UF IFAS Extension UNIVERSITY of FLORIDA

AEC547

Integrating Critical Thinking into Extension Programming #4: Measuring Critical Thinking Styles Using the UFCTI[1]

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Introducton

A critical thinking style "explains how an individual prefers one particular method to another when processing information, or critically thinking about a particular topic" (Gorham, Lamm, & Rumble, 2014, p. 44). The critical thinking style of an individual can be described as a range from engagement to seeking information and can be measured using the University of Florida Critical Thinking Inventory (UFCTI). This EDIS document is the fourth in a series on integrating critical thinking into Extension programming. It will introduce how the UFCTI was developed, how to interpret the results, and how it can be used to enhance Extension programs. The entire series includes the following EDIS documents:

1. Critical Thinking Defined (http://edis.ifas.ufl.edu/wc206)
2. Developing Critical Thinking Skills (http://edis.ifas.ufl.edu/wc207)
3. Critical Thinking Style (http://edis.ifas.ufl.edu/wc208)
4. Measuring Critical Thinking Styles Using the UFCTI (http://edis.ifas.ufl.edu/wc209)
5. Using Critical Thinking Styles to Enhance Team Work (http://edis.ifas.ufl.edu/wc210)

Creating the UFCTI

The development of the UFCTI began in 2000 when Rudd, Moore, and Penfield conducted a factor analysis of the California Critical Thinking Disposition Inventory (CCTDI; Facione, Facione, & Giancarlo, 1998). The CCTDI is an inventory designed to measure whether a person habitually exhibits the mindset of an ideal critical thinker using seven critical thinking dispositions proposed by Facione, Giancarlo, Facione, and Gainen in 1995. In this line of research, critical thinking dispositions are assumed to be measurements of how individuals approach certain qualities of critical thinking and can describe whether or not someone is a strong critical thinker. However, Rudd, Baker, and Hoover (2000) determined that the constructs were not represented in the CCTDI when their work with over 800 subjects failed to produce the constructs Facione et al. (1995) had proposed. They, along with other researchers at the University of Florida, began to develop an instrument that would more accurately measure critical thinking disposition. The research team searched the critical thinking literature and built a new instrument, the UF/EMI, which was submitted to pilot testing in 2003.

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The UF/EMI was designed to measure three constructs of critical thinking disposition: engagement, cognitive maturity, and innovativeness. The instrument assigned each participant an overall critical thinking disposition score, ranging from 26–130, with a high score signifying a high disposition for critical thinking and a low score signifying a low disposition for critical thinking. Between 2003 and 2008 the UF/EMI was tested on a variety of populations and settings.

Unfortunately, the reliability reported on the innovativeness construct fluctuated between and within groups and was deemed unreliable. Qualitative data was then collected to further understand the issues with reliability. All participants in the qualitative study, despite their overall UF/EMI score, reported engagement in critical thinking. Rather than having a high or low disposition for critical thinking, participants were reflecting a range of critical thinking tendencies or a purposive way of engaging in critical thinking (Lamm, Rhoades, Snyder, Irani, Roberts, & Brendemuhl, 2011).

Not wanting to dismiss the utility of the UF/EMI and the years spent testing the instrument, researchers examined the items within the UF/EMI for multicollinearity, ran an exploratory factor analysis and a confirmatory factor analysis, and began to eliminate items based on statistical issues. Even with adjustments made, the innovativeness construct remained unreliable, and questions surrounding a high/low disposition for critical thinking continued to be raised (Friedel, Irani, Rhoades, Fuhrman, & Gallo, 2008; Lamm et al., 2011; Lamm, Harder, Irani, Roberts, & Unruh Sndyer, 2011; Lamm, Strickland, & Irani, 2010).

After 10 years of development, testing, and revisions of the UF/EMI, researchers at the University of Florida chose to develop a new inventory in an attempt to more accurately measure critical thinking style rather than disposition (Friedel et al., 2008; Lamm et al., 2011). **Style** is defined as the way critical thinking is expressed, performed, or done while **disposition** is defined as an individual's habitual inclination or tendency towards critical thinking (Facione et al., 1995). For more information on the specifics of critical thinking style and the two related constructs, please refer to the third EDIS publication in this series *Integrating Critical Thinking into Extension Programming #3: Critical Thinking Style* (http://www.edis.ifas.ufl.edu/wc208).

Interpreting the UFCTI

The UFCTI measures a range between two constructs of critical thinking style: engagement and seeking information. In the UFCTI, each participant is assigned an overall critical thinking style score, ranging from 26 to 130, with a high score signifying a style that seeks information when thinking critically and a low score signifying a style that engages when thinking critically. Ideally, the ultimate critical thinker would land in the middle of the two constructs on the continuum, exhibiting an interest and ability to engage in both styles when thinking critically. Between 2011 to 2014 the UFCTI went through rigorous testing on multiple populations, factor analysis was run on several versions of the UFCTI, and it was refined until it was a reliable measure over time.

The UFCTI is comprised of 20 items each scored 1 to 5 as follows: 1, *strongly disagree,* 2, *disagree*, 3, *neutral*, 4, *agree*, and 5, *strongly agree*. Scores for the seeking information and engagement constructs are independently calculated and then summed to create a total score. It is important to recognize that the UFCTI is measuring a critical thinking style, not a level to which the participant engages in critical thinking. A low score is not better than a high score or vice versa.

Interested individuals can become certified to administer the UFCTI by taking a short online training available at www.ufcti.com. Certification is offered free of charge for UF/IFAS faculty/Extension professionals, staff, and students and for a minimal fee to all others.

Using the UFCTI to Enhance Extension Programs

Using the UFCTI, Extension professionals can easily identify the critical thinking styles of their participants in order to tailor their programs to reflect these styles. The tool can either be administered prior to the program to assist in program development or at the beginning of the program to guide formative changes. Research has shown that individuals with certain critical thinking style tendencies are attracted to different types of programs, and proactively utilizing the style in learning experiences will activate deeper critical thinking.

For example, if it is known that those in attendance at a program are more likely to be engagers, it would benefit the Extension professional in charge to create experiences where the participants engage in conversations, discuss their thoughts, and have opportunities to verbally reflect upon the learning objectives and on ways to utilize the material being covered. The activation of their natural critical thinking style will deepen the learning experience

and enhance the chances that they apply the information, engaging in the behavior changes the program is seeking.

If participants are known to have a seeking information critical thinking style, the Extension professional in charge can create experiences that require the participant to seek out information. Creating experiences where information is lacking and the participants must search for information; assess the validity of the materials they are reading, listening to, or watching; and reflect upon the new information, as it relates to their current knowledge, will activate their natural critical thinking style and deepen their critical thinking. As a result, the participant should be more likely to engage in the desired behavior changes.

Most likely, Extension professionals can expect participants to express both critical thinking styles and, therefore, can work to create programs that activate both styles (Gay, Terry, & Lamm, 2015). Perhaps integrating seeking-type activities prior to the program, such as presenting them with a pre-test or pre-flective activity (Harder, Lamm, Roberts, Navarro, & Ricketts, 2012), will initiate critical thinking in the seeking information participants, while a reflective session where participants discuss their thoughts at the beginning, mid-point, and end of a program will activate the participants with an engager critical thinking style.

Conclusions

Extension professionals who understand what critical thinking styles are and can identify the two types of critical thinking styles are better prepared to develop Extension materials and programs that relate to both styles. By acknowledging that every Extension program should incorporate techniques that will resonate with different styles of critical thinking, Extension professionals will be prepared to develop programs that integrate learning experiences so clientele are more likely to engage in critical thinking experiences and further develop critical thinking skills.

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