Faculty-Driven Design:
How a Successful Online Core Teaching Certification Was Developed, Implemented, and Revised Over Time

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We developed a teaching certification for higher education faculty to provide participants across North Carolina State University with the pedagogical skills required to excel in their teaching endeavors. The certification has evolved; its current configuration is an online, asynchronous program of study that faculty can complete at their own pace over one year. The Office for Faculty Excellence administers the certification; a Faculty Fellow facilitates the certification, providing support and guidance to the participants in multiple modalities. In this article, we discuss how the certificate was developed, administered, and revised over time, and we conclude with takeaways and practical implementation strategies for establishing and coordinating similar programs at other institutions.

Introduction

Faculty members develop high levels of expertise during their doctoral programs; however, many lack formal training in teaching and learning pedagogy and reflective teaching (Baker et al., 2014; Benito-Capa et al., 2017). This trend forces faculty to rely on the way they were taught as undergraduates as a guidepost for teaching their students: an apprenticeship model that might not include current pedagogical approaches.

Individual faculty members may try to remedy the situation on their own, which requires time and effort to refine their teaching practices and prepare their courses. However, faculty have reported not having time to focus on critical reflection or further development of their teaching skills once in full-time positions (Calkins & Harris, 2017), a problem that might be com-

pounded by limited access to pedagogical training within their home departments or units. Many universities established centers for teaching and learning (CTLs) to address this issue with teacher preparation and to create better student engagement and learner success (Asimakopoulos et al., 2021). As a result, faculty development programs focusing on the development of teaching skills are common at colleges and universities. In this article, we discuss the evolution of one such program and offer suggestions for developing and implementing a certification program in core teaching skills at other institutions.

Development of the Core Teaching Certification

At North Carolina State University, the Office of Faculty Development (OFD) first offered a certification for faculty in core teaching principles in 2011 with the inaugural Certificate of Reflective Teaching (CRT). A design team consisting of subject matter experts from the College of Education and faculty development specialists from the OFD created the program. The initial design was very loose in its objectives, offering flexible options for faculty to choose what they wanted to learn. The design had three goals informed by the subject matter experts and the university's strategic plan: (1) enhance the success of our students through educational innovation, (2) provide high-impact educational experiences for undergraduates, and (3) lower the barriers between disciplines and departments.

The program had core requirements on three topics: assessment, course design, and student-centered learning environments. The OFD would designate workshops throughout the year that would fulfill these requirements, and faculty would select those that best fit their needs and/or interests. In addition, the OFD required each participant to select and attend two elective workshops in the area of teaching and learning that needed approval from the certificate coordinator. These elective workshops could be internal or external to the university. The program also required participation in one intensive experience within the offerings of the OFD (a reading circle or summer institute) and creation of a final project through which participants demonstrated their growth during the program. Types of final projects could include (but were not limited to) a written reflection, a presentation at a conference on a teaching-related topic, a workshop for the campus community, or a poster presentation at North Carolina State University's Teaching and Learning Symposium. Certificate plans were submitted to the OFD and approved by the certificate coordinator.

The CRT served several purposes. First, it allowed instructors to learn pedagogical skills and information about teaching not necessarily gained during formal training in graduate school. Second, it allowed instructors to gain recognition for their efforts to become more intentional, reflective teachers who incorporate best practices in teaching in higher education. Finally, it allowed faculty members to foster relationships with other faculty members (outside of their home departments) dedicated to improving their teaching. The CRT was open to all faculty, including those in non-tenure track and part-time positions. Registration for the program occurred in August and January of each year, and faculty had up to two years to complete their certificate program.

The certificate coordinator solicited evaluations from all faculty participating in the CRT. Although evaluations were generally positive for the program, participation was very limited, with only 61 faculty completing the program from 2012-2018—unacceptable for a campus with over 2,500 faculty members. In addition, part-time and off-campus faculty could not complete the certification as it required face-to-face components. Evaluations also brought to light vast differences in outcomes for participants. Some found the program greatly beneficial and relevant, while others noted the inability to put what they learned into practice. Assessing knowledge and skill achievements proved difficult for OFD staff because of the different paths faculty chose to complete their certifications.

In addition to inconsistent outcomes, administration of the very flexible program also burdened our staff, who needed to consistently track progress and manage a high dropout rate brought on by the inability to accommodate the varied faculty teaching schedules. A large amount of effort was also devoted to scheduling the required workshops at times when faculty who needed them could attend. In essence, the staff was scheduling and confirming individual development plans for each faculty member and deciding what "counted" for completion and what did not. Ultimately, the OFD staff knew that the CRT was not working as intended and that a different approach was needed.

Development of the Online Version of the Certification

In 2018, development began on a new online teaching certification. The design of the new certification was based on the successes of the CRT but expanded to incorporate new goals. The new program aimed to increase its reach and completion flexibility while increasing the completion rate and

decreasing the time to completion. Based on completion data and program participant feedback, the new Core Teaching Certification (CTC) was redesigned and rebranded to improve the perceived value. The program shifted to a hybrid model to allow faculty to complete requirements face-to-face and/or online. Further, it utilized a learning management system to help with record keeping and with embedding clear learning objectives that incorporated a baseline (core) knowledge base for all participants. This design still included electives but on a much smaller scale. The program also now focused on incremental teaching changes rather than a capstone project.

The CTC had five competencies: reflective teaching, instructional design, assessment of student learning, student-centered teaching, and assessment of teaching (see Figure 1). The selection of these competencies was grounded in the old program's success based on assessment, course design, and creating student-centered learning environments. The new design also reflected a need for skills in designing a course and curriculum in addition to the work of instruction, a need often mentioned by graduates of the former program, the CRT.

To get the program off the ground, we hired a faculty development specialist with skills in designing and developing online learning modules using a learning management system. This person was solely responsible for the initial development of the new certification, including the design of the modules, recording videos and presentations, selecting readings and activities, and designing both formative and summative assessments.

The online modules were developed in Moodle and included a variety of technologies and activities, such as discussion forums where participants could interact, informational and content-related videos, a Flipgrid introduction, registration instructions for all related content, and a syllabus. The Moodle course had sections relating to each essential competency. Faculty participants selected one module from each of the five essential competencies to fulfill the certification requirements. Each online module session had its own Moodle page with activities, multimedia content, and resources. In addition, the OFD offered an online catalog for the modules that semester. The catalog included the topics, but not any specific details about the content for each module.

All activities/resources had activity completion and access restrictions to ensure that faculty participants in this iteration of the CTC moved through the activities/resources sequentially, completing one action to move to the next ones. The first cohort for the CTC in spring 2019 consisted of sixty-eight

faculty members. Already in its first semester, the CTC had more participants than the CRT had graduates.

Figure 1
Core Teaching Certification Competencies
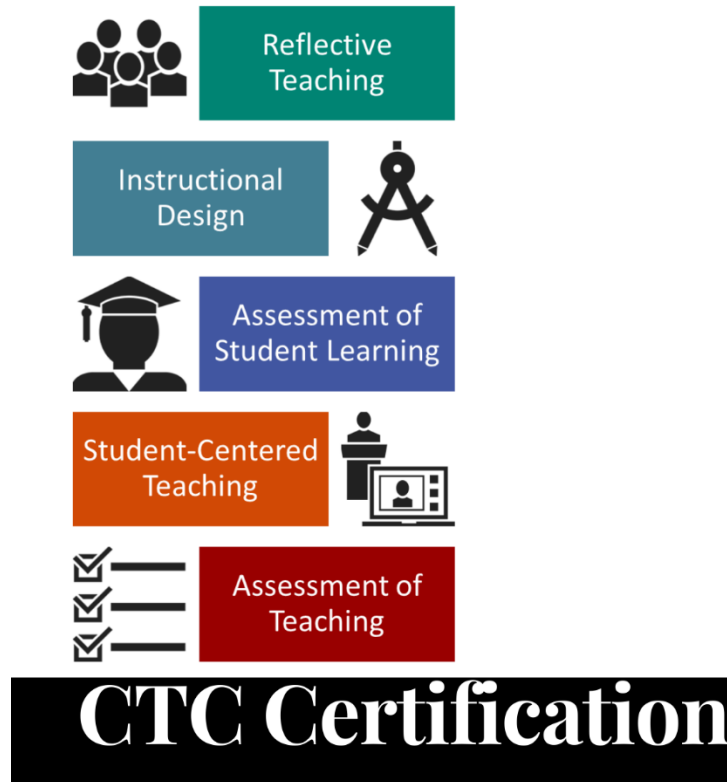
Note: *Faculty Participants must complete reflective activities and one module for each of the five essential competencies.*

Administration of the Revised
Online Version of the Certification

The first iteration of the CTC helped faculty members advance toward becoming scholarly teachers, in part by engaging participants in an online course that participants worked through at their own pace in an asynchronous fashion. This flexibility might have appealed to faculty and helped with

their long-term persistence with the program because they perceived that it did not take too much time and accommodated their schedules (McCourt et al., 2017).

This design of the CTC helped develop teaching skills, but the course structure was problematic based on faculty feedback. In response, we redesigned the certificate with the following changes: registration has been streamlined; all multimedia content is delivered via a single learning management system (LMS) platform; participant learning logs (a continuous document participants would add to as they moved through the course) have been eliminated and replaced with timely assignments built into the LMS; monthly online synchronous sessions have been added; and content has been updated to reflect current (post-pandemic) teaching conditions.

Around the time of the CTC redesign, the OFD merged with North Carolina State University's Office of Faculty Affairs, and the new unit created by this merger, the Office for Faculty Excellence (OFE), became the home of the current CTC.

Overview of the Current CTC

The logistics of running the certificate program became more efficient and clear when we moved away from a rolling enrollment (where participants could sign up for the course at any time) to a standard enrollment period. We opted for a standard fall-semester enrollment with a cohort of participants signing up for the course simultaneously, with one year to complete the course, which helped with organization and communication.

Faculty apply online by the end of August to join the cohort that cycles through the academic year. Recruitment into the program occurs through email announcements, web advertisements, digital newsletters, and announcements throughout the year at various teaching-related events. We estimate that the certification may take 10-14 hours to complete, and participants have the academic year to complete the modules and activities. A digital badge acknowledges successful completion, and graduates receive recognition and a certificate at the Annual North Carolina State University Teaching and Learning Symposium.

The teaching certificate course is still housed on the Moodle LMS. The course, however, is now set up without restrictions so that participants can proceed at their discretion. Within the course, videos are embedded that are short in length (2 minutes to 7 minutes), as well as activities involving participants' using Google documents or LMS quizzes, and forum discussions. Participants asynchronously move through the course.

Facilitation

In addition to these logistical changes, we have changed our facilitation model. Originally a staff member was in charge of the facilitation of the certificate, but following a faculty fellow model (Bringle et al. 2000; Smtih et al., 2020), we currently recruit faculty who have recently completed the certification. This change has removed some of the difficulties with course facilitation since the peer experience removes barriers to communication and enhances the experience for the participants.

We have also added monthly Zoom discussion sessions to help participants explore topics more fully and learn from one another synchronously. Scheduling and hosting the monthly discussions is one of the roles of the facilitator. Other duties of the facilitator include moderating the discussion boards for each module and providing individualized feedback and support as needed.

The course consists of five modules, as indicated above, which include: (1) reflective teaching, (2) instructional design, (3) assessment of student learning, (4) student-centered teaching, and (5) assessment of teaching. Table 1 displays the learning objectives for each module of the certification.

Each module presents a consistent format. First, participants either discuss in a forum format or reflect by answering quiz questions within the LMS. Questions surround what participants know about a topic already, their goals for the module, and reflection on their strengths in the area. The exploration section follows, where participants watch videos, read articles, and engage in activities such as answering reflection questions. Finally, at the end of each module, participants are asked to reflect on what they gained from the module.

The first iteration of the CTC had offered the teaching certificate course in various formats. There was always the Moodle online component, but additional in-person opportunities existed for modules. Participants could choose whether to work through a module asynchronously online or engage in an in-person experience. Often, the demand for the in-person was too low to justify such a workshop; facilitators had to notify participants that their interest could not be accommodated and move them back into the online module. Not only did these shifts foster discouragement in participants who had wanted the face-to-face interaction only to learn it was impossible, but the shifts also made documentation and tracking difficult for OFE staff.

Table 1	
Certification Modules and Objectives	

Module	Objectives
Introduction	● Welcome to the certification ● Review the syllabus
Reflective Teaching	● Explore reflective strategies ● Discuss their pedagogical experiences ● Consider their philosophy of teaching
Instructional Design	● Explore Backwards Design ● Course Design Frameworks ● Bloom's Taxonomy ● Blended and Online Learning ● Flipped Classroom
Assessment of Student Learning	● Explore planning for the 3 types of student interactions ● Explore Instructional Materials, Activities and Assessments
Student-Centered Teaching	● Explore Student-Centered Teaching, ● Discussions & Active Learning Strategies
Assessment of Teaching	● Explore strategies for soliciting feedback ● Explore ways to use feedback in order to inform instruction ● Reflect on their pedagogical practices

As a result, we decided to move everything online (without in-person options) in the redesigned CTC, a move that made expectations clear and increased participant satisfaction. Participants can see their course progress in this format, with completion status boxes filling in automatically as they work through the modules. Additionally, facilitation of the course is more manageable, with participant status easily monitored. Facilitators of the course easily move to the different completed assignments that need assessment. The overall status of each participant is viewed by looking at the LMS "course report" for "requirement status" set for each course activity, which shows each course component and whether the participant has completed it.

After a participant successfully completes all course components, they receive a digital badge.

Easy navigation for course facilitators is important because participants can move at different rates and in different modules, and facilitators must be able to assess and comment appropriately. One module is released monthly, keeping participants progressing and encouraged without causing participants who are moving one module at a time to feel overwhelmed. At the same time, as multiple modules come open, participants who have sporadic active periods can decide where they want to explore and learn first. This philosophical change to allow more flexibility for the participants is possible because each module is now independent of another. The goal was to increase interest in the course overall and improve participant satisfaction. Once all five modules are released, participants can select modules relevant to their needs and interests as desired over the remaining seven months, which has elevated motivation in completing the course.

Another improvement to the course design involved keeping all navigation within the Moodle course itself**.** In the initial CTC, participants would choose among different topics within each module and often had to leave the Moodle site and sign up for a specific workshop through the University's Non-Credit Activity registration system before returning to the Moodle course. Participants had to remember where to pick up the course and what section of their learning log to fill out, a process that became complicated as people navigated between sites.

The learning log had had some great aspects, such as a reflection on the participants' teaching background and philosophy. The log had asked participants useful questions for monitoring learning like "What did you learn?" and "How will you apply module content?" In the current CTC, independent reflection assignments at the end of each module have replaced the long log. The change marks our efforts to break up the long learning log into parts that work well (and to discard the confusing sections). The learning log had also, for instance, asked participants to plan their learning, which was confusing since the content of the modules was not always available to participants when they filled out the log. Additionally, the learning log had asked participants to provide "links to learning artifacts," which confused participants and increased the questions they asked the facilitator. The goal was to showcase work completed in the course; however, the learning was too broad and cumbersome to work effectively for the course. We have reworked these parts of the previous CTC into quiz questions or reflection

summaries embedded in each LMS module, creating clarity, organization, and a better experience for the participants.

The use of microcredentials or badges (McGreal & Olcott Jr., 2022) to mark the completion of each section of the program is another recent addition that has been well received by participants. As each participant completes a module, a badge is awarded that commemorates the milestone. At the end of the program, participants receive a digital badge and a certificate in person. Many participants who have completed the certificate have added their badges to their email signatures, a welcome gesture that shows their pride in receiving this certification.

We have also learned that having a monthly Zoom discussion session with participants is a great way to connect, grow as a cohort, learn from each other, and motivate participants to complete the course. The outreach to just one cohort of participants, rather than everyone who had ever enrolled in the course, has been more effective and targeted to help those people who were active in the course. Participants who have joined these Zoom meetings once a month comment that this is one of the most helpful aspects of the course because they value colleague collaboration and find that the Zoom sessions keep them accountable for their progress.

Program Outcomes and Takeaways

Since we began offering the certification online in 2019, 150 faculty members have registered for it, and 41 (27%) have completed it. Although this might seem like a low completion percentage, we must note that the COVID-19 pandemic has significantly impacted higher education faculty. In our case, although the participants sign up in the fall, faculty largely complete the certification requirements in the spring of each year. The COVID-19 pandemic disrupted their ability to complete the certification in 2020 as most instructors registered for this program had to move their courses online in emergency mode. We consider the number of completed certification courses as a testament to the resilience of our faculty members, who continued to work on their teaching even though they had many other demands on their time (Aebersold et al., 2020; Zakrajsek, 2021).

Studying participant survey feedback upon course completion, we find that participants were satisfied that they gained valuable content helpful for their teaching. From spring 2019 to spring 2021, 39 participants completed the survey. Of these, 97.4% either strongly agreed (n=23) or agreed (n=15) that they "learned result-based approaches to improve their instruction." We

found similar results with the statement that participants "gained a deeper understanding of best practices in higher education pedagogy," with 27 participants strongly agreeing and 11 agreeing with the statement.

We found the same 94.7% positive rankings when looking at more specific individual statements. For example, 19 strongly agreed, and 19 agreed that "my lesson/unit planning has changed as a result of the course." In addition, 18 strongly agreed, and 20 agreed that "my instruction has changed as a result of the course." Finally, 18 strongly agreed, and 20 agreed that "my assessments/assessment strategies have changed as a result of the course."

We found a 100% positive response at either strongly agreeing or agreeing with the following two statements: "The course helped me become a more reflective practitioner" (27 participants strongly agreed), and "I would recommend this course to my colleagues" (26 participants strongly agreed).

Participants selected the backward design/instructional design session as the most helpful to them (n=16), followed by engaging students/active learning strategies (n=10), assessments (n=5), and reflective teaching/metacognition (n=5) sessions. When asked what impact on student learning they have observed as a result of implementing strategies from the course, participants commented that students seemed to be more satisfied and engaged, that students had a better experience, and that the participants were more satisfied with their teaching. Other comments about growing confidence in teaching and improvement in their teaching were common. Finally, several participants commented about improving their feedback and assessment practices. One comment that summarized many of these themes follows: "I feel more comfortable with student feedback and I am more responsive to student needs. I know the direction that I'm trying to go with the class, so it helps with redirecting and providing proper feedback during the course."

In Figure 2, we display the colleges represented by participants who completed the certification between August 2019 and May 2022. Figure 3 shows the relative size of each college as inferred by the number of students. When comparing participation in the CTC by college to the size of the colleges, it can immediately be seen that participation is disproportionate to the size of the colleges. Engineering, which encompasses over 29% of students, only had about 12% participation, while veterinary medicine, which has under 2% of students, represented more than 12% of the CTC's participants. Clearly, some colleges have made a concerted effort to promote the program to their faculty members, which reflects in high rates of participation in the certification. For example, the Wilson College of Textiles, one of the smallest colleges at North Carolina State University at 2.9% of students, represents

4.9% of participants who have completed the certification, which is in line with the college leadership's commitment to the promotion of pedagogical training opportunities. A comparison of Figures 2 and 3 also shows where the largest gains might be made in participation. For example, there is room to increase participation in the CTC in the colleges of Engineering and Management.

Figure 2
**Colleges of the Participants Who Completed
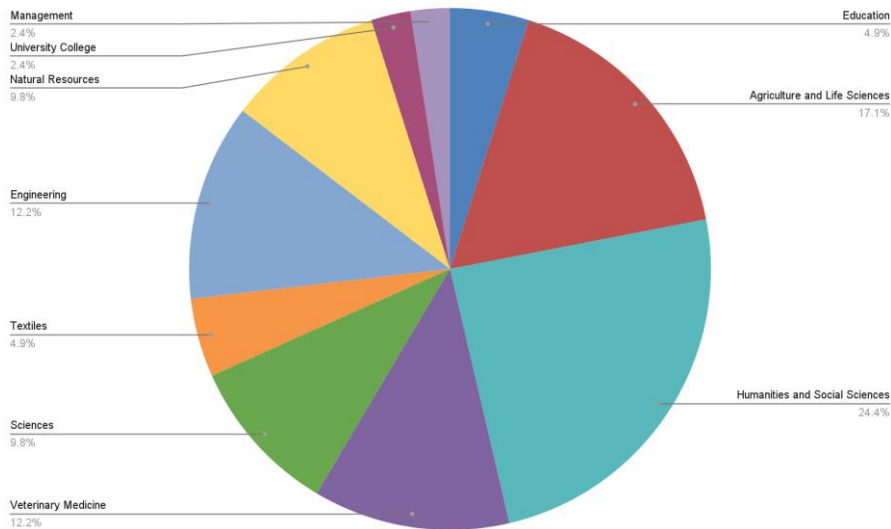the Core Teaching Certification since 2019**

Figure 4 shows the breakdown by rank of the faculty members who have completed the certification since 2019. Most of the participants are early-career faculty, either assistant professors in the tenure track (22%), assistant professors in the professional track (teaching faculty) (19.5%), or lecturers (17.1%). The interest in a pedagogical certification for these faculty members seems logical since faculty at the beginning of their careers might need support and training to make up for any shortcomings in their preparation for teaching. It is encouraging to see that they register and complete the certification in large numbers, most likely at the recommendation of their college leaders or peer mentors.

Figure 3
**Percentage of Students by College
(North Carolina State University, 2021)**
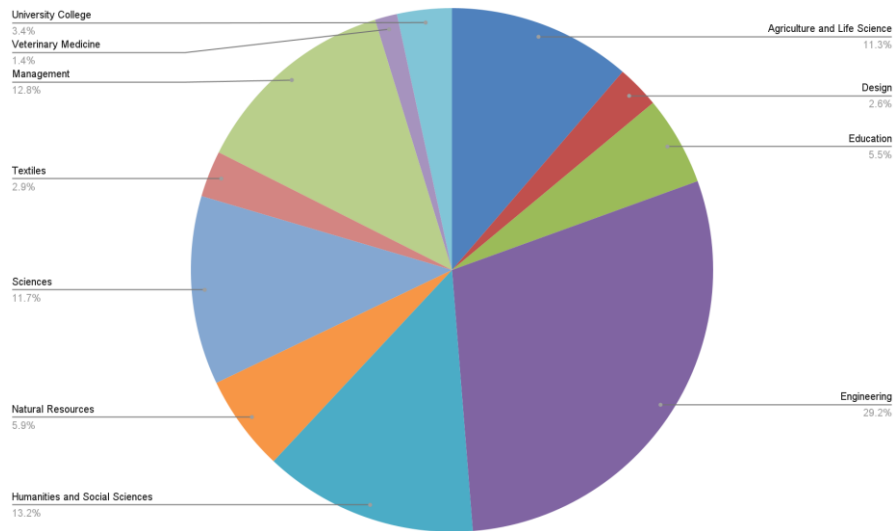
However, mid-career faculty in tenure-track and professional ranks are also represented among those completing the certification, with senior lecturers (9.8%) and associate teaching professors (9.8%) as the next largest groups of faculty represented in the pie chart. This finding is encouraging because it shows that our program attracts faculty beyond early-career stages. Most of our marketing efforts are directed toward early-career instructors, who are in need of an introductory course on teaching skills. However, the unanticipated participation of mid- and late-career faculty suggests that expansion of our marketing efforts might be beneficial.

Participant Outcomes

The OFE celebrates the certification with a certificate and digital badge, which can be seen in faculty offices and email signatures. An in-person celebration of this accomplishment is held annually at the North Carolina State Conference on Faculty Excellence, which replaced the former OFE Teaching

Figure 4
**Faculty Rank of the participants Who Completed
the Core Teaching Certification since 2019**
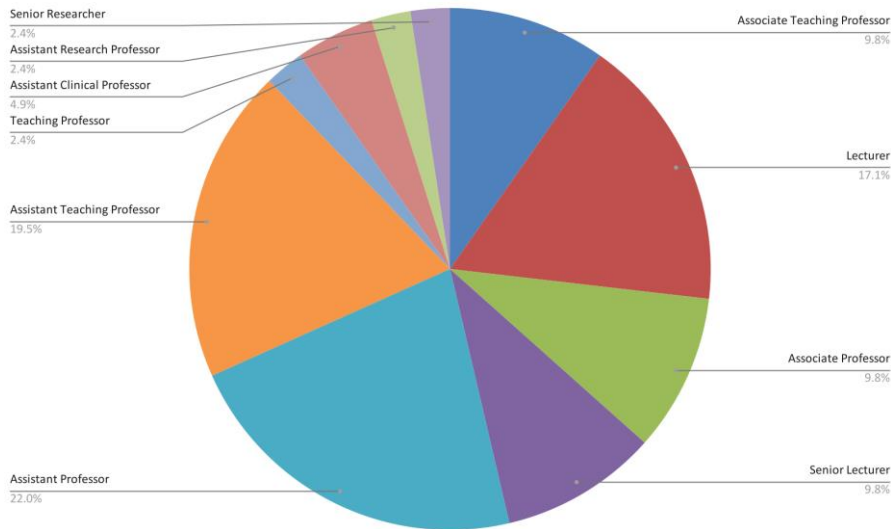
and Learning Symposium. Faculty will also receive accolades and recognition for their efforts when completing their annual faculty activity report and having discussions with their department chair. This accomplishment is used to show scholarship of teaching on dossiers and can be used when candidates apply for promotion and/or tenure.

In addition to the faculty being stakeholders and receiving benefits from this certification program, the administration and students are also stakeholder groups. The students benefit in the classrooms as their professors develop new ideas and teaching pedagogies. Likewise, the administration sees the value in having more accomplished teachers in the classroom helping students in more effective ways to learn material and content.

Practical Implementation Strategies

We would like to highlight here some successful strategies that we have implemented as the CTC evolved:

1. Enrollment should occur at a set time, with a cohort of participants who receive a set period to complete the course (no rolling enrollment). The ideal time for enrollment syncs with the academic calendar—recruitment in the early fall semester and program completion by the middle of the summer. The set time for enrollment helps with organization and communication.
2. An estimation of time for each module completion should be provided so participants can plan accordingly. Ideally, a participant should be able to complete a module within a few hours. A clearly visible estimate of time for each video and activity helps with participant motivation and decreases uncertainty and anxiety.
3. To encourage interest, participants should not be restricted to following modules in a linear format. Participants should be able to select the order in which they complete the modules. An alternative to this is to "open up" one module at a time over the first several months. Once all modules are open, there should not be a sequence restriction. By revealing one module at a time, the course can be streamlined, and participants can be motivated to focus without being overwhelmed with all content at once.
4. For each module, to reduce confusion and increase clarity, options for learning workshops should be embedded within the LMS itself (rather than requiring participants to leave the LMS and have to sign up for workshops elsewhere). Videos pertinent to workshops should be linked in the LMS itself, and all activities should be completed within the LMS. Participants might be confused or discouraged anytime they have to leave the LMS to link to a video or document. Changing any Google documents or Word documents into quiz formats, with participants writing/typing their answers to questions in Word format, is also helpful for clarification and streamlining.
5. Instead of one long, running learning log, separate individual assignments for each module should be created in the form of an LMS quiz with short answers or a Word document. At the end of the course, we recommend a final reflection to tie in all modules.
6. An optional Zoom (or in-person) discussion session should be held once a month to increase connection with participants and to motivate participants to stay on track toward completion.
7. Motivational emails should be sent out to participants, including something of interest related to the course, something related to

teaching in general, or just a friendly note about using a break in the semester to "stay the course."

Implications and Future Work

From participant comments and feedback, we are considering additional ideas for future iterations of the program. Participants suggested the following ideas for topics to add to the content: accessibility, example situations/case studies, different classroom techniques (such as comparing small group learning to large lecture format), soliciting peer feedback, and cooperative learning vs. collaborative learning. Incorporating a recap game or quiz that participants can engage in would be helpful for those who may have taken more time between modules, serving as a refresher for content (and incorporating retrieval practices, which is helpful for learning). In addition, the expansion of marketing efforts to focus on mid- and late-career faculty and part-time faculty may further participation in the program. For part-time faculty, this portable credential can demonstrate their commitment to teaching and learning at this and other institutions.

With the changes described in this article, the CTC has been transformed to address the deficiencies associated with previous institutional programming in teaching and learning. In its current form, the online, asynchronous certificate reduces the time commitment of the faculty, provides a standardized core foundation of knowledge and skill, allows part-time and off-campus faculty participation, and provides flexibility in scheduling. With these improvements, the certificate supports faculty in various facets of teaching and learning and engages faculty through their pedagogical careers' evolving stages. The certificate model is based on flexible and inclusive access for all participants, and its focus is on core competencies, a foundation upon which to build future programming while modeling more learner-centered approaches for the faculty.

Acknowledgments

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