

1999

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Recommended Citation

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How to Encourage Students in a Bibliographic Instruction Session to Use
Critical and Creative Thinking Skills: A Pilot Study

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ABSTRACT

This article will describe a pilot study on how applications and methods are used to help students discover and apply critical and creative thinking skills taught during a fifty-minute bibliographic instruction class. Learning these skills will help students understand how to ask questions of themselves in assessing which information sources to use for class assignments in the future.

INTRODUCTION

One-shot course-integrated bibliographic instruction is how most college students learn to use the library and its resources. Faculty members who have an assignment associated with one of these sessions are providing the most effective way for their class to make the best use of the library and its resources. This assignment will encourage students to apply what is being discussed and demonstrated in the bibliographic instruction (BI) session. Students need to be able to accurately access and assess the vast amount of information available. The growth of the Internet and its unchecked accuracy is of considerable concern. This is a primary reason why we, as instruction librarians, need to introduce critical and creative thinking to students so they will have the skills necessary to navigate the plethora of information now available to them.

I conducted a pilot study at Penn State - Erie, The Behrend College during the spring semester of 1998 in order to integrate the instruction of critical and creative thinking skills with a course-integrated BI session. Three different English classes were used in the study to examine if these skills can be absorbed and developed by students after attending a fifty minute BI session. The study was also used to assess the effectiveness of the instruction method used in conveying these skills during those sessions.

KEY CONCEPTS OF CRITICAL AND CREATIVE THINKING

If we want students to become critical and creative thinkers we need to apply, discuss, and demonstrate what defines critical and creative thinking. What traits do critical thinkers have? In defining this, I used five of Berry Beyer's six elements of critical thinking: disposition, criteria, argument, reasoning, and point of view.ⁱ I chose not to select Beyer's sixth element, "procedures for applying criteria and judgment"ⁱⁱ on the basis that it describes the process for using the other elements and I considered it not to be an element unto itself. These five elements formed the basis for the majority of questions used to construct the pre- and post-questionnaires for this study. I'll briefly define each of Beyer's elements and how they were conveyed during the instruction sessions.

Disposition is a consistent and continual way of behaving. Critical thinkers have dispositions of being skeptical, open and fair minded, while also having a willingness to change their views if the need is warranted.ⁱⁱⁱ During the sessions I explained to students the importance of being open-minded and skeptical. To accomplish this they need to accurately assess each new information source they encounter by questioning the item's merits, faults and supporting facts, etc. The students need to put aside, for the moment, their own views and gain an understanding of the views from each source and then draw their own conclusions

based on their own experiences and/or comparing it to other sources on the same subject that they have encountered.

Criteria are a set of conditions that must be met for anything to be judged true. Critical thinkers base criteria on facts that are unbiased, accurate and relevant, and from a credible source.^{iv} Students need to find the inaccuracies and biases in each source. They need to ask themselves what conditions must be met for that source to be credible and what basis is there for accepting a source as accurate, factual, and true? I encouraged students to establish for themselves a list, or set of conditions, that would have to be met in order for a particular book, articles, etc. to be selected by them for use in their research or information-seeking process.

Argument is a proposition with its supporting evidence and reasoning to persuade or convince. Critical thinkers consider strong arguments when stated in a clear position with convincing reasons for stating the claim backed by relevant and accurate facts without conditions or qualifiers.^v Students need to understand what constitutes an argument for them to be able to assess the overall content of a source. Without accurate factual statements an argument cannot be convincing. I instructed students to assess whether an author backed up his/her statements by looking for accurate and proven facts stated in a clear and concise

manner. They needed to also look for biased or misleading wording within the statements that indicates why the author was trying to sway the reader.

Reasoning is the conclusions and claims that hold arguments together. Critical thinkers reason by deduction and logical conclusions.^{vi} Students need to make clear decisions and feel confident about why they chose the information sources they did. I illustrated this by using statements of logic to convey the point and then told students to ask themselves why they came to the conclusions they did about that statement. The students need to answer for themselves this question: “If I determine the statements in this source are true and meet my criteria, then can I use this source to prove or disprove statements or other sources that I am using in my research?”

Point-of-view is a part of critical thinking that develops over a lifetime from experiences that are unique and individual to each person. Critical thinkers use other points of view to analyze the soundness and accuracy of statements in comparison to their own conclusions.^{vii} Students need to understand that each source of information has a point of view and needs to be analyzed and compared to their own point of view using the other four parts of critical thinking. The student needs to conclude whether they agree, partially agree or disagree with the source. I illustrate this point by making a statement and then ask students what

their view is? The students now have to think for themselves and will need to have a response ready if called on. This provides them the opportunity to experience first-hand how to form their own point of view.

We need to realize that critical thinking is not the only way to gain insight into the information-seeking process. We need to add the creative-thinking process into the mixture. Whereas critical thinking is a logical thought process based on the confirmation of facts and judgements, creative thinking is abstract. It's the ability to form or take parts of different ideas and formulate a new path, procedure or idea that leads to a desired goal or new idea. Critical thinking can only take us so far. Creative thinking can push a stalled critical-thinking process in a new direction.

Creative thinking can be applied by using two types of thought processes. The first is a process that utilizes three aspects of human thought. The first aspect, strategy, is the methodology used to solve problems or find information. The second aspect is the use of our knowledge base, or the entire recallable contents of conscience memories for us to use in solving problems or finding answers related to our information needs. The third aspect is a combination of attitude and personality which are individual factors that give direction to our own creativity.^{viii}

The second creative-thinking process, divergent/convergent thinking, is used simultaneously with the first process. Divergent thinking is the act of making a list of all possible choices. Convergent thinking is used to evaluate why you make or choose one thing or idea over another, thereby narrowing all your possibilities down to a single choice.^{ix} During the instruction sessions I informed students that when they begin a research project they will be using the divergent/convergent-thinking process. Each student looks for information, uses their knowledge pool, and processes that information individually. I illustrate this by asking a few simple questions, such as: “When you visit a new restaurant, how do you make your choice from the menu?” “How many ways can you make an ice cream sundae?” “How has nature influenced modern architecture?” “When you are in the Library, how do you select an article from a list of fifty citations listed in the results of a database search?” Students need to use all the critical and creative-thinking skills they have learned to find the answers to these and many other questions throughout their college years and beyond.

We need to urge students to think critically and creatively. This is the real challenge because these students have just left twelve years of rote teaching styles used in today’s educational system.^{x xi xii} By using illustrations or demonstrating these two creative-thinking processes to students, we can orient them to think in

different ways. Knowing how to recognize and use the processes of creative and creative thinking, students can then build and refine these skills and become better information seekers.

APPLICATIONS IN THE CLASSROOM

What can you do in the classroom to get students to think and critically assess the information they encounter? The objectives are to motivate students to discover and develop their skills on how to use and apply critical thinking in the library's information environment and how to use its resources in an efficient and effective manner.

The learning environment is crucial when new college freshman are starting down the road to active learning and critical thinking. I used Chet Meyers's recommendations about how to make the classroom more interactive. Begin the class with a bit of humor and then start by asking open-ended questions on a current event or something that is tied to the class assignment.^{xiii} This will make students more apt to respond and interact with you and with other students. Use silence after asking a question.^{xiv} This may feel uncomfortable to you but students do need time to ponder and come to their own conclusions. Now try and get them to verbalize their thoughts to others. These techniques were

applied to the three BI sessions with moderate success and kept the session open, and active. It was encouraging to have more than one student respond to questions.

Room layout is one way to break the grip of traditional educational teaching. Instead of straight rows facing the front of the room and having the teacher lecture to the students, have the room arranged in a semicircle or a U-shape pattern.^{xv} The instruction room at the Behrend College Library is such that the tables and chairs can be moved around. The room was arranged in a U-shape with the instructor's computer terminal near the center of the room facing the projection screen in front. There was also a table to one side of the terminal for demonstrating the critical and creative thinking process when evaluating paper sources. Rearrangement of the classroom was deemed an improvement over the traditional rows of seats from past sessions. Students were more attentive and apt to respond during the session, bringing students and instructor closer together in a more interactive environment.

Use a Socratic form of education by answering questions with other questions to assist in initiating classroom discussions and stimulating the student's inner questioning process. Encourage students to use critical and creative-thinking skills as an ongoing activity that can be applied to more than just

seeking information in the library. Create a friendly and comfortable atmosphere.

Remember that most incoming students are new to the college experience and if they can be made to feel at ease in the library, they may be better able to adapt to college life overall. Make an effort for the students to feel at ease during the session and provide them with multiple opportunities for verbal feedback. The tone and attitude of the instructor will determine if the seeds of critical and creative thinking are planted in fertile soil. Give students a feeling of confidence that they *can* do this, and that they *will* succeed in gathering and assessing the information they need.^{xvi}

Critical and creative thinking processes need to be conveyed in four different ways: Visually, by actually showing them the differences between similar types of sources. Physically, by having them examine sources in a hands-on type of exercise on their own. In writing, by providing handouts with the process defined and delineated with examples. Finally, verbally, by talking in class about the process that will enable them to use critical and creative thinking skills effectively.

We need to instill in students the skills of questioning and how to ask questions. Discuss with students the different types of questions that need to be asked and why, when selecting information sources. The first type of questions

basically relate to the purpose of establishing a starting point in the information-seeking process. Encourage students to ask themselves questions like: “what *is* the question that I am trying to ask,” and “what is *my* point of view?” The next type of questions focus on the decision-making process of selecting information sources by asking questions like: “why . . . ,” “what if . . . ,” “what information am I using,” “what conclusions am I making,” “what am I taking for granted.” These questions can only be answered by the person asking them based on his or her own knowledge pool and experiences. Once the students can comfortably answer these questions it will bolster their self-confidence and start them down the road to new understanding and becoming a lifelong learner. The third type of questions are ongoing or repeat questions that are asked over and over again during the thinking process such as: “what’s available,” “where is it,” “what do I need,” “who is it by, . . . for, . . . and from,” “how accurate is it,” and “is this relevant to my needs?” All three of these questioning types need to be encouraged during the BI session to start students off on the right foot.

During the session students were warned that they might not necessarily find the information they are looking for in the first, or even the fifth source when searching for needed sources. Information is not a product that they can just ask

for, nor will it be handed to them. The information-seeking process can be a long one with many dead-ends and hurdles that must be overcome. They will need to work for it. There's no free lunch here. We need to inform students that critical thinking in the information-retrieval process is a set of mental skills and thought processes unique to each information-seeking situation and needs to be cultivated, honed and refined to obtain the best results. Students must also be reminded that using the computers in the library, their dorm room, or from off-campus do *not* contain all the world's information. Also remind them that just because it was found on the Internet does not make it true! We need to drive home these information realities before students become disillusioned with the information-seeking process and the library.

In addition to the basic questioning skills of critical and creative thinking, students need to know how the library, as a physical entity, functions. They need to know the layout of the library, where various collections are, where and how microfilm machines and copiers work, and how computer terminals function. Learning about these basic library functions needs to be a part of the learning and questioning process and can best be covered in a Freshman library orientation or a separate library tour opportunity.

CONCLUSIONS

Critical and creative thinking needs to be an integral part of what is offered to students, whether it is in the form of one-on-one instruction, a one shot BI session, or a semester class experience. Time management is critical when it comes to conveying the message of critical and creative thinking. Be flexible and roll with the punches if so as to get the most out of the limited time we have with students. We need to promote the student's self-confidence and encourage them to freely assess and evaluate the sources of information they find. In doing so, we, as bibliographic and reference librarians, will have provided students with the opportunity to become creatively and critically active information seekers and lifelong learners.

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