

# Using Reflection to Identify Dissonance, Consonance, and Interest in Teaching

## Comparing Definitions and Stories to Resolve Conflict

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**Abstract**—This work-in-progress paper investigates how interest in teaching develops. Through a reflective process prompted by interview questions, study participants define teaching and share narratives about their teaching and learning experiences. By comparing participants' cognitive constructs of teaching with their descriptions of teaching as an action, we identify two emergent discourses: consonant discourses, in which theoretical and practical models of teaching are aligned, and dissonant discourses, in which definitions and actions are in tension with each other. Preliminary analyses indicate a connection between an observed interest in teaching and consonance, as well as between reflection and development of consonance.

**Keywords**—*Reflective Practices; Dissonance; Personal Definition of Teaching; Teacher Motivation; Recruitment of STEM Teachers*

### I. INTRODUCTION

For the past two decades the United States has been suffering from a shortage of teachers. Most states have identified one or more STEM disciplines among those with teacher scarcity for the 2015-16 school year [1]. Despite calls to action, national initiatives, and insights into teacher training, the problem persists [2-5]. Literature demonstrates that the dearth of qualified teachers contributes to students' poor performance on standardized tests, increased inequality within the national education system, and a shortage in the STEM workforce, among other undesirable social outcomes [6-8].

To understand this issue, scholars have examined teacher recruitment from an institutional organization perspective and on a school-by-school basis [9-10]. While these efforts have provided insights about increasing teacher persistence and retention, they have not shown how teachers may be recruited in the first place. Recent literature has begun to retrospectively classify motivation among in-service and pre-service teachers. Some studies show that realistic expectations of possible future selves in academic fields can aid in the decision to pursue academic careers [11-13]. This study seeks to complement the existing literature by investigating the discourses of individuals who utilize teaching skills in other professional roles and those who unexpectedly find themselves in teaching roles. Understanding these alternative paths to teaching may allow us to more fully characterize potential pathways to becoming a

teacher, and with inclusion of the more traditionally studied pre- and in-service teaching population, help us to understand how initial interest in teaching is developed.

In prior work we have identified Celadon College as an institution that supports an unexpected level of teacher development among its students. Celadon graduates, despite receiving engineering degrees, enter teaching or teaching-related careers at twice the rate of the national average for engineering graduates. This participation in teaching is at least in part due to the academic culture of the college [14-15]. This work in progress paper seeks to elucidate how that apparent increased interest forms.

### II. METHODS

Our study population consisted of students and alumni of Celadon College, a small private undergraduate engineering institution in the northeast United States. This study site has historically maintained its female to male student ratio at roughly 50/50, based on college records of legal sex. The college was created with the goal of revolutionizing engineering education; as such, its curriculum contains a range of pedagogies, including project-based, integrated, and team-oriented.

Phase I of this study included data collection and analysis of responses to a survey sent to Celadon students and alumni: 827 people in total, with a 1/3 students/alumni ratio and a 45/55 female/male ratio. The response rate to the initial survey was nearly identical to the population demographics [14].

Phase II of the study included fourteen semi-structured, open-ended interviews. The interview protocol developed for this Phase addresses constructs identified in the initial survey responses, such as pedagogical awareness and development of interest in teaching vis-a-vis institutional academic cultures. To ensure a variety of perspectives, interview participants were chosen using maximum-variation purposive sampling [16]. For this work-in-progress paper, we considered interviews with ten participants, 6 women and 4 men, who represent diverse graduating classes and involvement in post-Celadon teaching activities. All names presented, including the name of the college, are pseudonyms.

For this Phase of the study, we used a grounded theory approach, which allows formulation of hypotheses and identification of emerging theories from observed phenomena [17, 18]. *In vivo* coding was used to capture the interviewee language and open coding permitted the identification of new phenomena. Repeated coding and categorization, supported by analytical memos and code co-occurrence assessments, were used to capture emergent themes [19]. Validity and reliability are established by checking coding schemas among the four coders and multiple in-depth discussions with fellow researchers.

### III. RESULTS AND DISCUSSION

Our interview protocol invited participants to share their notions of what teaching means to them and to relate stories of their teaching experiences. This permitted categorization of each definition of teaching as an *expression* and each teaching experience as an *enactment*.

Using these two categories as the drivers of our analysis, we identified two emergent discourse types, *consonant* and *dissonant*. *Consonant* discourses were defined as those where an enactment and an expression share common codes; *dissonant* discourses, on the other hand, were defined as those where an expression and an enactment either did not share common codes or shared instances of codes with different or conflicting values (e.g., teacher responsiveness vs. absence of teacher responsiveness). We identified three types of emergent dissonance: *contradiction*, *omission*, and *lack of evidence*. As each participant's narrative evolved throughout the course of the interview, we considered expressions and enactments that are representative of each participant's repeated ideas within an interview. The themes of dissonance and consonance as they emerge are described in the sections below and a conceptual diagram is provided in Figure I.

Of note is that dissonance and consonance in this context are emergent themes and cannot necessarily be associated with similar terminology in cognitive dissonance theory [20-22]. Likewise, the enactment and expression categories defined in this work are emergent although they do have similar characteristics to existing terms in teacher identity literature.

In this paper we outline the emergent themes of consonance and dissonance and explore their possible sources and development. We maintain that dissonance, while originally implicit or even unknown to the participants, may be revealed through the reflective process of the interview, and that this reflection may be a method of facilitating consonance.

#### A. Consonance

Central to our emergent theoretical framework is the theme of consonance. Five participants' narratives contain consonant discourses. Some participants develop such discourses through reflective processes in the course of the interview, while others maintain consonant discourses throughout.

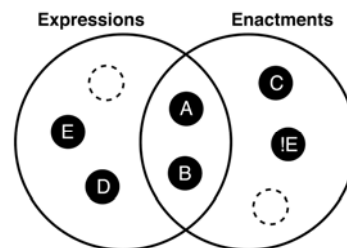


FIGURE I: The relationships between expression and enactment categories. Each dark circle represents a single quote or part of a quote containing a code or codes corresponding to either the expression or enactment category or both. The area where two circles overlap contains quotes representing *consonant* discourses. Dark circles that are placed in the non-overlapping area correspond to quotes or quote parts that contain *dissonant* discourses. For instance, a quote containing code C is categorized purely as an enactment, which is an example of a *dissonance by omission*. A quote or quote part containing code D, on the other hand, is categorized purely as an expression, which is an example of *dissonance by lack of evidence*. The presence of code E in one category and !E, a different or logically conflicting code, in the other category defines is an example of *dissonance by contradiction*.

For example, Karen, a Celadon alumna who has been teaching middle school science for several years, develops a consonant narrative over the course of the interview. As she reflects on both her experiences and values, Karen continually revises her initial definition of teaching as “the passing of knowledge from one person to another.” For example, mid-interview she emphasizes the importance of hands-on learning:

*doing is learning...I think the kids really learn best by doing, and I think that science really allows them to... experience it for themselves. - Karen*

Karen's language here echoes the language of five other participants who also want to allow their students to “discover” knowledge on their own or “experience” knowledge to learn. Karen also describes valuing passion and excitement in teaching:

*you have to love what you're teaching ... to be a good teacher, and... if you were getting that sense of passion across, it's the best...part about teaching. - Karen*

In her enactment examples, Karen displays passion for teaching and describes fun, hands-on experiences, such as taking her students to an amusement park to learn about physics. Later in the interview, she says that the moments she feels most like a teacher are those when students “come back to tell you something they've figured out on their own, or something they... got excited about from your class.” In one story, Karen encourages a student curious about galaxies to ask questions and research the topic independently. When the student comes back after having explored the topic on her own, she displays considerable excitement for astronomy and related science. Inspiring this kind of passion and desire to learn in her students outside of the classroom is what Karen believes teaching is all about. Karen's narrative is an example of consonant discourse.

### B. Dissonance by Omission

In three participants' discourses, expressions seem to lack many of the codes related to enactments. We define this type of dissonance as *dissonance by omission*. In this type of discourse, participants do not articulate values shown to guide them during their teaching practice.

For example, when asked to define teaching, Grace, a Celadon alumna who subsequently attended medical school, gives a very general answer that teaching is "transmitting knowledge in some way to someone else." Grace subscribes to the transmission model of teaching in her expression. However, over the course of the interview, Grace brings up other aspects of teaching in the context of her enactments, suggesting a more nuanced view of teaching than implied by her initial definition. For example, in the context of teaching graduate students, Grace discusses how she would "lean first towards people figuring things out for themselves," although she never expresses why she takes this action. When later asked what it means to be a teacher, Grace focuses her answer around the importance of responsiveness and,

*being able to gauge your audience... and teach in the way that is going to maximize [students'] learning with the constraints that you have. - Grace*

Grace's narrative is an example of dissonance by omission in that the values of responsiveness, ability to gauge the audience and "leaning" towards independent learners are not included in her definition of teaching, i.e., her enactments are not explicitly reflected in her expressions. In other words, Grace's "practice knowledge" may have developed in isolation from her cognitive models of teaching and learning.

### C. Dissonance by Lack of Evidence

Two participants' discourses exemplify *dissonance by lack of evidence*, in which expressions include codes which are absent from their enactment descriptions. Dissonance by lack of evidence is different from dissonance by omission in that it contains no evidence that the values expressed are enacted.

Greg demonstrates dissonance by lack of evidence throughout his entire interview. When describing teaching, he uses such words as "intrinsic motivation" and "spiral learning." His enactment experience, however, is limited: in one instance, he teaches his niece violin by googling instructions first; in another, he helps people pass the US citizenship test by giving a few history lessons. In neither case are the ideas expressed in his definition of teaching supported by evidence from his teaching practice. When asked how he has such a robust vocabulary around teaching, Greg admits:

*I have picked up some words over time, but I don't know that I'm using them precisely, in the way that they're described in the literature. I've heard these concepts mostly from conversations with people at [Celadon], but I had not, you know, sat around exposing myself to the actual meaning. - Greg*

Like Greg, most participants discuss how Celadon's emphasis on re-thinking education was influential in the development of their teaching models. Despite having taken part in many conversations, however, Greg admits that he does not fully understand the education terms he picked up during his time at Celadon and that he has not verified these concepts for himself.

### D. Dissonance by Contradiction

*Dissonance by contradiction* occurs when a participant's expressions conflict in some way with narratives of their enactments; this discourse is identified in four of ten interviews. For example, when Ellie, an alumna working as an engineer in a corporate office, is asked to share how she defines teaching, she responds that teaching is "the transference of knowledge from one body to another." She then adds,

*I really like to know who needs the teaching, who's doing the learning... in order to understand how this knowledge should be transferred. - Ellie*

Here Ellie implies the importance of learning about individual learners and adapting to their needs and learning styles. Such *teacher responsiveness* is identified in the discourses of several other participants, such as Grace's.

Later in the interview, however, Ellie shares her experience of teaching two coworkers about resources at their company. Despite her professed dedication to responsiveness, she attempts to use identical pedagogical methods with these two coworkers, whom she identifies as having drastically different learning styles. Despite seeing that one of her colleagues is not learning, Ellie refuses to change her teaching practices, shifting the responsibility for learning entirely towards her coworker:

*I was not successful at teaching that, because she just had absolutely no interest whatsoever in learning...I felt frustrated with myself as a teacher for not being able to teach my bitch of a co-worker, and now I feel that...it wasn't necessarily my fault. - Ellie*

Ellie expresses an instruction model in which the teacher adapts to students' needs, yet enacts non-adaptive teaching methods. This conflict of theory and practice is an example of a dissonance by contradiction discourse.

### E. Reaching Consonance Through Reflection

Though Karen, the middle school science teacher, uses many consonant expressions and enactments, she struggles throughout the interview to identify what teaching really means to her. She describes her practice, yet she finds it difficult to harmonize it with her evolving cognitive model of teaching. Like many participants, her discourse demonstrates elements of both consonance and dissonance.

Several weeks after the interview, Karen contacted the interviewer and asked to meet for lunch. Over the course of their discussion, Karen revealed that the interview has been on her mind for those past weeks, that she has been doing a lot of "soul searching," and that she is reconsidering her career path.

Looking back, she is dissatisfied with her answers to the interview questions relevant to expression:

*I felt like I didn't give it enough thought or feeling. It disappointed me that I, as a teacher, hadn't had a good reason to teach. It doesn't make sense and the fact that you asked me that question and I couldn't answer was disappointing.* - Karen

The reflective process of the interview leads Karen to verbalize for the first time what teaching may mean to her, and, as Karen looks back on that experience, she finds her answers dissatisfying. Her reflection on the interview helps her recognize dissonance between how a good teacher should be able to explain their teaching practice and what she had been able to articulate. Karen chooses to resolve this dissonance by switching into an educational technology design career, which she now hopes will allow her to think more broadly about education and what teaching may mean to her.

#### IV. CONCLUSIONS AND FUTURE WORK

##### A. Sources of Dissonance

Our analyses of dissonant discourses suggest that dissonance may be related to the ways in which participants develop their cognitive models of teaching vis-à-vis their experiential positioning on teaching. Greg, whose discourse represents dissonance by lack of evidence, has acquired vocabulary from Celadon's educational dialogue about teaching, but has never put it into practice despite many opportunities to do so, even while at Celadon. Conversely, Grace, whose discourse is indicative of dissonance by omission, goes about teaching in the clinic without "reflecting-in-practice" [24], which contributes to development of enactments but not expressions. As we continue to analyze the remaining interviews, we expect to refine our understanding of dissonant discourses.

##### B. Reflection, Consonance and Interest

The data suggest an emergent link between reflection and the resolution of dissonance. Though the dissonant discourses in these interviews may or may not be apparent to participants, when they have the opportunity to actively reflect upon and identify their own dissonance, they may be able to take action toward resolving it. Karen's story is an example of an apparent scarcity of reflection-in-practice that is necessary for practitioners' professional development [24]. It is clear that reflecting early on may have allowed Karen to identify her sources of dissonance and take steps to resolve them much earlier in her career.

Reflective opportunities allowing for recognition of dissonance and consonance can also allow for identification of interest in pursuing a career. We observe a trend that individuals with consonant discourses often express higher levels of interest in teaching. In fact, in almost all cases, participants with consonant discourses were already in a

teaching position or were considering entering a teaching career. This link between consonant discourses and interest in teaching is only now emerging as a new theme, which we will investigate further.

The implications here are not necessarily that people who are consonant in their discourses of teaching may be strong candidates for professional teachers. Rather, we postulate that reflection on teaching and participation in teaching practice may assist in developing a more consonant understanding of one's actions and, as a result, lead to more thoughtful decisions about pursuing and persisting in teaching roles. Understanding the relationships among reflection, consonance and interest will be important in our future work, which, in turn, may allow development of new strategies for teacher recruitment.

##### C. Consonance and Constructivism

A link between consonant discourses and the constructivist model of education is emerging in this preliminary work. Across our dataset, it appears that participants with consonant discourses describe responsiveness and a constructivist model of teaching at the core of their understanding and practice of teaching [25-26]. One possible explanation of this phenomenon is Celadon's emphasis on self-direction and project-based learning in context, which exposes every participant to constructivist pedagogies, and likely contributes to their understanding of education. Further research into this area may allow for better understanding of this emergent phenomenon.

##### D. Final Thoughts

What is presented in this paper is a preliminary work that begins to characterize how and why consonant and dissonant discourses may manifest in individuals' narratives about teaching. The reflective process, as operationalized in our interviews, may serve as a powerful tool in developing consonant discourses, which may, in turn, facilitate the development of further interest in teaching. These hypotheses open a number of future research directions, which begin to overlap with a body of literature on reflection and reflective practices [24, 27-30]. We intend to leverage this direction of study in testing the above hypotheses.

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