

Toward a Critical Science Paradigm Autoethnography: One Family and Consumer Sciences Professional's Experiences

Nicole C. Wanago
Montana State University

Abstract

This autoethnography systematically analyzes the experience of a family and consumer sciences (FCS) teacher educator who originally embraced the profession's heritage as a technical science and made a transformative shift to a critical science paradigm. Data analysis integrates transformative learning theory (TLT) to identify the connection between disorienting dilemmas, new knowledge, discourse, and critical self-reflection while embracing new perspectives. Insights gained from these experiences are shared to support teacher educators as they support the identity development of future professionals who embrace a critical science approach.

Keywords: Critical science approach, paradigm, FCS Teacher Education transformative learning theory.

Introduction

What does it mean to *be* a family and consumer sciences (FCS) professional? Since its formal origins at the Lake Placid Conferences when the profession was known as home economics, this perennial question has impacted the identity of the profession. A response to this question, a definition, requires a conceptual understanding of not just the name [of the profession], but what the name means in the minds and practice of professionals themselves (Brown & Paolucci, 1979, p. 1). Constructing a definition necessitates a willingness among professionals to self-criticize historical/familiar thinking and professional practices while consciously examining the potential consequences of proposed definitions (Brown & Paolucci, 1979).

Dominant views at the profession's organizational meetings held at Lake Placid have continued to inform familiar and present-day thinking practices emphasizing the empirical technical sciences "as the only rationale way of knowing" (Brown, 1984, p. 49). Brown and Paolucci's (1979) challenged to recognize the consequences of its heritage as a technical science and transform itself to adopt a philosophical mission that values multiple types of knowledge and a system of actions to inform thinking and practice to address complex societal problems (Plihal et al., 1999).

Brown and Paolucci (1979) argued practitioners had the moral and ethical responsibility to make this paradigm shift based on two foundational concepts: FCS (then, home economics) is both a *profession* and *practical science* (*p. v*). As noted by Brown and Paolucci, professionals provide services. For a profession to provide services, intellectual activity is required as practitioners make practical judgments to identify the problems addressed and methods to do so (Brown & Paolucci, 1979). The practical science concept requires that theory (knowledge) and

practice (action) are connected (Brown & Paolucci, 1979). Brown and Paolucci (1979) built on Habermas' (1971) paradigm of human interests as they acknowledged different types of knowledge, including technical, communicative, and emancipatory. Action, based in the Greek notion of *praxis*, requires that professionals define what they *would or should do* to act upon problems to fulfill the profession's mission of enabling individuals and families to act with an enlightened awareness of their actions' immediate and long-term consequences on themselves and the collective human condition (Brown & Paolucci, 1979).

Brown and Paolucci (1979) maintained that this normative stance can best occur if people bring a critical lens to bear on their decisions and actions. Being critical means seeking evidence of power (Smith, 2004). The philosophical mission and conceptual frameworks Brown and Paolucci proposed (1979) are known as the critical science approach (CSA). A practitioner develops professional competencies and dispositions within professional learning settings, including professional training programs and organizations (McGregor, 2019b; Vincent & Smith, 2004).

As a FCS teacher educator, I am responsible for creating an environment that cultivates opportunities for professionals to become critically conscious and reflective of the beliefs and practices that construct their identity as an FCS professional (McGregor, 2004; Montgomery et al., 1999). As I learned about the CSA, I became more aware of the power of CSA as was envisioned by Brown and Paolucci (1979) and Vincent and Smith (2004). This insight prompted me to ask, as Barley & Southcott (2019): "What causes a FCS educator to internalize/change their beliefs and attitudes to a CSA approach that, in turn, changes their practice?" Essentially, what causes this paradigm shift (McGregor, 2019a). To explore this question, I examined the evolution of my experiences that influence how my attitudes and beliefs influence my practice, including a deepening respect for and value of CSA.

Method

Autoethnography "is an approach to research and writing that seeks to describe and systematically analyze (*graphy*) personal experience (*auto*) to understand cultural experience (*ethno*)" (Ellis et al., 2011, p. 1). Autoethnography allows for the blending of storytelling about the content of life with theoretical analysis to extend understanding of a complex, multilayered societal phenomenon (Adams & Manning, 2015). The phenomenon proposed by my exploration of *Home Economics: A Definition* (Brown & Paolucci, 1979) is explored in this research with the research question: "How does my experience as an FCS professional offer insights about a professional's critical science paradigm shift?"

Research Participant

Autoethnography enables researchers to narrate their own stories by assuming the dual role of researcher and participant (Keles, 2022). Because a person cannot separate themselves from their culture, an assumption about autoethnography is that writing about the values and practices of the self simultaneously fosters an understanding and critique of the culture and social structures that impacted the experience (Adams & Manning, 2015). By writing about the meaning-making experiences that construct my definition of what it means to *be* a FCS professional, I am consciously and reflexively examining historical and familiar thinking practices.

Data Collection, Analysis, and Interpretation

The autoethnographic research process is not linear (Chang, 2016). A dynamic, cyclical relationship exists between data collection management, analysis, and interpretation (Chang, 2016).

Data Collection

Data included four chronological self-narrative short stories about my formal and informal educational experiences (Table 1). Writing prompts by Chang (2016) were used to incorporate diverse personal and critically self-reflective data from past and present memories. Examples of writing prompts included “list expressions repeatedly heard in your family, community or society and how it influences your thoughts, beliefs, and behaviors;” “identify mentors and how they influenced you;” and “create a visual mind map of core experiences that helped you gain an understanding of yourself and your relationship to others.” Personal artifacts were also collected and analyzed to compare my memories to developed products (Chang, 2016).

Table 1
Autoethnography Data Collection

Chronological Time Period Narratives	Supporting Artifacts
<i>A Family Legacy & Early 4-H Experiences</i>	<ul style="list-style-type: none"> • 4-H yearbooks
<i>Undergraduate Education: FCS Education/Extension</i>	<ul style="list-style-type: none"> • College transcript • Curriculum developed during student teaching
<i>Graduate (MA) Education:</i> <ul style="list-style-type: none"> • Language, Reading & Culture with an emphasis in Adolescent Content-Area Literacy • Professional Role: Take Charge Today Director 	<ul style="list-style-type: none"> • College transcript • Curriculum developed as the Take Charge Today Project Director • Professional Project: How Educators Make Decisions Regarding Financial Education Curriculum Choices and Assessment Methods
<i>Graduate (PhD) Education:</i> <ul style="list-style-type: none"> • Family and Consumer Sciences Education • Professional Role: Family and Consumer Sciences Teacher Educator 	<ul style="list-style-type: none"> • College Transcript • Curriculum developed (syllabi, lectures, assignments) as the FCS Teacher Educator • Educational philosophy statements • Course readings • Journals and study guides developed during the comprehensive exam and dissertation process

Data was continually refined during the data collection phase as I decided what to include or discard. By examining the historical supporting artifacts with the narratives, I continued critiquing the validity of the narratives and refining the data. Simultaneously, data collection included labeling the data's content using Chang's (2016) method to identify the who (the main actors), what (the main topic), when (the context), and where (the data were collected). This process guided data organization while illuminating potential gaps in the exploration between "self and others, personal and social context" (Chang, 2016, p. 125).

Data Analysis and Interpretation

Autoethnographic analytic analysis and interpretation techniques were used to transform the data into culturally meaningful explanations. A custom-tailored approach is "absolutely necessary" (Chang, 2016, p. 130) in autoethnographic data analysis with the process being a combination of inductive and deductive processes (Wilson & Chaddha, 2009). A comprehensive approach allows for a holistic analysis of the phenomena to identify cultural themes (Chang, 2016). I began with an inductive analysis process examining the data in segments and holistically using several strategies identified by Chang (2016).

1. Search for recurring topics, themes or patterns;
2. Identify exceptional, life changing, occurrences;
3. Analyze inclusion and omission;
4. Connect the past with the present: explore cause-effect relationships;
5. Broadly examine contextual factors impacting the experiences.

The interpretation process then transitioned to a deductive approach, using theory to explain the analysis and interpretation (Chang, 2016). Integration of theory systematically anchors the analysis process to move beyond personal reflections (Chang, 2016). Mezirow's (1978) Transformative Learning Theory (TLT) was used to explore integrative links between my experiences and professional growth that resulted in a paradigm shift (Chang, 2016; Barley & Southcott, 2019). TLT focuses on how we "negotiate and act on our purposes, values, feelings, and meanings" to gain greater control over our lives as socially responsible, clear-thinking decision makers" (Mezirow & Associates, 2000, p. 8). Individuals' paradigms, known as their frames of reference, connect their habits of mind to their ways of thinking and acting based on assumptions and their points of view (Mezirow, 2018). When a disorienting dilemma challenges the validity of a frame of reference, individuals may engage in discourse and critical self-reflection to transform their paradigm into a more inclusive, discriminating, and integrative perspective (McGregor, 2019a; Mezirow, 1997). A perspective transformation was revealed via multiple immersive, critical reviews of my data with Mezirow's (1997) recursive eleven-phase process (Table 2) (Calleja, 2014).

In more detail, I began by identifying an integrated collection of cumulative critical incidents and the associated emotions that resulted in disorienting dilemmas that challenged my FCS paradigm (Phase 1 and 2). Then, I critically assessed my assumptions' source, nature, and consequences by adding reflective notes to the narratives (Phase 3). Mezirow's (2018) habit-of-mind list of categories enhanced my critical reflection from sociolinguistic (social norms, customs, ideologies, political orientations); moral-ethical (moral norms and values); psychological (theories, schema, self-concept, personality traits); and aesthetic (values, attitudes,

standards perspectives (see p. 117). Furthermore, Laster's (2008) systems of action question list prompted reflection from multiple inquiry perspectives, including the technical (what I know to be true), communicative (how I arrived at my beliefs), and emancipatory (the impact). Finally, I created a mind map to identify integrated themes that identify my collective experiences of acquiring, experiencing, testing, and developing the confidence to transition and integrate a revised CSA paradigm as my identity as an FCS professional (Phases 5-10).

Table 2
Mezirow's Phases of Transformative Learning

Phase	Activity
Phase 1	A distorting dilemma
Phase 2	A self-examination with feelings
Phase 3	A critical assessment of epistemic, sociocultural or psychic assumptions
Phase 4	Recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar change
Phase 5	Exploration of options for new role, relationships, and actions
Phase 6	Planning of a course of action
Phase 7	Acquisition of knowledge and skills for implementing one's plans
Phase 8	Provisional trying of new roles
Phase 9	Renegotiating relationships and negotiating new relationships
Phase 10	Building of competence and self-confidence in new roles and relationships
Phase 11	A reintegration into one's life based on conditions dictated by one's perspective

Calleja, 2014, p. 130; Mezirow and Associates, 2000

Results and Discussion

Five integrated themes emerged from my examination of a series of disorienting dilemmas that moved me toward a personal self-examination, critical assessment, and application of new knowledge, resulting in a transformative shift in my perspectives to a critical science paradigm.

A Technical Foundation

My FCS meaning-making experiences began with my family and 4-H, an organization focused on youth development and potential via head, heart, hands, and health (National 4-H Council, 2024). My mother, grandmother, and aunt are home economists trained in a technical era prior to the introduction of critical science to the profession. Involvement in 4-H with family members as project leaders cultivated my early perceptions of FCS. Whether independent 4-H projects and their record books were clothing, textiles, or food-related, my family mantra was, "If it's not done right, it's not worth doing." This message simultaneously reinforced the importance of technical *how to* skills.

Pursuing a FCS education degree was a somewhat unconscious decision because my early experiences informed my desire to pursue a career aligned with my understanding of the profession's ideals: a focus on family and life skills development. As a result, questions that penetrated my thinking and much of my undergraduate coursework were technical.

- What is the most efficient way to organize a curriculum?
- What scientific principles should students know and be able to demonstrate?
- How can I engage learners through experiential learning?

As I developed my identity of what it meant to *be* a FCS professional, my interpretation was that my role was to be an expert who helps individuals by sharing *how to* knowledge through lectures, worksheets, tests, and engagement activities. A series of disorienting dilemmas in my professional work and graduate education created discomforts requiring a critical reflection of my initial perspective. These dilemmas are described in the subsequent four themes.

Constructivism: Lessons in Meaning-Making

After finishing my undergraduate degree, I worked for 12 years as director of the *Take Charge Today* (TCT) program (The University of Arizona, n.d.) to design a ready-to-teach personal finance curriculum and conduct professional development for educators using the program. The early version of the curriculum was a technically focused sequence of financial principles reinforced by knowledge-based games, worksheets, and multiple-choice exams. In time, in partnership with innovative classroom educators, industry leaders, and researchers, we began asking a series of disorienting questions, including:

- How can a curriculum transform behaviors? Example: Knowing how to create a spending plan does not mean an individual uses one, or knowing credit card terminology does not mean responsible credit use.
- With limited time, what content and skills matter most? Why?
- What are learners' attitudes and beliefs about money?
- How can topics be relevant to a student's present life when they may not directly manage money? How can the content relate to their future life when the financial marketplace is rapidly evolving?

While navigating these questions, I began a master's program grounded in constructivist Learning Theory with an emphasis on the development of content area literacy skills. Constructivism posits that powerful learning experiences come when learners construct understanding and meaning by actively integrating new information with what they already know through experience and discourse (Williams, 1999). Adopting a more constructivist philosophy of education while working collaboratively with educators to examine interpretive and critical questions prompted a shift in the TCT curriculum to be more student-led, emphasizing meaning-making while using instructional approaches such as case studies, role plays, and authentic assessments.

Developing Cultural Humility and Reflexivity

During my master's and doctoral education experiences, my ability to relate to the lived experiences of others was by students' peers, mentors, and colleagues with diverse backgrounds. Simultaneously, exposure to the meaning and principles of social justice challenged my thoughts about the purpose of education. New questions began emerging:

- What is the purpose of education?
- What are my blind spots and biases?

- What are the consequences of my decisions and actions?
- What social forces brought about different experiences, beliefs, and values?

Shame and confusion accompanied these disorienting dilemmas as I knew I wanted to grow, learn, and make changes but had no idea where to begin. My initial course of action was to find a quick, comfortable fix. I recall asking instructors to "just tell me what strategies to use." While instructional approaches exist to create a more culturally sensitive and inclusive environment, I did not fully comprehend my power and need to become self-aware of my biases.

My transformative shift was facilitated by discovering the role of reflective and reflexive thinking in connection with a PhD seminar course and colleague mentorship. Reflection involves examining what we think happened on any occasion and how we think others perceived the event (Bolton, 2013). When we reflect, we can fall into the trap of allowing uncritical stories to become safe and self-affirming accounts of an experience that may not recognize the role of power or our impact on others (Yan & Wong, 2005).

On the other hand, reflexivity involves finding strategies to question our attitudes, thought processes, values, assumptions, prejudices, and habitual actions to understand our complex roles in relation to others (Bolton, 2013). When we adopt reflexive thinking patterns, we develop our ability to act with cultural humility, "the ability to maintain an interpersonal stance that is other-oriented in relation to aspects of cultural identity that are most important to the person" (Hook et al., 2013, p. 2). By being reflexive, we shift our focus from knowing to a disposition of critically informed curiosity that is okay with uncertainty and embraces a lifelong commitment to developing self-awareness.

Philosophy: Linking Mission + Practice + Knowledge

I was exposed to foundational critical science readings of the profession, including *Home Economics: A Definition* (1979), *What is Home Economics Education?* (1980), Marjorie Brown's *American Home Economics Commemorative Lecture* (1984) and *Toward a Critical Science Approach Yearbook* (Johnson & Fedje, 1999) for the first time in my doctoral program. These readings, coupled with discussions among colleagues, fostered several disorienting dilemma questions that challenged my entire paradigm about what it means to be a FCS professional:

- What social forces influenced critical science historically and presently?
- Why did I not know about these readings? What other viewpoints do professionals have?
- Is the critical science approach realistic in practice?
- What are my ethical responsibilities to the FCS mission? To individuals and families?
- What if others knew about and adopted this description of the profession's purpose?

While I was surprised by the core principles of critical science and how they challenged my assumptions about the profession's work, the philosophy resonated deeply. Learning about the history of FCS was important in navigating my disorientation as it cultivated an understanding of the social structures and historical foundations that created and sustained the heritage of the technical science profession while providing a solid rationale for why a change was necessary

given societal conditions. By conceptually and critically analyzing how each word in the FCS mission provided the foundation of an interconnected system, I was able to link my purpose (the mission) to content (knowledge) to my role as an educator (practice) (Kieren et al., 1984).

Theory to Practice

In a practical science, practitioners must have the ability to address problems by connecting theory (knowledge) and practice (action) using a system of action conceptual framework (Brown & Paolucci, 1979). Considering the roles of theory and practice also prompted several disorienting dilemma questions as a practitioner and teacher educator, including:

- What is the aim of each system of action (technical, communicative, and emancipatory) in fulfilling the FCS mission?
- What theories should be foundational to thinking and practice in our profession?
- What would happen if educators chose *X* instructional approach?

My initial understanding of the systems of action was rudimentary as I focused on asking questions to explore each type of action. My confusion partly resulted from finding the terminology complex and not consistently used in scholarship. The table, *Addressing Problems Effectively Using Critical Science* (Vincenti, 2002), helped me to visually comprehend the language used to articulate how theory influenced the inquiry and questions asked for each type of action. Each system is related to one another but serves a unique purpose when addressing a complex problem.

Visualizing the systems as a Venn diagram, where all systems were necessary, but their prevalence varies depending on the type of problem, was an essential layer of understanding to integrate multiple theories into practice (McGregor, 2014). As a practitioner, I realized I was not abandoning my professional heritage as a technical science by adopting a critical science paradigm. Instead, the systems of action provide me with the thinking and practice tools to enhance my abilities to support meaning-making and social change to enhance the human condition.

Shifting my definition of an effective FCS practitioner from a technical expert to a facilitator was empowering. Among the numerous specialization areas within FCS, I knew I would never be an expert in everything from foods and nutrition to textiles to child development. I often felt stuck, and developing awareness that this way of thinking does not value the complexity of human life or learners' expertise (Brown, 1984) was transformative in my ability to address this dilemma.

By embracing a more normative theoretical approach (i.e. what *should* I do?), I began to value how discourse and the practical reasoning process support the development of autonomy and responsibility among individuals as they rationally formulated and examined knowledge about “what to do” (Brown & Paolucci, 1979). By shifting my perspective from expert to facilitator, I still use technical knowledge while also embedding interpretive and critical knowledge as those I work with discover what is best for them when addressing a practical problem.

Framing the focus of my work to identify practical perennial problems impacting the home and family by using practical reasoning was also foundational to my transformative shift.

However, it was not until my understanding of Brown and Paolucci's (1979) meaning of what a *perennial practical problem* is grew that I embraced the approach.

To illustrate, the word, *problem*, is not negative, implying that something is wrong or there is a sign of weakness. Instead, linguistically, the word problem means "a difficult question for thought or inquiry" (Brown, 1976, p. 14). *Practical* does not mean ordinary or how to make life easier (McGregor, 2014). Instead, Brown and Paolucci (1979) built upon a Greek definition of practical to mean "reasoned action" (p. 24).

Simultaneously, while learning about practical problems, I was exposed to the family strengths perspective, which posits all people should be empowered to use their strengths and resources as they develop the competencies needed to address their problems (Hammond & Zimmerman, n.d.). When a strengths-based perspective is used to articulate practical problems, it guides the "content that develops from the questions" (Smith, 2004, p. 50) to emphasize the empowerment of individuals and families (J.M. Vaterlaus, personal communication, June 2022).

Implications

This autoethnography aims to make a professional contribution that may help FCS educators make sense of their experiences and work to support pre-professionals in developing their identity in what it means to be a FCS professional (Keles, 2022). Four possible suggestions for FCS educators related to this research follow, along with strategies to embed experiences that support a paradigm shift to critical science among present and future FCS educators:

Facilitate an Emergent and Personal Journey that Develops Reflexive Thinking Practices

Vincenti and Smith (2004) identified critical dispositions of critical science, including independence of mind, open-mindedness, commitment to the process and consequences of reason, and respect for others. These qualities of mind and character are not an endpoint but a journey that requires an ongoing willingness to be reflexive. Embracing critical science is an ongoing growth process as individuals adjust to ever-changing personal and societal contexts (Philal et al., 1999). To encourage critically informed curiosity as a FCS educator, I must model practices that create classroom climates that encourage perspective-taking dialogue using varied discussion techniques. A strategy for encouraging reflexive question-asking and cultural humility has been using literature circles to read and explore diverse texts.

Create Integrated Experiences with the Critical Science Conceptual Frameworks Throughout a Program to Facilitate Mission, Knowledge, and Practice Connections

Exposure to critical science scholarship as an undergraduate student is essential to provide a conceptual framework for meaning making. The exposure may be scaffolded with readings such as the *Toward a Critical Science Yearbook* (Johnson & Fedje, 1999). When integrated with a critical analysis of the history of FCS, learners develop the foundation to understand why critical science evolved as they potentially navigate a transformative change to utilize the technical system of action while simultaneously embedding the communicative and emancipatory systems. In addition, developing and continually revising the philosophy of teaching statements provides a meaningful reflective opportunity for learners to examine the connection between beliefs, values, and practice (McGregor, 2022b).

Embrace and Embed Theory Consistently Throughout Courses

When I first explored the critical science paradigm, I began to think more deeply about the *what* and the *why* of practice by using multiple types of knowledge from different disciplines to explore complex problems. The FCS Body of Knowledge identifies the integrative concepts of life course development and ecosystem theories as foundational to practice (Nickols et al., 2009). In addition, applying theories including constructivism, the theory of communicative action, normative theory, and family strengths provide a foundation for the thinking processes necessary to adopt a critical science paradigm.

Apply the Practical Reasoning Framework to Practical Problems in Multiple Life Roles

Practical reasoning is an intellectual process for systematically addressing complex, ethical human problems using reasoned thought, judgment, and action (Hultgren & Wilkosz, 1986). As critical science's central critical thinking process, developing reasoning skills requires ongoing practice. In addition to embedding practical reasoning into content coursework to address a practical problem, applying the framework to curriculum development to define course content and prioritize teaching-learning processes that support skill development supports learners in conceptualizing critical science in practice.

Conclusion

My transformative shift to embrace the critical science paradigm informs my value judgment of what it means to be a FCS professional in my thinking and practice. While recognizing that my paradigm has shifted, the process is emergent. Each day, as I interact with learners in the classes I facilitate, my colleagues, and related literature, my understanding of critical science evolves. Even as a novice myself, learning alongside future FCS professionals, I am optimistic about the passion demonstrated by my learners as they construct their definition of what it means to *be* a FCS professional while examining how the mission of our profession informs their thinking and practice as they enhance the human condition.

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About the Author

Nicole C. Wanago is an assistant professor in the College of Education, Health and Human Development Department of Human Development and Community Health at Montana State University in Bozeman, Montana.

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