INNOVATIVE PEDAGOGICAL MODEL TO TRANSFORM MULTI-DISCIPLINARY FACULTY TEACHING AND LEARNING

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Abstract - The Teaching Academy for Professors (TAP) was first conceptualized in 2015 to improve faculty teaching and student learning. This case study was conducted in Spring Semester of 2019 at a diverse public university in California to improve pedagogy among eight multidisciplinary faculty members. The initial results indicated that after meeting six times in a three-hour seminar with a five-hour kick-off meeting, average knowledge and use of student-centered pedagogical methods increased 73.4% and 53.7% from pre- to post-assessment respectively. Moreover, there was transformation in the participants' thinking about their own thinking, different teaching methods to teach different learners, and community of colleagues to observe one another's teaching.

Keywords - Innovative Pedagogy, Multidisciplinary Faculty Learning, Student-Centered Pedagogy, Teaching Diverse Learners.

I. BACKGROUND

In response to the urgent need to provide an effective, structured learning environment for professors and to improve student learning, the Teaching Academy for Professors (TAP) was conceptualized in 2015. This adaptable program is based on communal approach to teacher learning [1], brain-based research [2], and learning sciences [3]. TAP is a community of professors from multiple disciplines (e.g. English, communication, history, engineering) who engage in a structured semester-long program as follows: 1) Participate in an intensive Summer or Winter Institute to learn foundations of teaching and learning and student-centered pedagogical approaches and frameworks; 2) Participate in on-going tri-weekly seminars during the semester with a discussion on teaching observations and focal topics on learning principles; 3) Regularly observe peers' teaching in a multidisciplinary-based triad with post-observation discussions; and 4) Analyze faculty and student performance data to examine the effectiveness of instruction [4]. Special characteristics of TAP include the following. First, it encourages diversity of disciplines, years of experience in teaching, rank, race/ethnicity, gender, age, etc. The diversity each faculty member brings to the table in these areas enriches the discussion on pedagogy from multiple perspectives, mirroring diverse student body on the campus and in the region. Furthermore, observing faculty from other disciplines allows them to empathize with the learning experience of novice learners who may struggle with difficult concepts. Another special characteristic is the emphasis on putting theory into practice. Since many faculty with Ph.D.s in academic content areas do not have explicit pedagogical preparation for teaching, TAP provides a structured learning environment for them to acquire theories and strategies for classroom teaching [5]. Finally, what differentiates TAP from other models is the application of a modified version of lesson study [6]. Faculty participants observe one another's teaching and engage in post-observation discussion on teaching. They do not merely talk about teaching as a hypothetical topic; rather, they actually go into classrooms to observe each other without any judgmental evaluations or punitive consequences. The focus is on formative feedback on identified areas of general pedagogy such as student engagement and formative assessment. This represents a paradigm shift from the focus on individualistic, performance-based evaluation associated with tenure and promotion to a process of teaching and learning that is constructive and nurturing.

This paper discusses a case study of eight multidisciplinary faculty members who participated in the Introductory TAP (i-TAP) during the Spring Semester of 2019, examining the transformation in their learning and thinking about teaching and student learning.

II. METHODOLOGY

A. Setting

This case study was conducted in a diverse public university in California with the total student enrollment over 25,000. White, Hispanic, Asian/Pacific Islander, and Black students comprise 16%, 45%, 21%, and 3.4% respectively of the entire campus student population, according to the 2018 statistics. The university's focus is on STEM disciplines as a polytechnic university, although Humanities and Social Sciences, as well as other distinct majors set the university apart as a pragmatic "learn-by-doing" institution. The number of faculty exceeds 1,200. Due to the university-wide academic system change, the Winter Institute was not offered.

Instead, an intensive five-hour meeting took place during the first week of the semester. This inevitable change in the core curriculum resulted in treating this program as an introductory Teaching Academy for Professors (i-TAP).

B. Participants

Eight faculty members from English, Communication, History, Foreign Language, Engineering (two members), Animal Science, and Architecture participated in the semester-long Academy in Spring Semester of 2019. The participants represented diverse racial/ethnic groups, including White, Hispanic, and Asians with two males and six females. Of the eight, three were lecturers (non-tenure track) and five were tenure-track faculty. Their teaching experience ranged from one to 16 years.

C. Design

Case study method was used for this study. As Stake [7] stated, the aim of using case study is to "encapsulate complex meanings into a finite report but to describe the case in sufficient descriptive narrative so that reader can experience these happenings vicariously and draw their own conclusions" (p.450). The unit of analysis for this study was the community of eight participants.

The pre- and post-surveys, multiple formal and informal conversations with the eight participants, and observations of their teaching focused on the research question: As a result of going through the TAP, how did the faculty participants transform their thinking about teaching and students?

Using thematic analysis from the participants' voices and responses, salient themes were identified and triangulated by the observations.

III. RESULTS

A. Changes in Faculty Knowledge of Teaching and Learning

Despite the fact that the participants' learning was adversely affected by the absence of the intensive Winter Institute, significant learning took place among the faculty participants. As shown in Figure 1, when asked to rate their knowledge of student-centered pedagogical approaches (e.g. group discussions, metacognitive strategies), student-centered assessment (e.g. formative assessment such as thumbs up and down), scaffolding for diverse learners (e.g. graphic organizers), and multi-modalities of learning (e.g. visual, tactile, kinesthetic learning activities), there were 42.6%, 93.1%, 81.5%, and 93.1% increases respectively from pre- to post i-TAP surveys. The pre- and post-surveys were conducted on the first and last day of the i-TAP respectively. Significantly, the results showed an average increase of 73.4% across the four survey items pertaining to knowledge of teaching and learning stated above. In many instances, the participants also implemented these approaches in their teaching, as the next section shows.

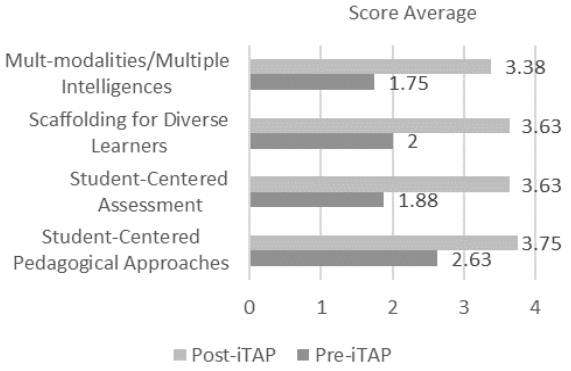


Fig. 1. Faculty Pre & Post i-TAP Learning Outcomes

B. Changes in Faculty Pedagogical Approaches

Another significant growth lies in the participants' application of student-centered pedagogical approaches of their own choices in their courses in Spring 2019. Student-centered instruction [8] is defined as "an instructional approach in which students influence the content, activities, materials, and pace of learning" (p. 338). Before the i-TAP, only zero to two participants reported using student-centered pedagogical approaches such as group discussions, graphic organizers, peer feedback, student reflections, metacognitive strategies, chunk & chew (breaking down content into small pieces with processing time), communal/group notes, and formative assessment (see Table 1). However, at the end of the program, the use of the student-centered pedagogical approaches increased by 53.7% from pre- to post-assessment. Many of these approaches were documented during the observations and discussions during the meetings and conversations.

Methods/Strategies	Pre-i-TAP	Post-i-TAP
1. Graphic Organizers	2	7
2. Peer Feedback	2	5
3. Student Reflections	2	5
4. Metacognitive Strategies	0	4
5. Chunk and Chew	0	6
6. Communal/group notes	0	4
7. Formative Assessment	2	6

Table I. Changes in the Number of Fellows Using Student-centered Pedagogical Approaches

C. Final Faculty Reflections

The following excerpts from the participants' final reflections show faculty learning and growth. When asked what aspects of the i-TAP have had the most impact on them and their teaching, one participant stated, "I used to start teaching from what is the definition of the term and continue going further.

Now, I try to start with examples/experiences that students can relate to before introducing the theory." This supports that the faculty member learned and applied student-centered pedagogical framework that puts experience and familiar vocabulary first before presenting a lecture filled with academic vocabulary [8]. Another participant who voiced cognitive disequilibrium throughout the semester shared her insights on shifts in her role from a teacher to a learner: "Being put into the role of student has changed what I expect of students. I give them more time to process information and more time to ask questions. I also have been reminded that there are many ways to learn and I need to provide a variety of ways for my student, even if those ways are not my first choice or uncomfortable for me." Empathizing with her students as a learner, this faculty member was able to change her teaching to a more student-centered manner to give students more time to process new knowledge and provide multiple ways to learn. A faculty member in Humanities echoed her deep understanding of learning as follows: "The theoretical language like Vygotsky's Sociocultural theory really helped me understand how ideas could yield different methods for teaching, like using prior knowledge to begin a chunk and chew activity. Also understanding that students have different learning habits and trying to be more inclusive of kinesthetic and tactile learners. This necessitated using more multimodality methods like Kahoot, visual aids and videos." She initially struggled with the student-centered pedagogical framework to apply in her discipline. However, when she experienced the "aha" moment to see how she could structure an experience related to identity, the faculty participant was able to make sense of her learning experiences and implement other student-centered methods in her teaching.

Finally, a faculty member in a creative discipline shared his insights regarding his experience in the i-TAP: "The program inspired me to put forth the students into the center of their learning experience and find even more opportunities, within the structure of the syllabus/curriculum, to generate collectivity, enthusiasm, movement and multisensory cognition between students, allowing the instructor to cede space where necessary and/or move into the background." The faculty was able to look at teaching and learning from a spatial perspective, to put students at the center of their learning both physically and metaphorically. These accounts indicate faculty participants' changes in their thinking about pedagogy that puts students at the heart of students' learning experiences.

IV. CONCLUSION

Findings from this study suggest that despite the introductory nature of the Academy without the three-day Winter Institute, the faculty participants still gained knowledge of various student-centered pedagogical approaches, student-centered assessment, scaffolding for diverse learners, and multi-modalities from the tri-weekly seminars, implementation of selected approaches, and observations of peers' teaching. The effectiveness of the i-TAP was reflected in the average increases of 73.4% and 53.7% pertaining to knowledge of teaching and learning and use of student-centered pedagogical methods in their courses respectively. Beyond the numbers, the participants' final reflections documented at the end of the Academy revealed profound transformation in their thinking about teaching and students through the structured program where the faculty learned from observations, seminars, and discussions on the principles of student-centered pedagogy and its framework and methods. In conclusion, while TAP hasn't yet been implemented on a broad scale, based on the emerging quantitative and qualitative data, it is a promising model to improve teaching and learning in multiple disciplines in higher education. It enables professors to break the barrier of teaching in isolation behind closed doors. Colleagues openly observe and give feedback on one another's teaching in a non-threatening environment. Their focus is solely on the process of teaching and learning. Admittedly, there is a place for formal evaluation associated with tenure and promotion in higher education. However, there should also be a place for structured, non-evaluative experiences where the focus is on acquiring and applying pedagogical knowledge and tools to further faculty growth that leads to improved student learning. Perhaps one step toward achieving this goal might be to listen to the authentic voices of higher education professors and meet their needs to successfully teach all students. Systematically addressing faculty needs with even a small investment of time and financial resources holds great promise. Based on the evidence from i-TAP, an innovative pedagogical model such as TAP can result in profound transformation of teaching and learning in higher education.

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