that used critical thinking and complex problem solving skills were more motivated and engaged in learning, and were more likely to seek additional education (Zeiser, Taylor, Rickles, & Garet, 2014); thereby making the case that schools might be able to sustain or increase the population of online students if higher order learning becomes prioritized at universities. By doing so, Minnesota State Colleges and Universities may be able to appeal to more students and increase overall enrollment numbers.

A student response guide for discussion board forums could lead to students more actively participating and displaying critical thinking in an online setting. This guide will help students to understand different types of questioning, and how to critically think and respond to discussion board questions by objectively considering different points of view. As a result of this guide professors not only can expect more enriching discussions online, but can also fulfill the Mission and Vision of Saint Cloud State University, "... (to) prepare our students for

life, work and citizenship in the twenty-first century” (St. Cloud State University, 2018, Mission section, para. 1) by honing-in on key skills such as communicating effectively through writing, critically dissecting and responding to inquiries, and by showing a deep understanding of a concept.

Significance

To keep-up with the demands of the 21st century, financial implications of decreasing enrollment, and competitive marketing from other institutions, universities are tasked with providing a quality learning experience both online and in the classroom. To ensure that online learning meets the demands of the 21st century, universities need to prepare students to utilize higher order thinking skills, so that they will be able to effectively and efficiently problem solve, create, and communicate globally in a variety of environments (Cochran & Conklin, 2007).

The purpose of this portfolio is to develop a tool (the online training guide) to help undergraduate students objectively respond to discussion board questions by using higher order thinking skills. On a larger scale, I hope that this portfolio can contribute to how Saint Cloud State University utilizes, evaluates, and assesses discussion board forums for online classes.

With the hope that professors see this training as beneficial for their students and incorporate it into their own classes.

Definition of Terms

Remember: To retrieve or find information from long-term memory.

Understand: To construct meaning from instruction or observation and can include oral, written, and graphic communication.

Apply: To use or carry out a particular procedure in a given situation.

Analyze: The breaking down of material or concept into the most basic parts to determine how each of the components relate, provide a larger meaning or determine purpose.

Evaluate: The act of placing judgement about a matter that is based on criteria and standards.

Create: To combine elements or to arrange elements in a manner that forms a coherent or functional product or outcome.

Authentic learning: The act of participating in learning that is based on real-world subjects and is shown through demonstration, understanding of concepts or performance of skills and relates to a topic or a particular type of knowledge.

Higher order thinking: To participate in complex or multifaceted thinking that entails asserted effort and is displayed by producing significant outcomes.

Bloom's taxonomy: A comprehensive study developed by Dr. Benjamin S. Bloom about the way people think and learn. Through his research Dr. Bloom developed a classification or a taxonomy that described and detailed the process of thinking.

Online learning: A structured learning activity that utilizes technology with intranet/Internet-based tools and resources as the delivery method for instruction, research, assessment, and communication.

Summary

The goal of this portfolio is to provide a discussion board forum training guide to the staff and professors at Saint Cloud State University. It is meant to be used as a tool to help students more actively participate and display critical thinking in an online setting. It is designed to generate more robust discussion board dialogue by honing-in 21st century skills and compelling

students to think more objectively about different viewpoints. For the critical thinking training guide, students will learn how to recognize different types of questions, and how to support their response by objectively considering various points of view.

The following chapter will describe the literature that was reviewed for this portfolio. Specifically, the review will detail online learning in higher education, critical thinking in online learning, higher order thinking and learning, and surface learning versus deep learning.

Chapter 2: Literature Review

Introduction

College creates opportunity to capitalize on new first impressions, explore interests that were not previously available and take advantage of opportunities. This idea has expanded with the explosion of online learning in recent years. The use of Internet resources as part of the syllabi in college classes increased from 15% to 40% between 1996 and 1999 (Moe & Blodget, 2000). Through computers/ mobile devices and with the Internet, students have been able to benefit from learning at their own pace and from any location. Online learning provides students with the opportunity to be successful in a college setting without ever stepping foot into a classroom and to transform into the kind of person they aspire to be. According to District Administration Custom (2015), students felt that they had more choice in an online setting, because of the plethora of courses at their disposal, even when in person classes were not available to take. In a study by Serhan (2010) in the *International Journal of Instructional Media* 77% of participants cited flexibility as a major advantage of taking online classes, because it allowed them to travel and participate in class without having to miss any of the content. Additionally, the study found that online classes could meet the specific needs of student's schedules and broaden their ability to choose the best format for their own learning (Serhan, 2010).

Educators who are tasked with the responsibility of offering online classes or e-learning, want to ensure that the content is delivered in such a manner that engages students just as much as if the students were in a traditional setting.

In Christopher, Thomas, and Tallent-Runnel's article "Raising the bar: Encouraging high level thinking in online discussion forums" (2004) the researchers state that "teaching and learning in online courses should, theoretically, compare equivocally with campus-based courses." (p. 166). To develop an effective online educational experience that aims to offer meaningful ways of communicating and learning, like one might find in a traditional classroom, it is often useful to utilize technology such as: Learning Management Systems, streaming media, online games/ activities, as well as various types of real-time communication methods like discussion boards.

Variables, such as how to encourage students to share their thinking or higher order learning without face-to-face interactions is another consideration of which online learning that educators should be aware. Getting students to participate does not necessarily come easily, especially in an online setting where body and facial cues are not always able to be observed. Because of this, the online environment can present some unique challenges that distinguishes it from a traditional model of education (Saxe, 2010). For example, a student may be less likely to collaborate or share deep insight with their peers online, because they are not able to gauge facial expressions of how their views will be accepted by the class.

One way to address this issue is to provide a guide for discussion board forums about critical thinking for students. This guide will help students to understand different types of questioning, and how to critically think and respond to discussion board questions by objectively considering different points of view. This way, students may be more likely to demonstrate deep thinking without feeling so subconscious to the unknown reactions or impressions of their peers. According to Willingham (2008), one of the main goals of going to school (in the world of

education) is to be able to think critically which entails enabling students to deploy the right type of thinking at the right time.

Methodology

The review of literature will occur with two discussions. The first part of the discussion will focus on online learning, and the second will explore various types of critical thinking such as Bloom's taxonomy, authentic learning and 21st century learning (learning abilities that students need to develop in order to succeed in the information age). For this research conducted the articles were collected via Eric and EBSCO host. In EBSCO, the specific database that I used included Academic Search Premier, Education Full Text (H.W. Wilson), Education Research Complete and Education Search Complete. Terminology that was used to search for primary and secondary articles included: online learning, Bloom's taxonomy discussion boards, critical thinking, authentic learning, higher order thinking, 21st century skills, e-learning, blended classrooms, complex learning, surface learning, and online design.

Finally, this chapter will provide the reader with current and relevant information regarding online learning and models that incorporate higher order learning.

Analysis of Literature

Technology, such as the Internet, mobile devices, synchronous and asynchronous classes have become more readily available since the early part of the 21st century.

It has become clear that not only is online learning in higher education here to stay, also that it has become a standard means of teaching students at a collegiate level. Methods such as online discussions, presentations or game-based learning may seem almost unfathomable to the grandparents or even parents of the Millennial generation or Generation Z. It is not uncommon

today for students to live and work, not only in an entirely different city, but often in a different state, and sometimes even in a different country from where their university or college is physically located. As this advancement in technology continues, the next generation of students coming into college are likely to be more tech savvy and understand new applications before their parents have caught-on to previous examples. According to EDUCAUSE Center for Analysis and Research- students who enter college possess unprecedented levels of skill with information technology and they think about and use technology very differently from earlier students. They are characterized as preferring teamwork, experiential activities, and the use of technology when it comes to their education (Kvavik, Caruso, & Morgan, 2015).

According to the Michigan Department of Education (2009) online learning is a structured learning activity that utilizes technology with intranet/ Internet-based tools and resources as the delivery method for instruction, research, assessment, and communication. In the *Journal of Emerging Trends in Computing and Information Sciences* (Jabli & Oahmash, 2013) it suggested that e-learning “refers to a system of education which integrates Information and Communication Technology with the current forms of education” (p. 877) to improve manageability of the learning process. It goes on to say that “e-learning can be divided into three major stages which include a transformative stage, an integrative phase and a transformer stage” (p. 878). Online learning can include but is not limited to synchronous and asynchronous learning modules, streaming audio and video recordings, discussion boards, and live classroom chat and break-out groups, interactive online games; and online assessments like quizzes, fast feedback, instant polling and categorizing or recalling activities.

As mentioned previously, the most evident benefits of online learning are the convenience and flexibility of accessing new information. Students can literally be learning anywhere in the world that has sufficient Internet access, and they can use mobile devices such as cell phones and tablets to access this learning instead of sitting at a desktop. Additionally, other benefits of online learning are that it not only enhances access, but improves engagement, enhances *learning*, extends experiences in exploring, and empowers the learners to take responsibility for scheduling and managing the learning journey” (Roffe, 2002).

Not everyone is sold on the idea of online learning, however, and some criticize how impersonal online learning can be and that it is not meant for everyone. In the *Journal of Visual Languages and Computing*, Cantoni, Cellario, and Porta (2003) described e-learning as requiring more responsibility and self-discipline for the learner to keep up with a more free and unconstrained learning process and schedule. Despite some people’s negative perception, online learning has only increased in use and popularity in the last ten years. A survey about higher education by Sloan Consortium found that in the United States, more than 2.35 million students enrolled in online courses in fall 2004 (Allen & Seaman, 2005) and that number has only increased.

Given this growth and its potential impact on postsecondary institutions, it is important that institutions of higher education provide quality online programs (Kim & Bonk, 2006). Online learning has become more than just a trend and has been adopted as an initiative by many colleges and universities around the United States. Higher education institutions are also using this to capitalize on integrating 21st century skills (or skills necessary to compete in a world of global communication and ever-changing technological innovations). Some of the specific 21st

century skills that are readily becoming more integrated into online classes, according to the organizations such as Virtual Schools and 21st Century Skills are: global awareness, self-directed learning, information and communications technology (ICT) literacy, problem solving skills, and time management and personal responsibility (2014).

To actualize this vision, many higher education institutions are implementing strategic plans that aim to have students critically think, communicate, collaborate and show creativity using technology (Pearlman, 2015).

With the desire to apply 21st century skills, colleges and universities want to maintain and improve the high-level of instruction and student learning occurs in an online setting, it is necessary to consider how higher order thinking transpires and is demonstrated by students. According to Murchu (2005), meaningful learning can occur when students are empowered to self-direct their learning and engaged in critical thinking via simulating and supporting activities. Higher order thinking, and learning can be demonstrated in various ways in an online environment. As the capabilities of technology increases, and educators are tasked with developing online classes, it is important to remember that getting students to understand the content on a deeper level trumps engaging them with the newest trend or online tool.

Surface Learning Versus Deep Learning

In order to understand how learning occurs at a deeper level, it is necessary to understand what surface learning constitutes. A surface learner, traditionally, is someone who learns by rote memorization and often disengages with active learning. This person often hesitates to speak or post messages in synchronous classes and prefers to upload material to understand it.

Deep learners, on the other hand, are students who actively engage in online discussions, readily collaborate with their peers and ask questions that reflect new ideas or thoughts (Cuneo & Harnish, 2002). Some of the variables that influence the way students consider online learning include: extrinsic and intrinsic motivation, established study approaches, how the learner appreciates and perceives the content (Ramsden, 1983). For example, if the student is syllabus driven their intent is to meet the requirements of the syllabus and the specific tasks that have been laid out (Cuneo & Harnish, 2002) to fulfill an overarching want or need. By understanding the differences between a surface learner and a deep learner, instructors can intentionally plan instruction that will promote higher order thinking and encourage surface learners to participate in active learning more readily. For example, “through engaging students in dialog, we seek to cultivate a culture of expansive conversations where ideas are increasingly connected, juxtaposed, interrogated, and critically evaluated so that students can achieve deeper meaning making and understanding” (Chee, Mehrotra, & Liu, 2013, p. 19). By practicing to critically think, students are more predisposed to think in abstract ways and become deep learners (Vejar, 2015).

Critical Thinking in Online Learning

The way critical thinking takes place in online learning has been an essential component to fully understand this research topic.

In this section, research about how instructors have planned to engage students in critical thinking will be discussed as well as the methodology and processes that instructors have employed during online classes to promote critical thinking. According to Brookhart (1997), “the way an instructor approaches assessment influences the way students perceive the class, the

material for study, and their own work” (p. 178). The areas that are assessed in an online class are also the areas in which the students tend to focus their learning. So, part of the students’ engagement in critical thinking depends on the type of expectations and areas of assessment that the online instructor establishes (Arend, 2007).

Instructors plan assessments and develop online curriculum in a variety of ways. As more and more schools have utilized online learning, one method of evaluating and planning for online learning is by using the Quality Matters Rubric which is a not-for-profit subscription created by Marland Online in 2003 (Eshleman, 2015). Although this rubric has not detailed how to get students to think critically, it has emphasized getting students to engage in learning through active participation (Geiger, Morris, Suboez, Shattuck, & Viterito, 2014).

The practice of collaborative design has been another method used by instructors to plan online classes. This process has entailed creating or adapting “new material in teams to comply with the intentions of the curriculum designers and with the realities of their context” (Voogt et al., 2015, p. 260).

The collaborative designer has helped teachers to:

Sequence epistemic actions going from *questioning* aspects of the existing practice, *analyzing* the situation, developing a new solution, experimenting with it to grasp its actual contour and possible limitations, *implementing* the solution with enrichments and conceptual extensions, and then *reflecting* on the process and *consolidating* it toward a stable form of new practice. (Engstrom & Sannino, 2010)

Still there are other models of how to design online classes, like the methodology described in the book *Teach Beyond Your Reach*, by Robin Neidorf (2006). The book details how to become

acquainted with various tools available for online learning, how to teach learners with various backgrounds and unique learning abilities, how to create interactive learning content while working with students of all abilities, and how to create collaborative learning communities. Promoting critical thinking during online classes not only has occurred through intentional planning, but also through employing such techniques as the discovery method, problem solving, the Constructionist model, and by using tools like videos, learning modules, games and animation to inspire critical thinking. Teachers can also foster the idea of exploration through the use of complex and reflective questions that will create situations for students to critically examine and connect their personal experiences to learning which will give students the opportunity to critically think (Muirhead, 2006).

In the book *Facilitating Online Learning: Effective Strategies for Moderator*, Collision, Elbaum, Haavind & Tinker (2000) define two classes of critical thinking strategies: (1) Strategies that sharpen the focus of the dialogue; and (2) Strategies that help participants dig deeper into the dialogue (Collision, Elbaum, Haavind & Tinker, 2000, p.129). These strategies are further dissected into three subcategories:

Table 2.1

Critical Thinking Strategies (Collision, Elbaum, Haavind, & Tinker, 2000, p. 129)

Sharpening the Focus	Deepening the Dialogue
Identifying Direction	Full-Spectrum Questioning
Sorting Ideas for Relevance	Making Connections
Focusing on Key Points	Honoring Multiple Perspectives

By implementing these strategies, the instructor can take the role of a guide or facilitator and will be able to have the ability to (2000) “craft interventions and guide discussions for clarity and effectiveness” (p. 164) to better promote critical thinking in an online setting.

Higher Order Thinking and Learning

There are many models that define and display higher order thinking and learning. Sometimes the vernacular for the terminology “higher order learning” is expressed as “authentic learning” or displaying “21st century skills.” Many of these ideas overlap in content, detail and observation; but each provides a slightly different lens in which behavior is interpreted. In this section, each idea will be illuminated further, by providing definitions, tangible processes, research, as well as online applications at a collegiate level. Additionally, the information provides a background of how to how to distinguish different types of higher order learning.

Bloom’s taxonomy of learning. Bloom’s taxonomy of learning was originated by a group of psychologists in 1956 headed by Benjamin Bloom, with the interest of discussing the considerations that should be included with achievement testing. One area that appeared lacking in the eyes of the psychologists was substantial information about the types of human reaction or response to content, problems or subject matter (Krathwohl, Bloom, & Masia, 1964). The psychologists decided to resolve this by developing a classification for students’ response to learning through using the language of desired outcomes. The purpose of this initiative was to clarify educational objectives, to create definite inferences about student behavior, provide a convenient classification scheme that described and order test items, to clarify and organize educational research, and possibly construct order among learning outcomes, so that generalizations and tendencies can be revealed (pp. 4-6).

Three domains of taxonomy were devised:

1. Cognitive: Objectives which emphasize remembering or reproducing something which has presumably been learned, as well as objectives which involve the solving of some intellectual tasks for which the individual has to determine the essential problem and then reorder given material or combine it with ideas, methods, or procedures previously learned.
2. Affective: Objectives which emphasize a feeling tone, an emotion, or a degree of acceptance or rejection. Affective objectives vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience.
3. Psychomotor: Objectives which emphasize some muscular or motor skill, some manipulation of material and objects, or some act which requires a neuromuscular coordination (Krathwohl, Bloom, & Masia, 1964, p. 6-7)

Accordingly, the two main dimensions of the Taxonomy Table are the four types of knowledge and the six major cognitive process categories. The general domain of objectives is best represented as a continuum ranging from general to very specific (Anderson & Krathwohl, 2001). In Table 2.2 below is Bloom's original taxonomy and in Table 2.3 is the up-dated model that is used today.

Table 2.2

Principles of Bloom's Taxonomy (Bloom, 1981)

6 Evaluation	The Evaluation level requires you to make judgements about the worth, value, or quality of an idea or an item. Evaluation asks for your choice or opinion, which you should be able to defend and support (1) on the basis of known standards and evidence, or (2) on the basis of the standards, values, or criteria that you develop. In order to think evaluatively, you need to know the facts and understand Knowledge and comprehension. You need to be able to apply your knowledge and to look at the separate parts. You also need to be able to put things together in a way that's meaningful for you. Evaluation contains elements of all of the other elements.
5 Synthesis	Synthesis is a higher-level thinking skill because it asks you to create something unique. Synthesis asks you to put together or combine what you have already learned, understood, and analyzed into something new and different. This kind of thinking is "divergent" as opposed to "convergent" because there is more than one acceptable response and the answers given are not necessarily predictable. Divergent thinking branches out from the norm or the usual.
4 Analysis	The analysis Level requires you to examine information by looking at its separate parts. Analysis builds on the understanding levels of application and comprehension. In addition, analysis definitely utilizes facts and information acquired at the knowledge level. Analysis requires you to compare, contrast, or differentiate- this means looking at separate and discrete components or factors. This level also asks that you show how the separate parts are related to each other or to the whole topic being examined.
3 Application	Application Level questions require you to use, apply or transfer what you've learned to other situations. You should be able to demonstrate or show that you've actually learned something.
2 Comprehension	The Comprehension Level requires you to attach meaning to facts and information. The Comprehension Level represents the lowest level of understanding. Some ways you can show Comprehension are by explaining or describing or telling about something in your own words.
1 Knowledge	The Knowledge Level is the foundation of the other levels. It is based on facts and information. Facts and the information are building blocks of knowledge. Facts and information provide the necessary basis for all other types of thinking. The Knowledge Level virtually supports the entire thinking building.

Table 2.3

The Taxonomy Table (Anderson & Krathwohl, 2001)

THE COGNITIVE PROCESS DIMENSION						
THE KNOWLEDGE DIMENSION	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluation	6. Create
A. FACTUAL KNOWLEDGE						
B. CONCEPTUAL KNOWLEDGE						
C. PROCEDURAL KNOWLEDGE						
D. META-CONGNITIVE KNOWLEDGE						

Authentic learning. Authentic learning has been defined as another means of looking at higher order thinking. According to EDUCAUSE Learning Initiative, authentic learning typically focuses on real-world, complex problems and their solutions, using role-playing exercises, problem-based activities, case studies, and participating in virtual communities of practice (Lombardi, 2007).

Essentially, *authentic* refers to assignments that have established a clear connection between the content learned in the classroom and the world outside the classroom (Bolin, Khramtsova, & Saarnio, 2005). Authentic learning has been distilled into 10 design elements that can be adapted to any subject matter domain (Herrington, Oliver, & Reeves, 2002):

1. **Real-world relevance:** Authentic activities match the real-world tasks of professional in practice as nearly as possible. Learning rises to the level of authenticity when it asks students to work actively with abstract concepts, facts, and formulae inside a realistic—and highly social—context mimicking “the ordinary practices of the [disciplinary] culture.
2. **Ill-defined problem:** Challenges cannot be solved easily by the application of an existing algorithm; instead, authentic activities are relatively undefined and open to multiple interpretations, requiring students to identify for themselves the tasks and subtasks needed to complete the major task.
3. **Sustained investigation:** Problems cannot be solved in a matter of minutes or even hours. Instead, authentic activities comprise of complex tasks to be investigated by students over a sustained period of time, requiring significant investment of time and intellectual resources.
4. **Multiple sources and perspectives:** Learners are not given a list of resources. Authentic activities provide the opportunity for students to examine the task from a variety of theoretical and practical perspectives, using a variety of resources, and requires students to distinguish relevant from irrelevant information in the process.

5. Collaboration: Success is not achievable by an individual learner working alone. Authentic activities make collaboration integral to the task, both within the course and in the real world.
6. Reflection (metacognition): Authentic activities enable learners to make choices and reflect on their learning, both individually and as a team or community.
7. Interdisciplinary perspective: Relevance is not confined to a single domain or subject matter specialization. Instead, authentic activities have consequences that extend beyond a particular discipline, encouraging students to adopt diverse roles and think in interdisciplinary terms.
8. Integrated assessment: Assessment is not merely summative in authentic activities but is woven seamlessly into the major task in a manner that reflects real-world evaluation process.
9. Polished products: Conclusions are not merely exercises or sub-steps in preparation for something else. Authentic activities culminate in the creation of a whole product, valuable in its own right.
10. Multiple interpretations and outcomes: Rather than yielding a single correct answer obtained by the application of rules and procedures, authentic activities allow for diverse interpretations and competing solutions.

Starting around 2005, authentic learning became synonymous with real-world problem solving and the discovery or inquiry method, but this idea includes much more, and if utilized appropriately could impact students greatly. A study by the British Educational Research Association that tested Google Drive as a collaborative authoring platform to implement

authentic learning found that not only did students show more analytical assessment, but their thinking was transformed in the way that they considered how learning took place. The students took more ownership of their own learning and became more critical of knowledge and interpretations (Rowe, Bozalek, & Frantz, 2013).

By participating in authentic learning students will be able to apply expert thinking and complex communication and will be able to differentiate those with career-transcending skills from those who have little opportunity for advancement (Levy & Murnane, 2006). Authentic learning has become a core idea in the world of education and frequently implemented through the use of technology. The greater the student's exposure to authentic learning the more prepared they will be to deal with ambiguity and put into practice the kind of higher order analysis and complex communication required of them as professionals (Dede, Korte, Nelson, Valdez, & Ward, 2005).

21st century learning. The concept of 21st century learning came about in 2004 as a result of an initiative by the International Society for Technology in Education (ISTE). A more recent version “shifts our focus from an emphasis on technology-for-teaching to that of technology for learning (Cennamo, Ross, & Ertmer, 2014, p. 11) and has been included as a part of many educational institutions’ strategic plan. According to The Education Reform Glossary, 21st century skills “refers to broad set of knowledge, skills, work habits, and character traits that are believed to be critically important to success in today’s world, particularly in collegiate programs and contemporary careers and workplaces” (2014). Six standards were developed for K-12 students:

1. Creativity and Innovation- Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
2. Communication and Collaboration-Students use digital media and environments to communicate and work collaboratively, including at a distance to support individual learning and contribute to learning of others.
3. Research and Information Fluency- Students apply digital tools to gather, evaluate, and use information.
4. Critical Thinking, Problem-Solving, & Decision-Making- Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources.
5. Digital Citizenship- Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
6. Technology Operations and Concepts- Students demonstrate a sound understanding of technology concepts, systems and operations (International Society for Technology in Education, 2007).

An example of how to use higher order thinking in the context of 21st century learning comes from Brookhart (2010) and details how teachers could setup lesson goals to teach students how to identify and solve problems at school and in life. Brookhart explained that “this involves not just solving problems set by the teacher but solving new problems that they (the students) define themselves, creating something new as the solution” (p. 8).

Twenty-first century learning has provided educators, administrators and academics with a tangible means of perceiving higher order learning by having clear standards that are linked to descriptions of outlined behavior such as developing and managing projects or solving problems. It directly connects with the future of online learning, because it guides educators to teach higher order thinking skills such as: reasoning, questioning and investigating, observing and describing, comparing and connecting, finding complexity, and exploring new viewpoints (Barahal, 2008).

The Role of Questions

What the question asks and how it is formatted undoubtedly plays a significant role in the quality of a participant's response. If participants can pinpoint the type of question that is being asked, they are better able to look at the highlighted question that is being asked. They are better able to look at the highlighted question with a shrewd eye and respond in a manner that shows critical thinking. By acquiring this skill of evaluating questions, participants will be able to recognize different types of questions and will consequentially respond in a way that shows increased higher order thinking.

There are many different models that are used to define and categorize questions. In this section, four models or ways of defining questions will be included. Some of these models are similar in nature and have coinciding terminology. While other models have unique viewpoints. The intent of this section is to provide an overview of the various ways that questions are defined and utilized.

ESL questioning. The website www.usingenglish.com was developed to assist English as Second Language (ESL) teachers to find resources and information for their job. The website identified seven types of questions. These questions were created to teach students, how to

recognize and use questions in the English language. The definitions below reflect each of the seven types of questioning (Heuristic, n.d.).

1. Academic Question: one whose answer may be of interest to some but is of no practical use or importance. Asking an academic question doesn't have that much point- few especially interested in the answer.
2. Embedded Question: is a part of a sentence that would be a question if it were on its own, but it is not a question in the context of the sentence.
3. Hypothetical Question: is one that is asked out of interest, as the answer will have no effect on the situation.
4. Leading Question: one that suggests an answer that implies that there is a proper answer. The term comes from law, where the courts insist that questions that suggest answers are not asked because they restrict the right of witnesses to speak freely.
5. Question Tag: can be made by making a statement and putting auxiliary verb and pronoun at the end.
6. Rhetorical Question: one that requires no answer because the answer is obvious and doesn't need to be stated. The speaker (of the rhetorical question) is not looking for an answer but is making some kind of point as in an argument.
7. Yes/No Question: is a question that can be answered with *yes* or *no*.

This model of question types is beneficial for ESL students; however, such questions will not necessarily promote critical thinking.

5W's (and H). In journalism and for writing online content, the 5W's (and H) plays an important role. The 5W's (and H) prompts the writer to identify: who, what, where, when, why,

and how- before telling a story. The 5W's (and H) can 'guide your reporting as you interview, observe and research to gather the facts for your story' (Buttry, 2011). By using this type of questioning, writers create a narrative about a person or an observation about a situation that has occurred. Frequently, this method is also used in writing blogs or providing a background on a website. Once the article or piece of writing is complete, it provides the reader with a basic understanding of something that has occurred.

Scientific inquiry. Questioning in science is not only common practice but is essential to problem-solving. For example, if a chemist wants to test what will happen to a compound when it is altered by a chemical reaction he must first develop a question. The question will be based on prior observations and will outline what is being tested and how. Additionally, the chemist needs to make sure the question can be tested in a feasible manner.

According to the *National Science Education Standards* (NSES, p. 23) scientific inquiry is: The diverse way in which scientists study the natural world and propose explanations based on the evidence derived from their work. Scientific inquiry also refers to the activities through which students develop knowledge and understanding of scientific ideas, as well as, an understanding of how scientists study the natural world. (National Academy Press, 1996). The National Research Council highlighted five key features of scientific inquiry to help define it more concisely.

Table 2.4

Inquiry and the National Science Education Standards: A Guide for Teaching and Learning (National Research Council, 2000, p. 29)

Essential Features	More ←----- Amount of Learner Self-Direction -----> Less Less ←----- Amount of Direction from Teacher or Material -----> More			
	Variations			
1. Learner engages in scientifically oriented questions	Learner poses a question	Learner selects among questions, poses new questions	Learner sharpens or clarifies question provided by teacher, materials, or other source	Learner engages in question provided by teacher, materials, or other source
2. Learner gives priority to evidence in responding to questions	Learner determines what constitutes evidence and collects it	Learner directed to collect certain data	Learner given data and asked to analyze	Learner given data and told how to analyze
3. Learner formulates explanations from evidence	Learner formulates explanation after summarizing evidence	Learner guided in process of formulating explanations from evidence	Learner given possible ways to use evidence to formulate explanation	Learner provided with evidence
4. Learner connects explanations to scientific knowledge	Learner independently examines other resources and forms the links to explanations	Learner directed toward areas and sources of scientific knowledge	Learner given possible connections	Learner given all connections
5. Learner communicates and justifies explanations	Learner forms reasonable and logical argument to communicate explanations	Learner coached in development of communication	Learner provided with broad guidelines to use to sharpen communication	Learner given steps and procedures for communication

Scientific inquiry does push the scientist to use critical thinking, because he must relate the question to scientific knowledge, problem solve and back-up his reasoning.

Bloom's taxonomy. Bloom's taxonomy has been utilized in the world of education for decades. It not only assists educational practitioners in understanding what constitutes critical thinking but has been adapted into types of questions for critical thinking. Like the learning in

Bloom's taxonomy, the questions too, have six designated levels of cognitive processing categories. Table 2.5, the following pages provide a sample of questions for each of the six levels.

Table 2.5

Bloom's Critical Thinking Cue Questions (Allen, 2013)

Levels	Thinking	Questions
I.	Knowledge	<ul style="list-style-type: none"> • What is... • Where is... • Can you select? • How would you explain? • How is...
II.	Comprehension	<ul style="list-style-type: none"> • How would you classify the type of... • Will you state of interpret in your own words.. • How would you summarize? • Explain what is happening? • What is meant by...
III.	Application	<ul style="list-style-type: none"> • How would you use... • How would you solve ____ using what you've learned? • How would you organize _____ to show... • What facts would you select to show...
IV.	Analysis	<ul style="list-style-type: none"> • What are the parts or features of...How is ____ related to... • Why do you think... • What conclusions can you draw? • What ideas justify...
V.	Synthesis	<ul style="list-style-type: none"> • What changes would you make to solve... • How would you improve... • What is the relationship between... • Can you make the distinction between... • What is the function of...
VI.	Evaluation	<ul style="list-style-type: none"> • Do you agree with the actions/outcome... • What is your opinion of... • What judgement would you make about... • Why was it better that...

The National Society for Education in Art and Design (NSEAD) provides an overview of how teachers use the questioning of Bloom's taxonomy in their classroom.

- Maintain the flow the learning within the lesson;
- Engage students with the learning;
- Assess what has been learned, and check that what has been learnt is understood and applied;
- 1st student memory and comprehension;
- To initiate individual and collaborative thinking in response to new information;
- Seek the views and opinions of pupils;
- Provide an opportunity for pupils to share their opinions/views, seeking responses from their peers;
- Encourage creative thought and imaginative or innovative thinking;
- Foster speculation, hypothesis and idea/opinion forming;
- Create a sense of shared learning and avoid the feel of a 'lecture';
- Challenge the level of thinking and possibly mark a change to a higher order of thinking;
- Model higher order thinking using examples and building on the responses of students (Gast, n.d.).

The questions for Bloom's taxonomy are multifaceted and can be employed in numerous educational realms. These queries can be used for many purposes to justify the presence of higher order thinking but focus on using certain verbs to promote higher levels of thinking. The Socratic method defined by Oxford Reference is the method of teaching in which the master imparts no information, but asks a sequence of questions, through answering which the pupil eventually come to the desired knowledge (Socratic method, 2018). It is one of the oldest and most established approaches to questioning. The words and methodologies of how to question others is based in Plato's book *The Republic* from 380 B.C. This consequential book has influenced society's interpretations of government and roles of power, philosophy, as well as, litigation. The website *changingminds.org* outlines the six types of questions used in the Socratic method but provides an updated model to show relevant examples from the 21st century.

1. Conceptual clarification questions: Get them (pupils) to think more about what exactly they are asking about. Prove the concepts behind their argument. Use basic 'tell me more' questions that get them to go deeper.
2. Probing assumptions: Makes them (pupils) think about the presuppositions and unquestioned beliefs on which they are founding their argument.
3. Probing rationale, reasons and evidence: Why they (pupils) give a rationale for their arguments, dig into that reasoning rather than assuming it is a given.

Questioning viewpoints and perspectives: Most arguments are given from a position.

So, attach the position. Show that there are other, equally valid, viewpoints.

4. Probe implications and consequences: The argument that they (pupils) give, may have logical implications that can be forecast.

5. Questions about the question: Turning the question on itself. Use their attack against themselves (Heuristic, 2018).

Socratic questioning pushes students to justify and defend their reasoning. Often students will rely on personal experiences or rationalizations of accepted logic to make their arguments. When students respond in a manner that justifies and defends their reasoning they are actively analyzing their thoughts to develop an appropriate response. This type of questioning naturally results in responses that display higher order thinking.

Gaps in Research

One of the gaps in research for this area was content about online discussions that considered higher order thinking. It was especially difficult to find content that also included Bloom's taxonomy and online discussions. It was more successful linking e-learning to higher order thinking/ complex or authentic learning. Some of the difficulty of finding content that related to online discussion and higher order thinking was due to the fact that the phrase "higher order thinking" can be expressed in several different ways.

For examples, higher order thinking could overlap with the wording: deep thinking, critical thinking, Bloom's taxonomy and 21st century learning. Another cause for this apparent lack in research, may have stemmed from the fact that online discussion boards and the utilization of this tool, are concepts that are still being refined.

Conclusion

Based on the findings from this literature review, it appears that higher order thinking has been given more consideration in online learning environments. With intentional strategic plans of getting students to participate and achieve 21st century skills and integrating authentic learning

into the collegiate settings, it should be no surprise that society seems to be moving into a new frontier of learning. There is a world of possibilities at our fingertips and technology has allotted us the opportunity to learn, communicate, experience, understand and appreciate information in ways that previous generations could never have fathomed. In order to capitalize on these opportunities, it is imperative that online education at a collegiate level is framed in a manner that promotes higher order thinking. “In a world where information is the currency of the day, technology can help educators’ advance student understanding, reasoning, and decision making” (Blakenship, 2009, p. 127) by incorporating a model of higher order thinking into their curriculum. In doing so, we will be able to help students meet the benchmarks of 21st century learning and solve the complex problems of tomorrow. In the next section of this portfolio I provide a clear description of the project.

It details the goals, target audience, media used, methodology for analysis and evaluation, and the context for implementation.

Chapter 3: Description of Products

Introduction

Chapter 2 reviewed literature about online learning and various types of critical thinking. This chapter provides information about the methodology used for the critical thinking guide, as well as a description of the product. It includes an overview of the goals and objectives, target audience, media used, methodology for evaluation and application.

Description of Products

The products created for this portfolio is a guide for discussion board forums. This product helps undergraduate students to show critical thinking through their responses by taking them through two different modules. The first module shows participants how to identify the type of question being asked in the discussion board forum. The second module shows students how to support their response by objectively considering various points of view.

The problem that is addressed in this portfolio focuses on how to increase dialogue that shows critical thinking in an online setting. The goal of this portfolio is to help undergraduate students to improve in their ability to show higher order thinking in discussion board forums by objectively considering multiple viewpoints. Once this portfolio has been completed, the following objectives will have been met:

- Professors at St. Cloud State University will be able to utilize the Critical Thinking Training Guide for the benefit of their undergraduate students.
- Students at St. Cloud State will have access to a tool that helps them identify different types of questions.

- Students at St. Cloud State will be able to access to a tool that provides them with strategies for improving their written responses in discussion board forum. More specifically, the guide will be able to help students to objectively consider various points of view in a manner that uses critical thinking.

Audience Analysis

For this portfolio, the audience are undergraduate students from St. Cloud State University. Many of these participants have at least some experience navigating online tools such as the Learning Management System Brightspace and consequentially should have little trouble partaking in an online guide. This population does not necessarily need to be an expert in a given field nor do they need to major in a particular area. The only criteria for this audience is that they are enrolled in at least one undergraduate course at St. Cloud State University and that they have access to a device that has Internet.

Critical Thinking Training Guide for Discussion Board Forums

Product. The product for this portfolio is a guide for discussion board forums. This product helps undergraduate students to show critical thinking through their responses by taking them through two modules. The first module shows the participants how to identify different types of questions and, the second module shows participants how to support their discussion board responses by objectively considering various points of view.

The focus of this training guide is to assist students with objectively responding to discussion board posts in manner that considers various viewpoints and uses critical thinking. The media used for this project stems from the Adobe software Captivate. This authoring tool creates eLearning and was chosen for this project, because it has a reputation of being dynamic,

user-friendly, and engaging. The training guide includes elements such as: animation, audio, and an interactive game.

Content. The content in the training guide consists of two modules and an interactive game. The beginning of the training provides the participant with the goal and objectives of the training. The first module shows the student three different models of questioning and explains how each model can be used. It highlights Socratic questioning, questioning for Bloom's taxonomy and the 5W's (who, what, where, when and why). The second module shows students how to support their response by objectively considering various points of view. More specifically, this module shows students how to critically analyze the discussion board questions by thinking about different perspectives in a nonbiased manner. Module 2 also shows students how to respond to questions using supporting details from credible sources. In the final part of the training guide students play an interactive game of *Who Wants to be a Millionaire* that tests their understanding of the content that they just learned.

Process. The training guide was developed using the software Captivate. Prior to designing the training guide, research about critical thinking and firsthand experience of discussion board forums took place.

The storyboard and script were created next, and finally the training guide was developed and published. During this process my advisor was kept abreast of the design and development of the training guide.

Relationship. Online learning has become a prominent part of the college experience and discussion board forums have become a staple as a learning tool. Discussion board forums can be a rich and beneficial learning tool if the students understand how to respond in a way that uses

critical thinking and considers different perspectives. Robust dialogue in discussion board forums help students to acquire 21st century skills such as: demonstrating a deep understanding of what one has learned, being able to critically dissect and respond to inquiries and being able to communicate effectively through writing. St. Cloud State University's mission highlights preparing students for the 21st century. This training guide supports the school's mission and helps students understand how to contribute to a meaningful discussion board.

Application of Products

This project focuses on discussion board forums and elevating the dialogue to reflect 21st century skills. It can be used as a tool for undergraduate students and could potentially be utilized by the Academic Learning Center at St. Cloud State University for students who struggle academically. The development of the critical thinking guide for St. Cloud State University is advantageous not only as a tool for students but is also beneficial for my long-term aspirations of furthering my career and completing my graduate degree.

Timeline

February 2017

- Culminating project preliminary meeting with committee members May-July 2018
- Project production and completion
- Replace committee members that are no longer at St. Cloud State July 2018
- Culminating project completed August 2018
- Final meeting with committee members
- Oral and written exit interview with the Information Media department

Summary

The critical thinking training guide is a tool that supports St. Cloud State students by showing them how to respond critically and objectively to discussion board forums. This chapter provided an overview of the guide and went into detail about the application, the target audience and provided a timeline for the portfolio.

In the next chapter, a complete description of the training guide and the implementation will be explained.

Chapter 4: Tangible Products

Introduction

There is one project that is described in detail for chapter four. This project is the critical thinking guide for undergraduate students at St. Cloud State University. This project is Captivate production and is utilized online. The purpose of the guide is to help undergraduate students to improve in their ability to show higher order thinking in discussion board forums by objectively considering multiple viewpoints. This guide supports the mission of St. Cloud State University by reinforcing key 21st century skills such as: demonstration of how to show a deep understanding of what one has learned, how to critically dissect and respond to inquiries, and how to communicate effectively through writing. The critical thinking guide, upon completion of this portfolio, will be made available to professors, staff and students at St. Cloud State University.

Product-Critical Thinking Guide

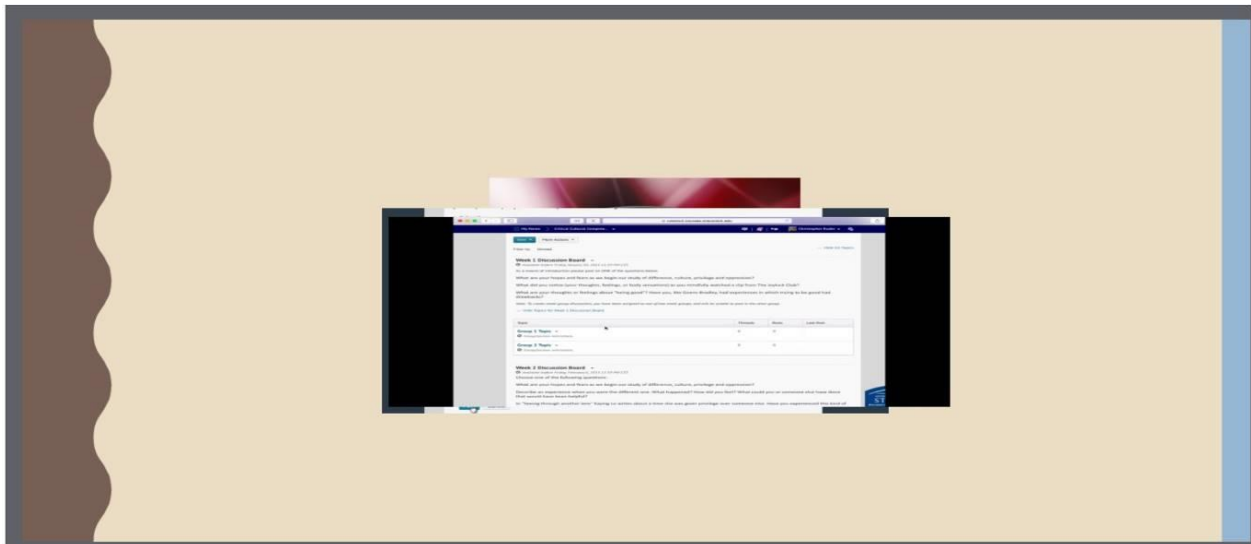
The critical thinking guide can be found at: <https://www.stcloudstate.edu/its/services/media/default.aspx/jessicanordness/>. The training guide is made-up of an introduction, module 1, module 2 and an interactive game. In the introduction, the guide provides the user with an overview of the goal and objectives. The introduction also relates the objectives to ways that the participants can benefit from the training.

Next, the training guide begins module 1 and teaches the students about three different types of questioning: questioning for Bloom's taxonomy, Socratic questioning and 5W's (who, what, where, when and why). This section explains the purpose of each model of questioning and details how each can be utilized. Students who participate in this training guide can choose to examine more in-depth examples for Socratic questioning and questioning for Bloom's

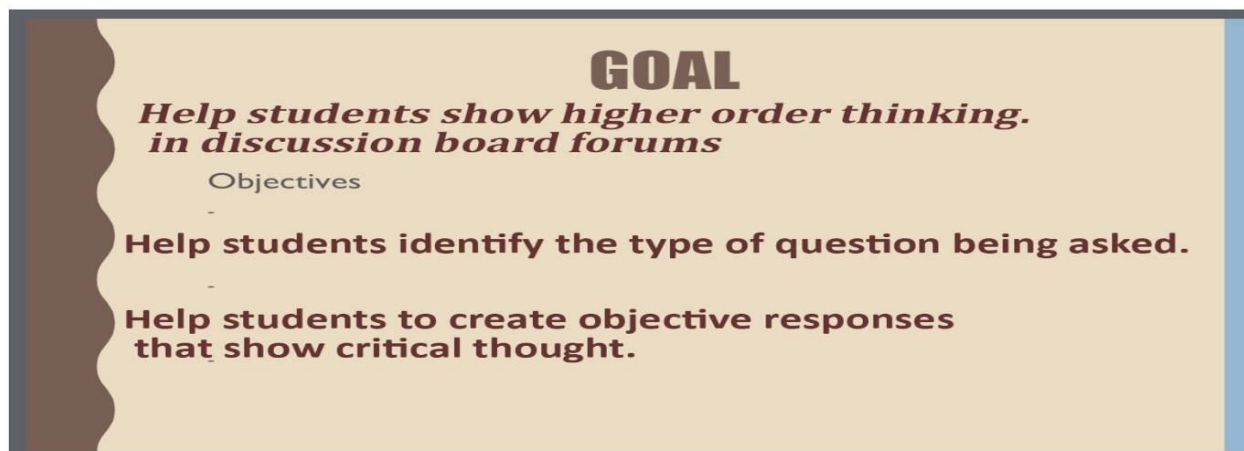
taxonomy. In module 2, the students learn how to improve in their ability to show higher order thinking in discussion board forums by objectively considering multiple viewpoints. The guide shows students how to analyze the discussion board question by thinking about what the question asks, as well as, considering multiple viewpoints. Module 2, also shows students what to do if they are unsure how to answer a discussion board question. It shows students how to find credible sources, record their findings, and answer discussion board questions by backing-up their response with examples. In addition, the training guide emphasizes when it is necessary to use citations. In the final part of the training guide the students test their understanding of the information that they just learned by playing an interactive game of *Who Wants to be a Millionaire*.



Slide #1. Title Page. Welcome to a guide for critical thinking in discussion board forums.



Slide #2. Introduction. It is common for college students to participate in online discussion forums. Students usually answer one or two questions that are posted by the instructor and then comment on the responses of several classmates. Discussion board forums can be a great tool to enhance or assist in learning new material. However, because discussion boards are a collaborative learning tool its overall quality is dependent on the posts of students.



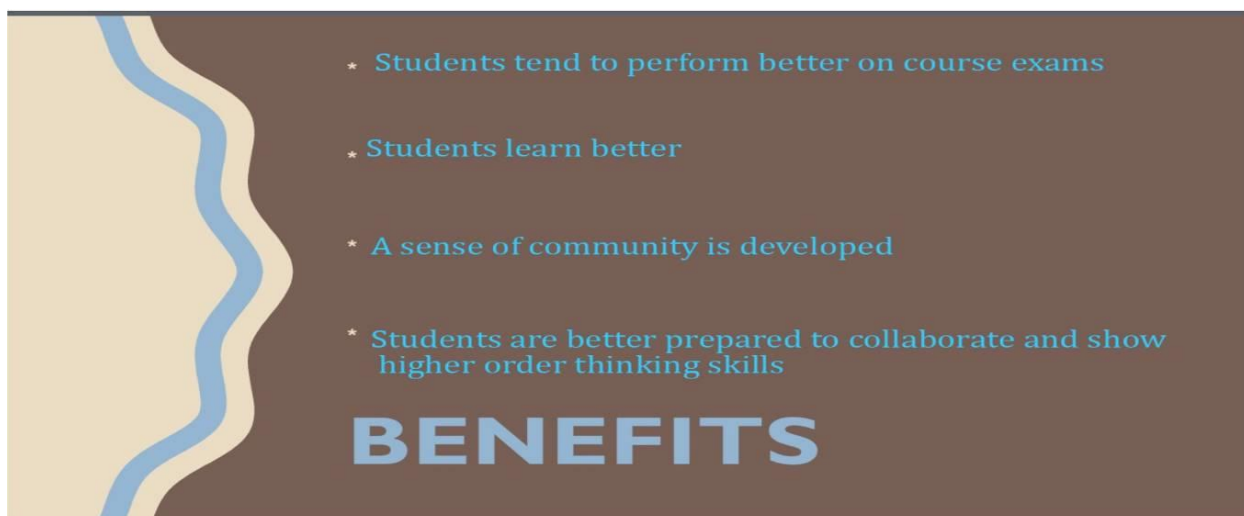
GOAL

***Help students show higher order thinking.
in discussion board forums***

Objectives

- **Help students identify the type of question being asked.**
- **Help students to create objective responses that show critical thought.**

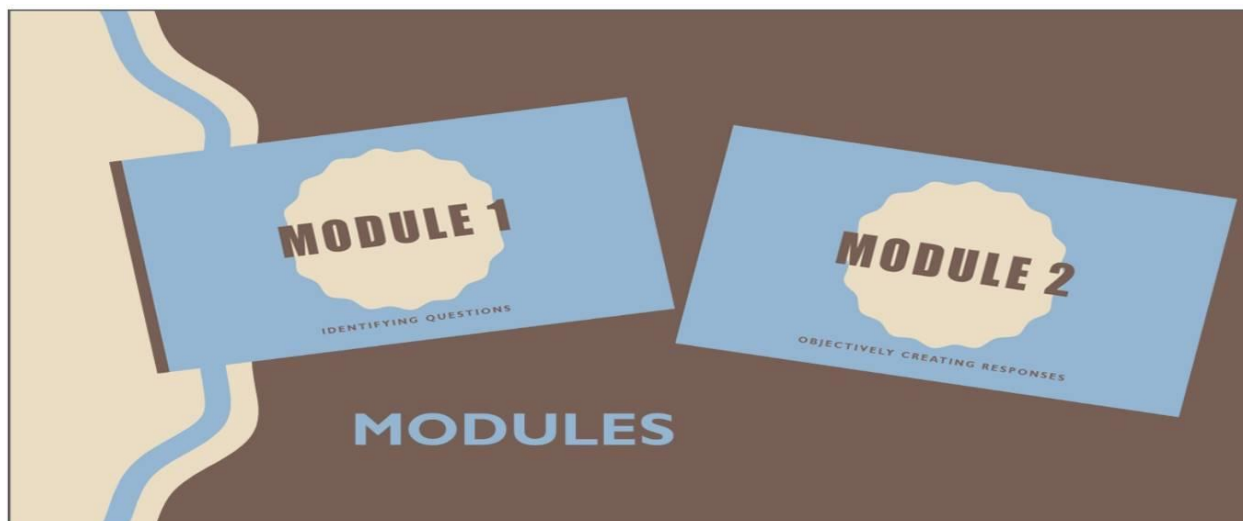
Slide #3. Goal and Objectives. The goal of this training is to help students show higher order thinking in discussion-board forums. The main objectives are to ... Help students identify the type of question being asked, Help students to create objective responses that show critical thinking.



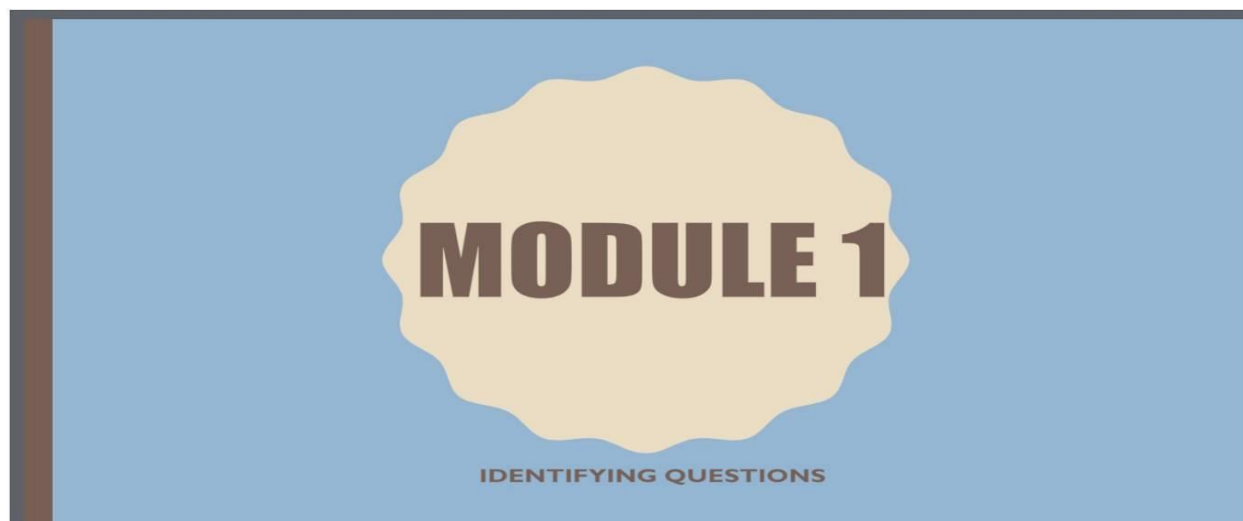
- * Students tend to perform better on course exams
- * Students learn better
- * A sense of community is developed
- * Students are better prepared to collaborate and show higher order thinking skills

BENEFITS

Slide #4. Benefits. According to Dr. Robert Jorczak, a professor at the University of Wisconsin, Stout, the benefits of having robust discussion board forums are: Students tend to perform better on course exams, Students learn better, A sense of community is developed, And students are better prepared to collaborate and show higher order thinking skills.



Slide #5. Modules. There are two modules in this training guide. In the first module you will learn about different types of questions and then in the second module you will learn how to respond to discussion board posts objectively and in a manner that shows higher order thinking.



Slide #6. Module 1 Overview. A study by Fel Gao called “Use of Discussion Strategies and Labels” suggests that being able to identify and label discussion board questions results in students having a heightened connection and appreciation for other people’s viewpoints.

The slide is titled "Socratic Questioning" and is divided into three main sections. At the top center, there is a "Next Page" button. The first section, "Socratic Questioning", lists six types of questions: 1. Questions for clarification, 2. Questions that ask about assumptions, 3. Questions that ask about reasons and evidence, 4. Questions about perspectives, 5. Questions that ask about implications & consequences, and 6. Questions about the question. Below this list is a button labeled "Socratic Questioning". The second section, "5 W's", is titled "Questions Using the 5W's" and lists five questions: * Who are you talking about?, * What are you talking about?, * Where did this occur?, * When did this occur?, and * Why did this happen?. The third section, "Questions for Bloom's Taxonomy", is titled "Questioning for Bloom's Taxonomy" and lists six levels: 1. Questions for Remembering Information, 2. Questions for Understanding Information, 3. Questions for Applying Information, 4. Questions for Analyzing Information, 5. Questions for Evaluating Information, and 6. Questions for Creating/ Constructing. Below this list is a button labeled "Bloom's Taxonomy".

Slide #7. Three types of Questions. Here are three types of questions that are fairly common. The first is Socratic Questioning. This is a well-established form of questioning that can be very beneficial when responding to a classmate's comment or post in a discussion board. Socratic Questioning can help you ask informative questions that compel your classmates to reflect deeply and engage in higher order thinking.

Using Socratic Questioning as a tool can show that you are taking the time to evaluate the responses of your classmates, and are striving to engage in a meaningful dialogue. Click on the box below to see more information and examples about Socratic Questioning.

The second type of questioning is the SW's. You might know it as Who, What, Where, When and Why. These are clarifying questions that urge the respondent to describe the circumstance or argument in full detail. The 5W's are also useful for responding to a classmate's discussion board post. It can be an effective tool for arguing a point or a position. For example, if you disagree with a comment you can ask the respondent if their position would still be true if the circumstance (such as who, what, where, when or why) changes.

The last type of questioning comes from Bloom's Taxonomy. The questions on the lower half of the page indicate higher order thinking. Professors often use questions that analyze, evaluate or construct for developing questions in discussion board forums. Click on the box below to see more information and examples about Questioning for Bloom's Taxonomy.

Questioning for Bloom's Taxonomy

- 1. Questions for Remembering Information
- 2. Questions for Understanding Information
- 3. Questions for Applying Information
- 4. Questions for Analyzing Information
- 5. Questions for Evaluating Information
- 6. Questions for Creating/ Constructing

Remembering

Understanding

Applying

Analyzing

Evaluating

Creating and Constructing

Return to Module 1

Socratic Questioning

- 1. Questions for clarification
- 2. Questions that ask about assumptions
- 3. Questions that ask about reasons and evidence
- 4. Questions about perspectives
- 5. Questions that ask about implications & consequences
- 6. Questions about the question

Clarifying

Assumptions

Reasons & Evidence

Perspectives

Implications & Consequences

Questions about Questions

Return to Module 1

What are the steps of eukaryotic cell meiosis?

Explain your understanding of the theme for the story *Alice's Adventures in Wonderland* and how it relates to growing-up.

QUESTIONS FOR LOWER LEVEL THINKING

The slide features a decorative wavy line on the left side. It includes several small images: a cartoon rabbit, a man in a suit, a man with a beard, a woman with long hair, and a woman with long hair. The text 'LET ME THINK' is overlaid on the images of the man with a beard and the woman with long hair.

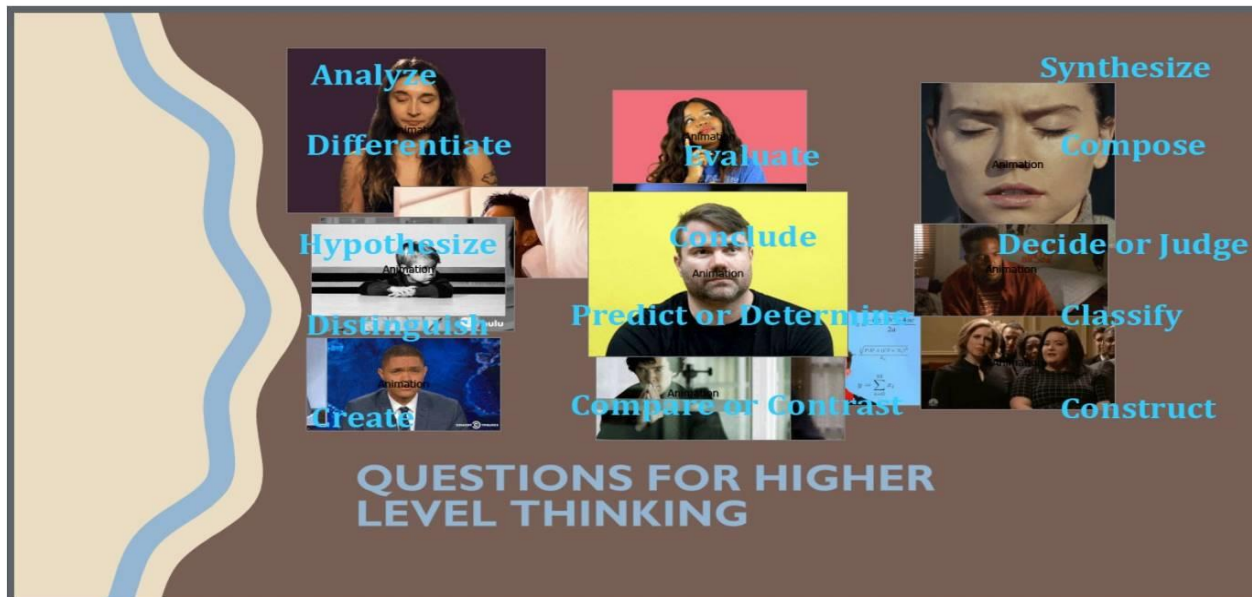
Slide #8. Questioning for Lower Level Thinking. Questions that compel students to use basic thinking in their response is considered to be lower level. When this occurs, participants recall information to show that they have a basic understanding of the subject matter and can apply what they have learned. Sometimes lower level questions are used in discussion board forums to get students to show their understanding of the subject matter or apply it in a new way. Lower level thinking questions are not usually open ended and try to get participants to respond in a certain way.

Examples of lower level thinking questions include:

What are the steps of eukaryotic cell meiosis?

Or

Explain your understanding of the theme for the story *Alice's Adventures in Wonderland* and how it related to ...



Slide #9. Questioning for Higher Level Thinking. Questions that compel students to use critical thinking is considered to be higher level. These questions get participants to think deeply about information and often prompts them to justify their answer.

Students use their prior knowledge and past experience to develop their response. When participants choose to elaborate upon responses and back-up their answers objectively it shows that they have deeply thought about the content.

Higher level thinking questions are regularly used as prompts for discussion board posts. You can recognize higher level thinking questions by looking for such words as:

- Analyse
- Evaluate
- Synthesize
- Create
- Construct
- Compare or contrast
- Differentiate
- Classify
- Distinguish
- Compose
- Hypothesize
- Decide or judge
- Conclude
- Predict or determine

Recall key events from the Renaissance then contrast and compare them to the Industrial Revolution.

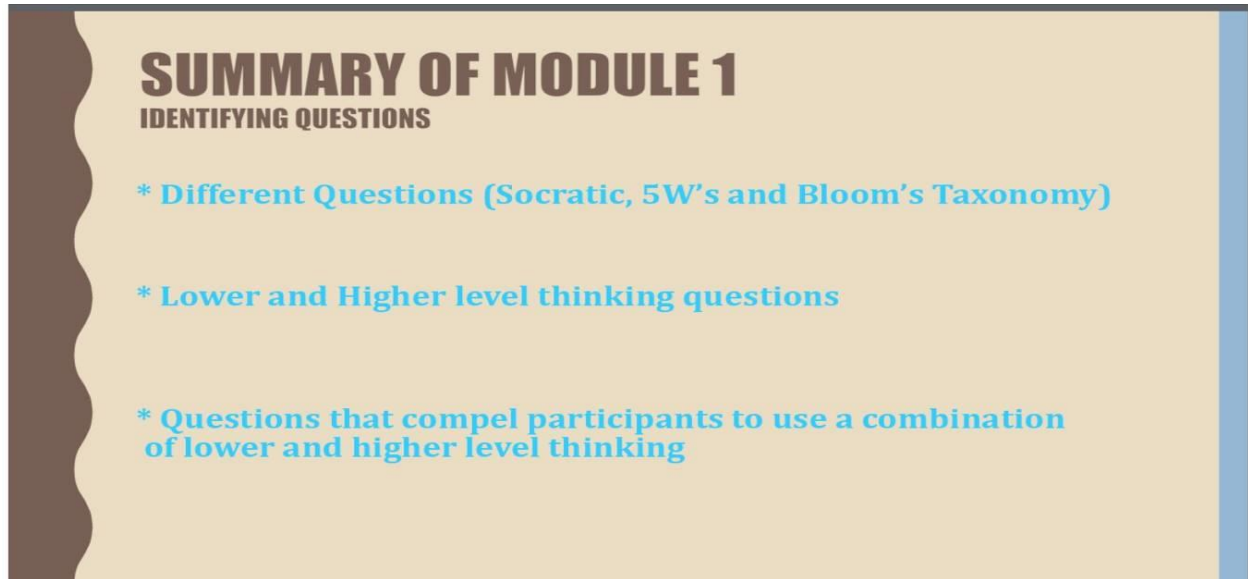
Explain your understanding of the negative effects of global warming and determine a way that it could be resolved.

QUESTIONS FOR COMBINATIONS OF THINKING

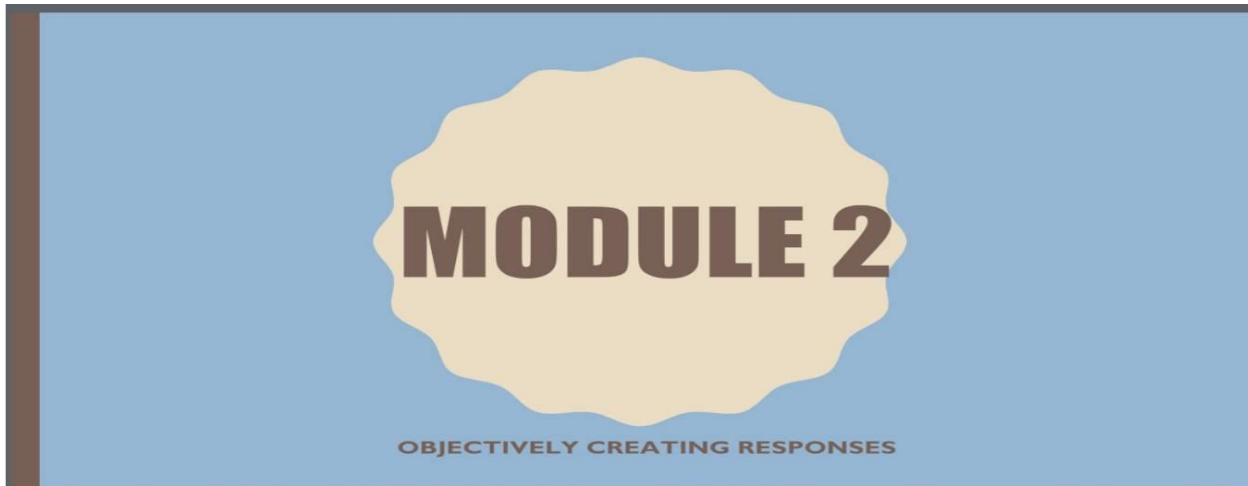
Slide #10. Questions for Combinations of Thinking. Discussion board forums might have questions that compel you to use lower level and higher level thinking in a singular question. If this is the case, just make sure that your response answers both parts of the question.

Some examples of questions that compel participants to use a combination of lower and higher level thinking include:

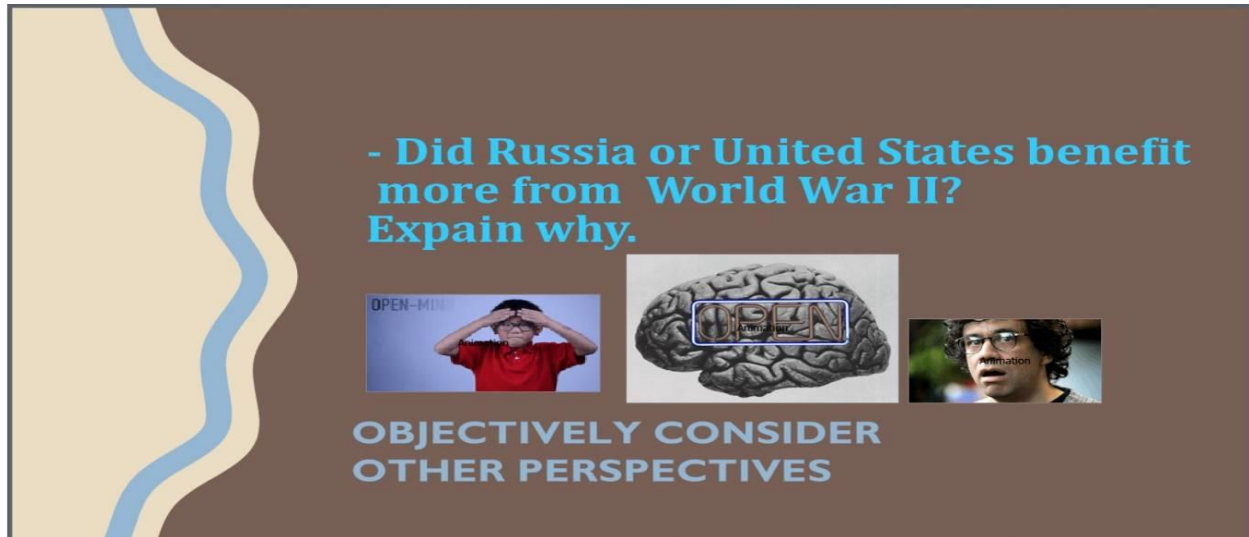
- Recall key events from the Renaissance then, compare and contrast them to the industrial Revolution
- Explain your understanding of the negative effects of global warming and determine a way that it could be resolved



Slide #11. Summary of Module 1. This is the end of the first module. You learned about three different types of questioning (Socratic, 5W's and Bloom's Taxonomy). Next, you learned about lower and higher level thinking questions. In the last part of Module 1, you learned about questions that compel participants to use a combination of lower and higher level thinking.



Slide #12. Module 2 Overview. In Module 2 you will learn about examining questions objectively and creating responses that reflect critical thinking. This will help you to formulate authentic and meaningful responses in a discussion board forum.



- Did Russia or United States benefit more from World War II?
Explain why.

OPEN-MIND

OPEN

OBJECTIVELY CONSIDER
OTHER PERSPECTIVES

Slide #13. Objectively Consider Other Perspectives. When you first read a discussion board post from your instructor it is important to keep an open mind and consider multiple perspectives as you think about what the question asks.

For example the question ...

Did Russia or the United States benefit more from World War II? Explain why.

It is clear that the participant is supposed to evaluate Russia and the United States. It is important for them to consider the Russian viewpoint, as well as, the United States viewpoint. The student should brainstorm the benefits for each country. This will help the student to collect supporting evidence for their response.

Russia	United States
<ul style="list-style-type: none"> Peace and stability in the region Gained Soviet Socialist Republics & East Germany Joined UN (1945) Drastically expanded diplomatic relations Lots of aid given to Russia after war Became a super power No longer have to defend themselves from invading neighbor (Germany) 	<ul style="list-style-type: none"> Jump started the economy Trade increased Technology advancement continued to thrive due to strong economy Women became more accepted into the work place

"Initially I feel that Russia gained more from WWII than the U.S. I believe this to be the case, because Russia was able to accumulate the Soviet Socialist Republics, gained diplomatic relations with many other countries and became a super power."

Slide #14. Credible Sources. Sometimes discussion board questions are challenging to answer. Respondents may not necessarily have background knowledge that equips them to answer the question fully. If you feel this way about a discussion board question it might be time to do some research.

Credible sources for discussion board forums should provide trustworthy and honest information. This could include scholarly sources such as LexisNexis, Info Trac, EBSCO. Also, newspapers and magazines like: the New York Times, TIME Magazine, and the Wall Street Journal. As well as, books from the library. Once you have researched and found enough information to develop an opinion start writing your response. Use the information from your research to support your answer.

Going back to the example question from the last slide a respondent might create a list of the advantages that resulted from World War II for both Russia and the United States. Each time they found valuable information from a credible source they wrote it down and added it to their list.

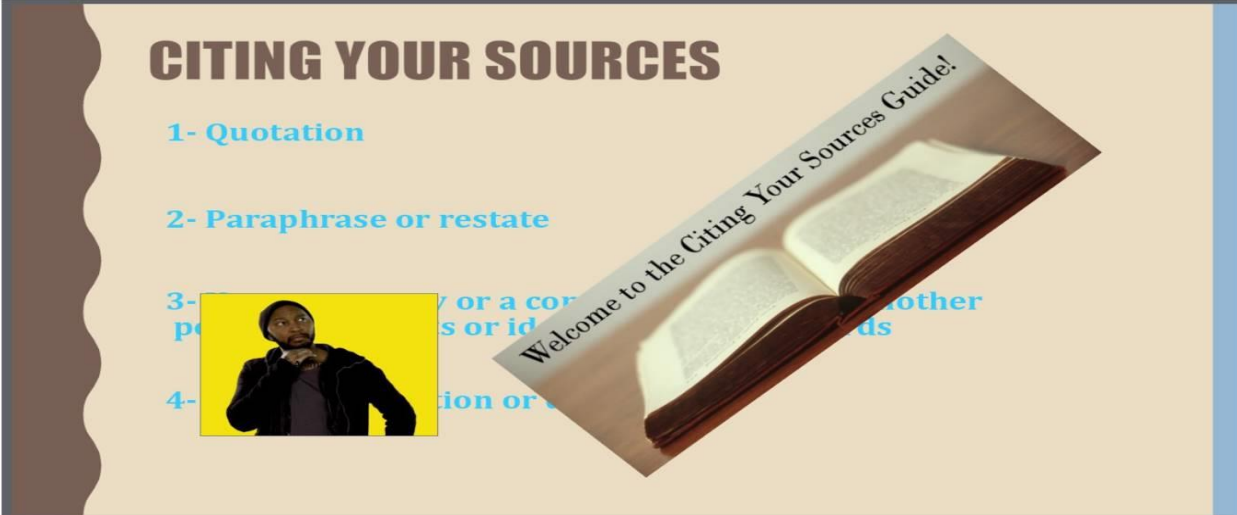
The respondent then uses this information to develop an answer. Here is the answer they wrote

...

"Initially I feel that Russia gained more from WWII than the US. I believe this to be the case, because Russia was able to accumulate the Soviet Socialist Republics, gained diplomatic relations with many other countries and became a Super Power."

CITING YOUR SOURCES

- 1- Quotation
- 2- Paraphrase or restate
- 3- Summary or a concise statement of another person's thoughts or ideas
- 4- Facts, information or data




Slide #15. Citing Your Sources. If you decide to use the information that you researched, and incorporate the writing or ideas of an author it is important to cite your work. According to Princeton University you should cite your resource if ... You use a quotation, if you paraphrase or restate a person's thoughts or ideas in your own words, you use a summary or a concise statement of another person's thoughts or ideas in your own words, or when you use facts, information or data.

ANSWERING DIFFICULT QUESTIONS

Explain one reason that protests should be banned on college campuses.


Animation

Custodians




Animation

School Honors



Animation



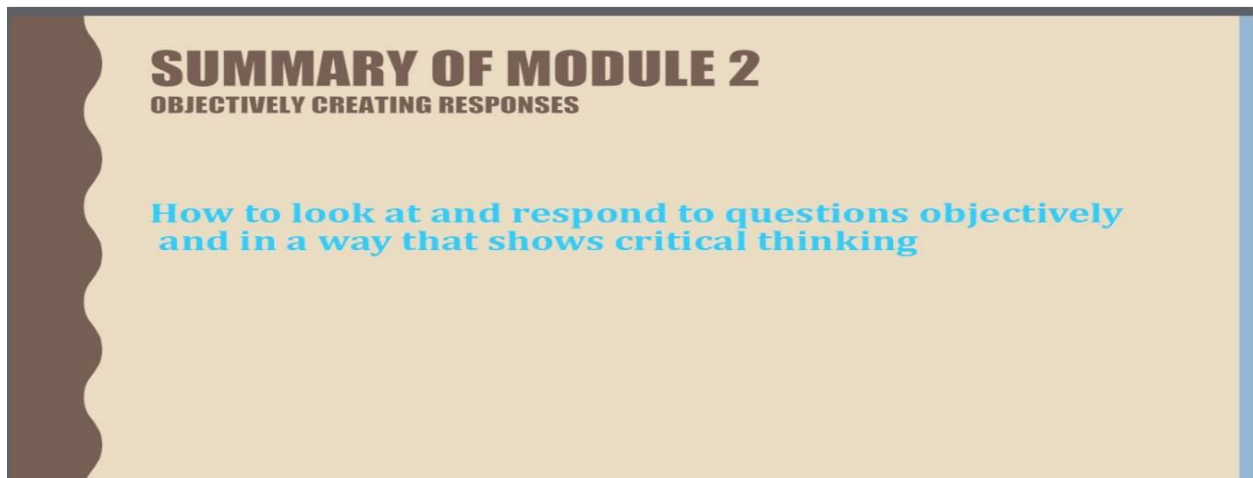
Slide #16. Answering Difficult Questions. Sometimes looking at multiple viewpoints can be challenging. There are even circumstances in which it is difficult to get beyond your own bias, because of an opinion you believe to be true or an experience you have had. In these kinds of circumstances it is important to not let your judgment be clouded. Instead, try to identify potential viewpoints and consider each side objectively.

For example, the question...

“Explain one reason that protests should be banned on college campuses.”

Perhaps the respondent has actually protested on a college campus and has strong feelings that protesting is a good idea. Despite the respondents strong feelings it is better to objectively consider the question and to look at alternative viewpoints.

The respondent could consider the viewpoints of people who would be impacted by campus protests, such as custodians and school donors. By thinking objectively about different viewpoints the respondent is able to maintain a nonbiased perspective.



Slide #17. Summary of Module 2. In Module 2 you learned how to look at and respond to questions objectively and in a way that shows critical thinking. Next, you will participate in a game about the information you just learned.

The image shows a presentation slide for a game called "Millionaire". The slide has a light beige background with a dark blue wavy border on the left and a light blue vertical bar on the right. In the center, there is a dark blue rectangular area with a white border. At the top of this area, the word "Millionaire" is written in white. Below it, a white button with the text "Play Now" is visible. Underneath the button, the text "Interactive Widget" is written in small font. Below that, the word "INSTRUCTIONS:" is written in bold, followed by a bulleted list of four instructions: "Questions are multiple choice.", "Choose any one option and click the 'Lock Answer' button.", "On answering a question correctly, you win the corresponding amount of money.", and "On crossing each milestone, the corresponding amount of money is guaranteed."

Slide #18. Millionaire the Game. No narration.

The image shows a presentation slide with a light beige background and a dark blue wavy border on the left and a light blue vertical bar on the right. The text is centered. At the top, it says "This has been a presentation of" in a dark red font. Below that, the title "A Guide to Critical Thinking for Discussion Board Forums" is written in a large, bold, blue font. At the bottom, it says "Bibliography is available upon request: jessicascsu@gmail.com" in a dark red font.

Slide #19. Last Slide. No narration.

Chapter 5: Reflection

The completion of this project has left me with a feeling of accomplishment, as well as, a deeper respect for those who have completed a master's degree, especially while balancing a full-time job. My culminating graduate school project has been in the making for a better part of three years and has changed significantly over time. Understanding and appreciating the process of going through the preliminary meeting, finding committee members, revising the project drastically, and then finding committee members once again has been a long and enduring experience that has also been meaningful. I recognize that without dedication, perseverance and support from my advisor I would not have been able to complete this project.

The original topic for my culminating project focused on aiding the instructor with developing questions for discussion board posts. The project would have utilized backward design to help instructors create questions that used Bloom's taxonomy to form questions that promoted students to answer in a manner that showed higher order thinking. The original culminating project would have been completed by doing a thesis and by comparing questions that had been reformatted to reflect Bloom's taxonomy to questions that were developed by the instructor that were not reformatted. Due to unforeseen complications the thesis did not come to fruition and I decided to change my culminating graduate school project to a portfolio. I also decided to change the focus of instruction from professors to students.

I made this decision based on current insights surrounding discussion boards and the amount of information available to instructors that assisted them with developing questions that promoted critical thinking. Since I had started my research, I had found that there were many

more resources available to instructors about formatting discussion board questions than there were 3 years ago and realized that the focus of my project would be more worthwhile to undergraduate students.

This training guide has helped me to experience, first-hand, how to actively problem solve challenges with the production and publishing aspects of the software Captivate. The most important lesson that I learned from this struggle, is reflected in the words of Lolly Daskal: what we don't know we don't know (Daskal, 2018). This implies that in the moment of utter frustration of being completely lost, one can only shift to understanding by moving out of their comfort zone and seeking help for the information they do not necessarily know they need to find. Once I moved past these challenges, I came to have deeper appreciation for instructional designers that do this on a daily basis.

Time will tell, if and how the training guide will impact the St. Cloud State community and the undergraduate students. I created this training guide with the hope that it would be able to be used as a learning tool to help undergraduate students with discussion board forums. Once this project has been completed I intend to show it the Academic Learning Center at St. Cloud State University to see if they would be interested in adding it to their webpage.

My hope is that this training guide will have a lasting and beneficial effect on students. In addition, I hope that this training guide influences how instructors think about and use discussion board forums in the future.

Since I developed this training without the insight or impute of the St. Cloud State community, I felt that it was important to use guidelines during the development stage, as well

as, to help me measure its overall effectiveness. I used the 6 Principles of Effective Online Training from Mindflash, a leading learning management solutions company that has substantial experience developing eLearning, to assist me. The six principles include (Mindflash, n.d.):

1. Add relevant graphics.
2. Don't add meaningless graphics or other extras just to make things "more engaging."
3. Place text near the graphics it describes.
4. Describe graphics with audio narration.
5. Don't use audio narration and identical text on a screen. Just use the audio.
6. Be conversational.

The graphics for the training guide were chosen very intentionally to reflect the narration. After initially developing the guide, I went back and removed roughly twenty differently animations, because the result felt too disruptive. In the final draft of the training guide, several slides highlight key aspects of the narration.

Although, the text in these slides are similar to the audio, I made sure that it was not identical. I also, made sure that the narration of the training exhibits a conversational format that is not too formal.

Overall, I feel that the training guide that I developed reflects most of the six principles very well. I think it is possible that some people might feel that parts of the training might be too reliant on animation. Additionally, there are several slides in which the narration is lengthy. In retrospect it might be advantageous to the flow of the training guide to break some these slides apart. For this training to be utilized by the St. Cloud State community I understand that features

of the training guide may need to be altered. I am more than willing to make such changes, to have my work be used by the student body and by the university. I am excited to see what happens with this training guide and what impact it might have on the students of St. Cloud State University.

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Appendix

Practice Worksheet: A Guide to Critical Thinking

St. Cloud State University Practice Worksheet:

A Guide to Critical Thinking

Name: _____

The Objectives of this training guide is to....

* _____

* _____

What were the three types of questioning from the first module?

- 1.
- 2.
- 3.

When thinking about discussion boards-- what type of questioning will be the most useful to understand?
Explain your reasoning.

How will asking questions about the consequences or implications help you to understand a given topic better?

What type of questioning becomes more complex?

What is the difference between lower level and higher level thinking?

Provide your own example of a question the uses a combination of higher level and lower level thinking.

Why is it important to consider other perspectives when answering a question?

What is a credible source?

How will you use what you learned in this training guide to help you show critical thinking for discussion board questions?