

The Impacts of Participating in a College Led Critical Thinking Academy

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Abstract

Critical thinking skills are deemed an essential, but lacking, skill for college graduates. Few colleges and universities have purposive strategies in place to decrease the perceived deficit. In order to increase students' critical thinking skills, Texas A&M University created an innovative faculty Critical Thinking Academy (CTA). The purpose of the academy was to increase the critical thinking skills of students in the College of Agriculture and Life Sciences by equipping faculty with the knowledge, skills, and abilities in teaching and evaluating critical thinking as and to create a community of scholars. This study analyzed the impacts of the CTA and found participants developed new pedagogical strategies to increase critical thinking skills in their courses, increased their self-efficacy and implementation of critical thinking evaluation practices, and served as mentors to other faculty who wanted to expand their critical thinking pedagogy knowledge.

Introduction

Though critical thinking is seen as an essential skill for college graduates, most colleges and universities do not have a firm grasp on developing critical thinking skills in their undergraduate students. Huber and Kuncel (2016) note that while college faculty describe critical thinking as one of the most important goals of undergraduate education, there is little evidence it is being explicitly taught in the classroom.

Unfortunately, the gap between critical thinking skills needed and wanted by employers and the skills undergraduate students in food, agriculture, natural resources, and human sciences (FANH) possess is substantial. Strong, et al. (2016) studied the critical thinking abilities of FANH students in the US as well as an institution in the Caribbean. Analysis of the US based students found few students who engaged in critical thinking inside the classroom and a comparative statistical analysis found there were no statistical differences between US FANH

students and those based in the Caribbean. Also, students in the College of Agriculture and Life Sciences (COALS) at Texas A&M University were given the Critical Assessment of Thinking (CAT) exam in 2011 and scored below the University average as well as the national average for this assessment in critical thinking (CAT Results, 2012). With the understanding critical thinking is commonly desired by educators and industry professionals alike, the question becomes: who is responsible for developing critical thinking in students?

While many faculty believe they are fostering critical thinking skills in their students, research has found FANH faculty have merely baseline to some knowledge on the intricacies of critical thinking (Stedman and Adams, 2012) and lack the instructional training to help students gain critical thinking skills (Tsui, 2007). These studies support Ewing and Whittington (2009) who found FANH faculty mostly teach at the lowest levels of Bloom's Cognitive Domain, missing many key components of critical thinking. In another study, FANH faculty identified one of their greatest professional development needs was to learn pedagogies to teach students how to develop critical thinking skills (Harder, et al., 2009).

The gap between perception of ability of faculty and actual results is too great to ignore. Burbach, et al. (2012) found instructors who are well-trained in critical thinking methodology can positively influence students' critical thinking disposition, even within the time limits of a college semester. Crenshaw, et al. (2011) noted a lack of faculty familiarity with critical thinking instruction lead to didactic instruction that did not prepare students for real-world problem solving.

A central competency needed for increasing critical thinking in undergraduate FANH students is improved instructor knowledge, skills, and abilities in critical thinking. Teaching instructors how to teach students critical thinking is imperative to the process. Paul and Elder (2012) suggest critical thinking can be and should be integrated into courses from the beginning (syllabus creation) to the ending

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(summative evaluation). Focusing on faculty development will allow FANH faculty to increase students' critical thinking and problem-solving skills.

The Critical Thinking Academy (CTA) at Texas A&M University was established as an innovative faculty development program by the Academic Associate Dean of the College of Agriculture and Life Sciences (COALS). The purpose of the CTA was to increase the critical thinking skills of students in COALS by equipping faculty with the knowledge, skills, and abilities in teaching and evaluating critical thinking as well as creating a community of scholars who would educate their peers on critical thinking pedagogy (Dooley and Kurten, 2017). Through a series of half-day workshops, faculty were introduced to the multifaceted concept of critical thinking, the need for intentionality in teaching critical thinking, designing assignments and activities that increase critical thinking, and how to evaluate critical thinking within their students (Boyd, et al., 2017). The conceptual framework of the program was based on Paul and Elder's (2012) eight elements of critical thinking.

Thirty-three faculty members completed the CTA in three cohorts. Participants were chosen from a pool of applicants and efforts were made to select a diversity of professional rank (Lecturer, Clinical Professor, Assistant Professor, Associate Professor, and Professor). Twelve of the college's 15 departments were represented over the three years of the program. Upon completion of the CTA, participants were awarded a stipend to use for further professional development in critical thinking, developing activities and assignments which included critical thinking, and/or purchasing critical thinking evaluation measures (Boyd, et al., 2017).

Purpose and Research Questions

The purpose of this study was to assess the impacts of participating in the Texas A&M University College of Agriculture and Life Sciences' Critical Thinking Academy on faculty's implementation of the academy's espoused outcomes.

RQ1: How did faculty, who participated in the Critical Thinking Academy, implement critical thinking in their courses?

RQ2: How are faculty, who participated in the Critical Thinking Academy, assessing the critical thinking competencies of their students?

RQ3: How are faculty, who participated in the Critical Thinking Academy, serving as a critical thinking resource to their colleagues.

Methods

This constructivist qualitative study was designed to gain a deeper understanding of the specific impacts of the CTA program on and with faculty participants. Acknowledging each participant was affected by the program in different ways, it was imperative we gained insight into the lived experiences and truth making impacts of the program to truly answer the research questions (Patton, 2015).

Population and Sample

The population of this study consisted of the 33

faculty who completed the CTA sponsored by the College of Agriculture & Life Sciences (COALS) at Texas A&M University. A purposive sample of 17 CTA graduates were chosen to ensure all departments and teaching ranks were represented. The sample was contacted via e-mail and telephone and asked to participate in a brief interview about how they have used the knowledge they gained from the CTA.

In mid-March, the COVID-19 crises caused the researchers and CTA participants to pivot to remote work. Because the CTA graduates were engaged converting in-progress courses to online delivery, seven of the 17 sample participants were able to engage in interviews. Respondents consisted of four males and three females, two professors, one instructional professor, and four lecturers. Respondents in this study represented five of the 12 departments who participated in the CTA. One respondent taught 100-200 level courses, three taught 200-300 level courses, and three taught 300-400 level courses.

Data Collection

To understand the depth and multifaceted impacts participants experienced, a semi-structured interview protocol was implemented. This protocol included nine questions addressing participant experiences with critical thinking after the CTA had concluded. The Institutional Review Board of Texas A&M University approved the study protocol and all participants provided written informed consent prior to participation.

Due to COVID, the interviews took place via Zoom or telephone. The data was recorded and transcribed by one of the research team. She sent the transcripts to the participants for member checking where they were encouraged to edit, add to, or clarify answers to increase the credibility of the study (Patton, 2015).

Data Analysis

Two researchers applied the process of inductive content analysis to the totality of transcripts. Each researcher individually unitized the data into data chunks and then categorized their chunks. Unitized data were then compared and integrated to develop codes (Lincoln and Guba, 1985). The third researcher then analyzed the unitized data, categories and tentative codes. She then organized these codes into more tangible themes and constructs. This process was utilized to increase internal consistency and dependability of the data analysis process (Lincoln and Guba, 1985).

Results and Discussion

RQ1: How did faculty, who participated in the Critical Thinking Academy, implement critical thinking in their courses?

Four themes emerged from the data when participants were asked about their implementation of critical thinking knowledge inside the classroom; (1) purposeful teaching of critical thinking, (2) new learning assessments created, (3) reflections of learning, and (4) creation and modification of rubrics.

The first theme of purposeful teaching was the most mentioned by the participants. All participants described the pedagogy of how they taught critical thinking. Developing a PowerPoint lecture to begin the discussion was a popular way of introducing the concept. Participants took the information learned in the critical thinking academy and, as one participant said “I developed a presentation that included the aspects of critical thinking [and] started to have discussion about critical thinking and what that was and what that looked like.”

Several participants also noted how they not only discussed critical thinking competencies and strategies but also how to use them in life-long learning. One participant noted the Critical Thinking Academy taught him to “be more intentional and take [class] time to talk to students about what critical thinking is, its importance, and how it is useful not just for that class but moving forward and connecting different classes.”

The second theme, new learning assessments created, brought to bear how participants implemented their critical thinking evaluation knowledge gained from the CTA. Developing purposeful case studies was mentioned by many participants as one new assessment created. Those assignments took course content and paired it with critical thinking strategies “to help the students not only walk through the critical thinking strategies but to help them dissect information and come to a conclusion.” Critical analysis position papers were also discussed as new learning assessments created. One participant noted he was resolute in creating the assignment in “stages to work with their increased critical thinking knowledge.” Participants who teach in STEM disciplines also discussed modifying lab activities to be more inquiry based and critical thinking infused. “So, instead of just being like okay here is step one and step two, get a result and write it up. I just gave them the supplies, the objective of, ‘this is for you to determine how an activation of enzymes effect produce quality’. After that, there was also a reflective component.”

The reflective component leads into the third theme of reflections of learning. Numerous participants mentioned the importance of adding a reflection component to activities in order to increase students’ critical thinking competency. The added reflections “helped students think through the process” of learning and applying information. One professor noted she was ecstatic when her students came to her at the end of the semester and reflected, they were thankful she did not “hold [their] hand and forced {them} to figure things out on [their] own.” They noted it helped them “grow a lot in our self-confidence and learn how to think for ourselves.” What is intriguing about this theme is that it includes not only the reflective component of students’ critical thinking competency but also the reflective component participants engaged in to develop and implement critical thinking into their course. One participant stated, “when I read their reflections about thinking about thinking, I began to reflect on the process myself.”

Another specific way participants changed their course based on their Critical Thinking Academy experience was the creation or modification of rubrics to evaluate student learning.

One participant mentioned how her rubrics became more “tailored to not only the answers but how the students arrived at the answers.” Another participant noted how the CTA helped expand their knowledge of rubric assessment by introducing him to two different rubrics that measure critical thinking knowledge and behavior change.

Due to the CTA program, participants increased their critical thinking knowledge, skills, and abilities and self-efficacy in creating specific pedagogical methods to increase critical thinking skills for their students. Participants identified specific ways in which they integrated their new knowledge of critical thinking into their courses including: (1) purposeful teaching of critical thinking, (2) new learning assessments created, (3) reflections of learning, and (4) creation and modification of rubrics. Although Stedman and Adams (2012) found FANH faculty have little knowledge on theoretical components of critical thinking, the participants of the CTA not only increased their personal knowledge of the subject, they transferred that knowledge to their students through teaching. This finding also supports the conclusions of Harder, et al. (2009) that faculty want to learn how to increase students’ critical thinking skills and implement specific methods to do so.

RQ2: How are faculty, who participated in the Critical Thinking Academy, assessing the critical thinking competencies of their students?

Three specific pedagogical themes emerged from the data; (1) exams, (2) assignments, and (3) rubrics. What also emerged was not only the “how” of the question but also the impact of these new assessment tools. Because of these new pedagogical methods, participants saw their students be able to think independently, have increased precision in their work, and earn higher grades.

Exams were mentioned by many of the participants as a way the CTA changed their assessment practices. They saw question construction as a way to evaluate critical thinking. “I was not only trying to lead students to synthesize the material, I wanted them to go through the process of critical thinking during the exam.” Participants also used new exam structures to evaluate critical thinking. One participant noted he began to think about strategically having “a certain percentage of each exam that are critical thinking questions” and increasing that percentage for each subsequent exam to assess students’ critical thinking competence.

Creating new or modifying existing assignments also emerged as a way the CTA influenced participants in their critical thinking evaluation practices. Case studies were frequently mentioned as new strategies for critical thinking assessment. One participant noted, “we would work our way through the process [of the case study] before they would answer. I found they were better able to articulate their thinking process.” Another participant discussed modifying a paper which included peer review. The peer review evaluation process became about more than content, grammar, and references. “Students knew their peers would also be looking for critical thinking and asking a lot of questions during the process. That showed

an increase in both students' critical thinking abilities."

Creating and/or modifying rubrics was another way participants began to evaluate students' critical thinking in their courses. Modifying rubrics to measure not just the "what" students produced but the "why" was made easier by participating in the CTA. One participant shared, "learning how to phrase questions on a rubric to focus on critical thinking was immensely helpful in my ability to quantify critical thinking change." Some participants mentioned using the same rubric over the course of the semester allowed them to measure the change in critical thinking ability. One participants' department went further with using rubrics to evaluate critical thinking. "We have begun to use the same rubric throughout the course and with multiple courses to gather data on critical thinking improvement. We use the change in critical thinking scores on our departmental evaluation."

The participants in the CTA academy learned to develop or modify assignments, activities, and evaluation techniques to measure students' critical thinking. They evaluated students' critical thinking baseline measures and growth through exams, assignments, and rubrics. Their evaluations showed by being purposeful in teaching critical thinking, students' competency in critical thinking grew. This supports Burbach, et al. (2012) who found students' critical thinking capacity can be developed within a semester-long course.

RQ3: How are faculty, who participated in the Critical Thinking Academy, serving as a critical thinking resource to their colleagues.

Participants in the CTA were not only tasked with increasing their own self-efficacy in critical thinking but also serving as a resource for others in their department interested in developing their critical thinking competencies. To this end, two themes emerged from the data detailing how they are accomplishing this task; (1) working one-on-one with other faculty, and (2) facilitating departmental seminars.

Faculty participants in the CTA were eager to discuss how they have helped other faculty members understand the complex concept of critical thinking. Participants shared the one-on-one interactions varied from senior members of faculty within their department to colleagues around the globe who wanted to learn more about critical thinking. One noted, "many of the professors in our department are older and were not initially on board with critical thinking, but some of them now seek me out for guidance." The college's impetus in critical thinking has led CTA participants to be sought after for course design. One participant said he has been asked to "review all new syllabi proposals and course modification proposals" as an expert reviewer. He went on to explain those reviews usually begin a conversation about the components of critical thinking and how to most effectively incorporate pedagogies into their classes. Another participant shared he "encouraged others to join the CTA" when they showed interest in the subject.

Developing and implementing departmental seminars was another strategy participants used to teach others about critical thinking. One participant discussed how

other faculty in her department, who were CTA Fellows in previous years, had developed a brown-bag workshop. She was glad to "support them and people got really excited" about participating. Another participant noted his seminar sessions for faculty about critical thinking has led to a "departmental redesign of our curriculum." One participant shared how he focused more on "spreading the critical thinking gospel" to departmental graduate students. Those once-a-month meetings were used as a mentoring tool no matter if their appointment was teaching, research, or both.

CTA participants were able to create a community of scholars of other faculty and graduate students who were interested in increasing their critical thinking knowledge, skills, and abilities. While some felt more comfortable doing so on a one-on-one basis, those mentoring relationships allowed others to gain competency and modify pedagogy to increase students' critical thinking. Mentoring relationships help to negate the lack of faculty familiarity in critical thinking instruction, as identified by Crenshaw, et al. (2011). Developing departmental seminars or brown-bag workshops was another tactic used by CTA participants to share their knowledge of critical thinking. This supports the conclusion of Phillips and Green (2011) who found faculty wanted more training in how to create critical thinking pedagogy.

Summary

Critical thinking is highly valued because it is a life-long skill that can be applied across a wide range of situations and industries (Phillips and Green, 2011). In order to increase students' critical thinking skills, Texas A&M University created an innovative faculty Critical Thinking Academy (CTA). The purpose of the academy was to increase the critical thinking skills of students in the College of Agriculture and Life Sciences by equipping faculty with the knowledge, skills, and abilities in teaching and evaluating critical thinking as and to create a community of scholars. This study analyzed the impacts of the CTA and found participants developed new pedagogical strategies to increase critical thinking skills in their courses, increased their self-efficacy and implementation of critical thinking evaluation practices, and served as mentors to other faculty who wanted to expand their critical thinking pedagogy knowledge. While this study is not generalizable, it gives an in-depth evaluation of the impacts of a critical thinking faculty development program. Other universities can utilize this study as a resource when proposing, developing, and evaluating critical thinking faculty development opportunities.

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