Faculty Engagement Patterns in Online Formative or Whole-Person Education: Characteristics of Highly Engaged Faculty

Katrina Borowiec[1] · Stanton Wortham[1] · Deoksoon Kim[1] ·
Elizabeth Barsotti[2]

Abstract

Participation in online learning has increased in recent decades, with dramatic growth sparked by the global COVID- 19 pandemic. When teaching online, faculty must be responsive to students' diverse social, emotional, moral, spiritual, and physical needs, in addition to their intellectual development. Formative or whole-person education is a holistic approach to supporting student wellbeing. In this study, we use data from 308 faculty members at a Jesuit university in the Northeastern United States to examine faculty engagement typologies in formative education online and to explore whether engagement varies across faculty characteristics. We use a three-step mixture modeling approach to latent profile analysis with covariates. Our findings identified four profiles, corresponding to lowest, lower middle, upper middle, and highest engagement in formative education online. Subsequent modeling indicated that women; faculty identifying as spiritual (whether participating in organized religion or not); faculty in nursing, education/human development, social work, and theology; and faculty with online teaching experience prior to the pandemic were more likely to be in the highest engagement profile. Our results offer insight into how faculty support students' holistic needs. They have implications for faculty professional development; tenure and promotion policies; and supporting faculty members' spiritual development.

Keywords Whole-person education · Latent profile analysis · Higher education · Faculty development · Women · Spirituality

The global COVID- 19 pandemic caused a major increase in the numbers of faculty and students engaged in online learning. It also raised awareness about students' wellbeing. The online learning sector had in fact been growing substantially in decades prior to the pandemic. For example, in 2000, 8% of undergraduates in the United States enrolled in at least one online course, compared to 34% in 2018

(Radford, 2011; U.S. Department of Education, 2019). This shows a large increase in the proportion of undergraduates enrolled in online courses, before the pandemic began in March 2020. In spring 2020, 84% of undergraduates had at least some of their classes moved online in response to pandemic-related public safety measures (Cameron et al., 2021).

When the pandemic started, faculty members had varying levels of experience with online teaching. As of fall 2018, 44% of instructors had online teaching experience (Inside Higher Ed & Gallop, 2018). This suggests that many instructors were teaching online for the first time in March 2020. Hodges et al. (2020) called online teaching during the early pandemic "emergency remote teaching," given its quick uptake during a global crisis.

Additionally, during the pandemic, many faculty shifted their attention to students' emotional wellbeing, often adopting an "ethos of care" (Goin Kono & Taylor, 2021, p. 156). This shift reflected faculty members' concerns about students whose pre-pandemic challenges were exacerbated in numerous areas – e.g., housing and food insecurity (Goldrick-Rab et al., 2020), mental health concerns (Healthy Minds Network & American College Health Association, 2020), technological barriers (Hart et al., 2021; Quezada et al., 2020), and post-college employment-related worries (Zhai & Du, 2020). Comprehensive approaches to student well-being (Wortham et al., 2020) are especially vital during periods of crisis.

One such approach is "formative" or whole-person education that comprises three main components: integrated development along various dimensions (cognitive, ethical/moral, spiritual, social-emotional); educating for meaning and purpose; and fostering community inside and outside the classroom (Boston College, 2007). Individual faculty enact these practices differently. For example, some instructors focus on building community, while others focus on helping students identify meaningful pathways.

Some faculty also engage in these practices more intensely. Prior to the pandemic, it was well-documented that women and racial/ethnic minority faculty disproportionately carried service and care-related responsibilities, potentially reducing their research output (Guarino & Borden, 2017; O'Meara et al., 2020). The pandemic exacerbated these trends (Skinner et al., 2021; Tugend, 2020), and some faculty mothers have considered leaving academia due to the pandemic's toll (Matulevicius et al., 2021).

Although the "emergency remote teaching" period of the pandemic is over, many students and faculty are still engaged in online learning. As of fall 2022, 53.3% of undergraduates and 53.5% of graduate students were enrolled partly or fully in online courses (U.S. Department of Education, n.d., "Trend Generator"). Prior research also indicates that students think that faculty should play an important role in their well-being (Baik et al., 2019). However, Martin et al. (2020) found that less than 5% of 619 articles on online teaching and learning published between 2009 and 2018 focused on faculty characteristics. Thus, it is important to understand whether and how faculty support students' holistic needs when teaching online, while also identifying whether some faculty subgroups might be overburdened. The current study addresses two research questions:

1) What are the patterns of faculty engagement in formative education online?
2) What demographic and other faculty characteristics predict these patterns of engagement?

Literature Review

The literature review is divided into two major strands of research that guided our study: 1) formative or whole-person education and 2) faculty characteristics, attending to student needs, and the professoriate.

Formative or Whole-Person Education

Many educational philosophies view education holistically. Intellectual development represents just one aspect of a comprehensive approach to student development (Wortham et al., 2020). These philosophies include those targeting character development, civic purpose, and well-being (Wortham et al., 2020). In this section, we describe one holistic approach, formative or whole-person education, including its philosophical roots and its application to online learning.

Philosophical Foundations

With roots in the Jesuit tradition, formative education supports students' intellectual, spiritual, social-emotional, and moral/ethical development (Boston College, 2007; O'Malley, 2015). From the Jesuit perspective, "cura personalis" or caring for the whole person allows students to flourish and to serve others through becoming the best versions of themselves (Geger, 2014; O'Malley, 2015).

Wholeness, meaning/purpose, and community are three central characteristics of formative education (Boston College, 2007; O'Malley, 2015). Formative education promotes wholeness by integrating the intellectual, social-emotional, moral/ethnical, and spiritual dimensions of student development (Boston College, 2007). By looking beyond extrinsic and instrumental goals, students can discover their purpose by "discerning" how their talents can serve the broader needs of humanity (O'Malley, 2015). Furthermore, formative education recognizes that integrated human development and identifying meaning and purpose are best approached within a community (Boston College, 2007). As students develop holistically along these multiple dimensions, they can better discern how their talents might serve their communities, contributing to a sense of meaning and purpose.

Aspects of non-secular postsecondary student development theory can directly be linked to formative education. "Wholeness" is comparable to Kuh's (2018) promotion of a holistic educational approach that advocates attention to students' spiritual, social, emotional, ethical, and physical development, in addition to their intellectual growth. "Meaning and purpose" and "community" are represented in Chickering and Reisser's (1993) seven vectors of identity theory which emphasizes the importance of discovering what brings meaning to a person's life and developing

interconnectedness with others, respectively (Chickering & Reisser, 1993; Patton et al., 2016).

Application of Formative or Whole-Person Education to Online Learning

Formative or whole-person education online is a newly emerging area of research. One recent qualitative study (see Kim et al., 2021b) explored how faculty members across diverse disciplines (arts and sciences, business, education/human development, law, nursing, social work, theology, and continuing education) provided formative education in an online setting during the early COVID-19 pandemic. Faculty members' formative teaching practices fell under one of three main themes: empathic, reflective, and adaptive. Empathic practices showed empathy for students as faculty proactively checked in on them, developed supportive classroom communities, and allowed themselves to be vulnerable in the classroom. Reflective practices were designed to promote student reflection, through writing or other creative activities and practices promoting mindfulness. Adaptive practices solicited students' feedback throughout the course and modified their teaching in response to students' needs and suggestions. Combined, these empathic, reflective, and adaptive practices attended to students' holistic needs.

Other researchers have underscored the importance of adopting an "ethos of care" (Goin Kono & Taylor, 2021, p. 156) and demonstrating empathy for students' developing needs (Conklin & Dikkers, 2021; Miller, 2021), especially during periods of crisis such as the pandemic. Online teaching scholars have also emphasized the importance of community building (e.g., Borowiec et al., 2021; Castañeda & Selwyn, 2018; Kauffman, 2015; Kilgour et al., 2019; Robinson & Hullinger, 2008; Salmon, 2011). For example, according to the Community of Inquiry Framework instructors can foster a sense of community when teaching online (Archibald, 2010; Berry, 2019; Garrison & Akyol, 2013; Garrison et al., 2010; Shea & Bidjerano, 2009). Instructors can design learning environments (i.e., have "teaching presence") that foster students' comfort in sharing their ideas and asking questions (i.e., have "social presence") and support students' cognitive engagement with the course materials (i.e., "cognitive presence"). Clear, direct communication between students and their instructors helps establish a sense of human connection in online courses (Berry, 2017; Lowenthal & Dunlap, 2018).

While attending to students' needs, instructors also commonly encounter challenges when transitioning from in person to online instruction. In their literature review, Kebritchi et al. (2017) found that postsecondary instructors' challenges generally fell into one of four categories: content development (e.g., adjusting materials for an online format); integrating multimedia into the course (e.g., deciding whether a particular graphic will supplement learning); using content in a way that supports learner-centered instruction (e.g., collaborative activities with peers); and presenting material in meaningful segments with clear learning objectives. During the COVID-19 pandemic, Hebert and colleagues (2022) found that faculty members with less online teaching experience felt that the pandemic had a greater negative impact on their instruction compared to faculty with more online teaching experience prior to the pandemic.

Faculty Characteristics, Attending to Student Needs, and the Professoriate

In this next section, we focus on four faculty characteristics that are related to faculty teaching practices in person and/or online: gender, race/ethnicity, spirituality, and academic discipline. These four characteristics were selected for several reasons. First, prior research (e.g., O'Meara et al., 2020) highlights differences by gender and race/ethnicity in faculty workloads, which may translate to related differences in formative engagement. Second, faculty spirituality is an under-researched area in postsecondary education. The Jesuit context of this study is a useful site to begin exploring the relationship between faculty spirituality and teaching practices. Finally, academic discipline was selected given the importance of disciplinary cultures in shaping faculty members' beliefs and behaviors (Neumann, 2001; Umbach, 2007).

Gender and race/ethnicity will be discussed together in the literature review, since many studies focus on the intersection of these characteristics. At the end of the literature review, we briefly discuss other potentially relevant characteristics that have been discussed in prior research (e.g., rank, age, teaching experience).

Gender, Race/ethnicity, and Faculty Workload

Prior research suggests that women and faculty of color have higher teaching and mentoring workloads (Guarino & Borden, 2017; O'Meara et al., 2020; Schuster et al., 2006). It is possible, therefore, that certain faculty subgroups (like women) are more highly engaged in formative education online than others. While they were not studying formative education explicitly, Lindholm and Astin (2008) examined a related construct, student-centered pedagogy, which was characterized by eight practices: class discussions, cooperative learning, student presentations, group projects, peer evaluations, self-evaluations, reflective writing and journaling, and student-selected course topics. Lindholm and Astin found that, across disciplines, women faculty engaged in more student-centered pedagogy than men.

As previously discussed, faculty members adapted to the pandemic by leaning into an "ethos of care" (Goin Kono & Taylor, 2021, p. 156) for their students and showing empathy for students' emerging needs (Conklin & Dikkers, 2021; Miller, 2021). For example, Johnson et al. (2020) found that faculty accommodated students' needs during the early period of the pandemic by reducing students' workload and implementing a more flexible grading model.

However, some research suggests that women faculty members, faculty members of color, and particularly women of color (e.g., Lane et al., 2023) may have been more engaged in this caretaking work. Lopes and de Camargo Santos (2025) found that women increasingly engaged in both care-related work for their students and service demands for their institution and department during the pandemic. Students perceived women faculty members as more supportive and responsive to their individual needs in their courses during the COVID- 19 pandemic (Docka-Filipek et al., 2023). Women encountered increased demands

for caretaking not only in the workplace, but also at home with children and/ or elderly relatives (Dunn et al., 2022; Esquivel et al., 2023; Lane et al., 2023; Medina et al., 2024).

Berheide et al. (2022) found that White cisgender male faculty engaged in less emotional labor in caring for the needs of their students during the early period of the pandemic than their colleagues, including those identifying as Black, Indigenous, and People of Color (BIPOC) cisgender men, BIPOC cisgender women, White cisgender women, and gender non-conforming individuals. Moreover, Berheide et al. found that the relationship between race and gender identity was mediated by the volume of student requests for "special favors" (p. 451). Berheide et al. contend that, in comparison to other faculty members, White cisgender male faculty members hold power that shields them from additional requests for assistance from students.

The Role of Spirituality

Faculty members' spirituality is often disconnected from discussions of academic work (Lindholm & Astin, 2006). Yet spirituality is intimately connected to how people assign meaning and purpose to their lives, ask questions, and connect with others (Hindman, 2002). Hindman (2002) describes spirituality as "a dynamic expression of who we are" (p. 168).

While spirituality and religion are related, Lindholm and Astin (2006) describe religion as more focused on our exterior and group-activities and spirituality as more focused on our interior and private lives. They present spirituality as an inner journey of identifying our values, sense of identity, and personal authenticity; finding meaning and purpose in our lives; and developing and nurturing meaningful connections with our communities. Individuals can incorporate religious beliefs into their spirituality, but religion is not a prerequisite for spirituality (Lindholm & Astin, 2006). In their empirical research, Lindholm and Astin found that 16.6%, 42.8%, and 40.6% of faculty members scored "low," "medium," and "high," respectively, on a measure of spirituality.

Spirituality is related to teaching practices. Lindholm and Astin (2008) found that a larger proportion of faculty who scored high in spirituality engaged in eight student-centered practices (e.g., cooperative learning, self-evaluations) in "all" or "most" of their courses, compared to those low in spirituality.

The Role of Academic Discipline

Academic disciplines are in some important respects unique cultures within broader academic communities (Neumann, 2001). Faculty members from different disciplines generally have, to varying degrees, varying beliefs about what constitutes "good" teaching and tailor their pedagogy accordingly (Neumann, 2001; Umbach, 2007). Classifying academic disciplines into categories that represent important disciplinary differences can provide insights into variations in teaching practices across faculty (Milutinović et al., 2023; Umbach, 2007).

Researchers have proposed multiple classifications of academic disciplines (Umbach, 2007). First, disciplines can be classified as "hard" (e.g., engineering) or "soft" (e.g., history) fields, a taxonomy which Biglan (1973a, 1973b) uses to explore the extent of consensus about what counts as established knowledge within a field. "Soft" fields have lower consensus than "hard" fields. Second, disciplines can be classified as either "pure" (e.g., chemistry) or "applied" (e.g., education), with applied fields placing greater focus on real-world applications (Biglan, 1973a, 1973b). Third, disciplines can be organized into six academic environments: realistic (e.g., electrical engineering), investigative (e.g., biology), artistic (e.g., arts), conventional (e.g., accounting), enterprising (e.g., business), and social (e.g., nursing) (Holland, 1997). In theory, the characteristics of the academic environments should align with the personalities of the faculty members (Holland, 1997; Umbach, 2007).

Researchers have identified relationships between these types of academic discipline and 1) time spent on teaching compared to research, 2) self-reported emphasis on interacting with students, and 3) specific instructional practices. Faculty in lower consensus fields are more likely to spend time on teaching than those in higher consensus fields, while those in higher consensus fields are more likely to spend time on research (Braxton & Hargens, 1996). Faculty in social disciplines self-report more emphasis on faculty-student interactions than faculty in realistic, investigative, artistic, conventional, enterprising, and other disciplines (Umbach, 2007). Faculty in low consensus fields utilize more active learning strategies and "demonstrate respect for diverse talents and ways of knowing" more often, while those in higher consensus fields are more likely to communicate high academic expectations (Braxton et al., 1998, p. 311). Finally, faculty in social disciplines place considerable emphasis on "enriching activities" relative to other disciplines, and faculty in realistic environments accentuate higher-order cognitive activities (Umbach, 2007).

Lindholm and Astin (2008) classify faculty members into 14 "disciplinary affiliations." They find that faculty members in business, education, English, fine arts, and interdisciplinary fields engage in more student-centered pedagogy, on average, than their colleagues in biological sciences, engineering, math/statistics, physical sciences, and social sciences.

Other Faculty Characteristics

In addition to the four characteristics that we focus on in this study, prior research has also explored other faculty characteristics that correlate with divergent pedagogical practices. The following faculty characteristics were associated with greater self-reported faculty emphasis on interacting with students: 1) full-time, tenured/tenure-track faculty status (vs. part-time and full-time, non-tenure track faculty), 2) fewer years of teaching experience, 3) older age, and 4) associate professor status (vs. full professor status) (Umbach, 2007). Furthermore, older and senior-rank faculty were less likely to use student-centered pedagogy than their younger and lower-rank colleagues (Lindholm & Astin, 2008). In

addition, more senior-rank faculty were less likely than their junior colleagues to "demonstrate respect for diverse talents and ways of knowing" (Braxton et al., 1998, p. 311) and to utilize active learning strategies. These additional characteristics were less relevant in our study, but they are worth exploring in future research.

Methodology

This quantitative study utilizes principal components analysis (PCA) before moving to a three-step mixture modeling approach to latent profile analysis (LPA) with covariates to examine faculty engagement patterns in formative or whole-person online education. LPA is a latent variable modeling technique used to identify subgroups or typologies of individuals (Collins & Lanza, 2010). Compared to factor analysis, which is considered a variable-centered modeling approach, LPA is considered person-centered.

Data Collection

In fall 2020, 1,865 instructors at one private, Jesuit university in the northeastern United States were invited via email to participate in an online survey about their experiences with online, hybrid, and blended learning. Participants must have taught at least one online, hybrid, or blended learning course. In total, 347 or 18.6% of instructors completed the survey. No incentive was offered. More information about the survey questions is provided in the Measures section.

The study was approved by the Institutional Review Board at Boston College (#21.023.01e). All participants provided informed consent.

Measures

The Measures section is divided into two parts. The first part describes the indicators of formative education (later described as "domains") that were used in the development of the latent profiles, while the second part describes the faculty characteristics that were later used as covariates in subsequent modeling.

Indicators of Formative Education

The survey focused on 38 Likert scale items about faculty's engagement in formative or whole-person education when teaching online. For each of the 38 items, faculty were asked: "When teaching online, how often do you do the following activities?" The response options were "never," "rarely," "sometimes," "often," and "very often." Table 2 displays sample items. These 38 items were based on themes that emerged from a series of interviews with 37 faculty at the same institution (see Kim et al., 2021b).

Faculty Characteristics

Eight faculty characteristics were included in the analysis and will be described below.

Gender Faculty members were asked to report their gender identity using the following categories: "Man," "Woman," "I prefer not to answer," and "I prefer to self-identify as ___". "Man" served as the reference category in the analysis. "I prefer not to answer" responses were excluded from the analysis on gender. No participants reported "I prefer to self-identify as."

Race/ethnicity Faculty members were asked, "Do you identify as Hispanic or Latinx?" The response options were "Yes," "No," and "I prefer not to answer." Faculty were also asked, "How would you describe your racial identity? Select all that apply." The response options were "American Indian or Alaska Native," "Asian," "Black or African American," "Native Hawaiian or Other Pacific Islander," "White," "I prefer to self-identify as __," and "I prefer not to answer." Due to sample size limitations, race/ethnicity was recoded into a dichotomous variable with two groups: non-Hispanic White or faculty of color (i.e., all faculty except non-Hispanic White identifying faculty members). The former served as the reference group.

Spiritual or religious identity Faculty members were asked, "Which of the following statements best describes you?" The four response options were: "I am a spiritual person"; "I am a religious person"; "I am a spiritual and religious person"; and "I am neither a spiritual nor religious person." The last category was treated as the reference group.

Tenured or tenure-track status Faculty were asked, "Are you a tenured or tenure-track faculty member?" "Yes" and "No" were the response options, with "No" serving as the reference group.

Academic discipline Faculty were asked, "To which of the following schools are you primarily affiliated with?" The response options corresponded to the eight schools at the institution, including Arts and Sciences, Business, Continuing Education, Education, Law, Nursing, Social Work, and Theology. There was also a response option for "other." Due to sample size limitations, education/human development, nursing, social work, and theology were combined into one analytic category, as these are often considered "helping" fields. Business and law were then combined into another category, as professional fields. Finally, continuing education and "other" faculty were analyzed together, along with faculty with an unknown academic discipline. Arts and sciences served as the reference group in the analysis.

Years of teaching experience Faculty were asked, "How many years have you worked in higher education as a faculty member?" Six response options were provided: "0–2 Years," "3–5 Years," "6–10 Years," "11–15 Years," "16–20 Years," and "21+ Years." This covariate was treated as a numeric variable in the analysis.

Taught online course prior to COVID Faculty were asked, "Prior to spring 2020, had you ever taught a completely online course?" The response options were "Yes" and "No," with "No" serving as the reference group.

Taught hybrid or blended course prior to COVID Faculty were asked, "Prior to spring 2020, had you ever taught a hybrid and/or blended course?" The response options were "Yes" and "No," with "No" serving as the reference group.

The two questions about prior online or hybrid/blended teaching solicited information about faculty members' level of experience and familiarity with virtual teaching environments. We distinguished online courses that are completely online from hybrid/blended courses that combine traditional in-person with online learning. Beyond this distinction, we did not provide any parameters regarding what "counts" as a hybrid or blended course, leaving these terms open to some flexibility in their interpretation.

Participants

The current study focuses on the 38 items designed to measure faculty members' engagement in formative education online. Participants must have answered at least 50% or 19 of the 38 survey items to be included in the current analysis. In total, 308 participants met this qualification.

Table 1 presents detailed information about participants' background characteristics. First, 44% of participants identified as men and 45% identified as women, while the remaining 12% did not provide information about gender. Second, the highest proportion of participants identified as White (72%); 5% identified as Asian; 4% identified as Hispanic/Latinx; 2% identified as Black or African American; 1% identified as multiracial; 1% identified as additional races/ethnicities; and the remaining 15% did not provide information about their racial/ethnic identity. Third, 26% identified as spiritual only; 8% identified as religious only; 33% identified as both; 22% identified as neither; and 10% provided no response.

Fourth, a diverse range of academic fields were represented among respondents. The highest proportion of instructors came from the arts and sciences (50%), followed by education and human development (12%); 11% of instructors came from business; 6% from law; 5% from social work; 4% from continuing education; 4% from nursing; 2% from theology; <0.5% from "other" academic fields. Six percent of instructors did not report their academic discipline.

Fifth, faculty had a wide range of teaching experience. While 20% of instructors had five or fewer years of teaching experience, 38% had 21 or more years of experience. Sixth, 39% of faculty were tenured or tenure-track. Finally, prior to the COVID-19 pandemic, 15% of instructors had taught online and 10% had taught a hybrid or blended course.

Compared to the overall institution, excluding those participants with "prefer not to answer" responses or missing demographic data, our sample includes a lower proportion of male and tenured or tenure-track faculty and a higher proportion of White

Table 1 Faculty Participant Characteristics

Characteristic	Count	Percent	Characteristic	Count	Percent
Total Participants	308	100%			
Gender			**Academic Discipline**		
Man	134	44%	Business	33	11%
Woman	138	45%	Nursing	12	4%
I prefer to self-identify.	0	0%	Law	17	6%
I prefer not to answer.	14	5%	Education/Human Development	36	12%
No response	22	7%	Arts/Sciences	155	50%
			Social Work	15	5%
Race/ethnicity			Theology	7	2%
Asian	14	5%	Continuing Education	13	4%
Black/African American	5	2%	Other	1	0%
Hispanic/Latinx[a]	13	4%	No response	19	6%
White	222	72%			
Multiracial[b]	4	1%	**Years of Teaching Experience**		
Other[c]	2	1%	0–2 Years	34	11%
Prefer not to answer	20	6%	3–5 Years	29	9%
No response	28	9%	6–10 Years	45	15%
			11–15 Years	35	11%
Spiritual or Religious Identity			16–20 Years	30	10%
I am a spiritual person.	81	26%	21+ Years	116	38%
I am a religious person.	25	8%	No response	19	6%
Both	103	33%			
Neither	67	22%	**Taught online prior to Covid**		
No response	32	10%	Yes	46	15%
			No	261	85%
Tenured or Tenure-Track			No response	1	0%
Yes	119	39%			
No	165	54%	**Taught hybrid or blended course prior to Covid**		
No response	24	8%	Yes	31	10%
			No	277	90%
			No response	--	--

[a] Includes all faculty who identified as Hispanic/Latinx regardless of reported race

[b] Includes faculty who reported two or more races

[c] Includes faculty identifying as "American Indian or Alaska Native" and "Native Hawaiian or Other Pacific Islander."

and education/human development faculty. We cannot compare our sample with respect to faculty members' spiritual or religious identity, years of teaching experience, and prior experience teaching online or hybrid/blended courses because these characteristics are not available publicly.

Data Analysis

A combination of analytical approaches was used, starting with PCA before moving to a three-step mixture modeling approach to LPA with covariates. The PCA was conducted in IBM SPSS 27 (IBM Corp., 2020), and the LPA was conducted in LatentGOLD 6.0 (Statistical Innovations Inc., 2021).

Principal Components Analysis (PCA)

The construct of interest, faculty engagement in formative or whole-person education online, is conceptualized as a categorical latent variable. LPA uses continuous indicator variables to classify instructors into these categorical clusters or profiles (Collins & Lanza, 2010). The 38 formative education survey items represent the possible indicators. However, entering all 38 items into the model separately would likely lead to an unstable solution, especially given the modest sample size. Therefore, we used PCA as a data reduction technique.

The 38 items were classified into 11 content domains, and we conducted a PCA for all items in each domain to obtain a component score. PCA scores were converted to T-scores (i.e., M= 50, SD= 10) with higher scores corresponding to higher engagement. The Cronbach's alpha reliability coefficient and the proportion of variance explained were also computed for each component.

Latent Profile Analysis (LPA) with Covariates

A three-step approach (Asparouhov & Muthėn, 2014) was used to model latent profiles with covariates. The basic three steps of the approach are identifying the optimal number of profiles, classifying individuals into profiles, and modeling with the covariates. In contrast to other approaches that incorporate covariates, the advantage of the three-step approach is that the latent variable (i.e., faculty engagement in formative education online) does not shift following the incorporation of covariates (Nylund-Gibson & Choi, 2018).

In Step 1, we used the principal component scores as indicators of formative education online. Since the components were continuous, we used LPA sequentially to fit models with one through seven profiles. For each model, we obtained several indicators of model fit. First, lower values of the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) indicated improved fit (Nylund-Gibson & Choi, 2018). Second, the Vuong-Lo-Mendell-Rubin hypothesis test (VLMR) indicates whether a model with $k+1$ clusters (i.e., profiles) provides a statistically significant improvement in model fit over a solution with k clusters (Vermunt & Magidson, 2021).

Beyond model fit, we examined the model's classification accuracy or entropy (Collins & Lanza, 2010) and profile size (Weller et al., 2020). Entropy values of .80 or above are considered acceptable (Tien et al., 2013). While measures of model fit are given precedence in determining the final latent profile solution, the prevalence of each profile should also be considered to ensure that the solution is stable (Weller et al., 2020). Very small profile sizes that represent less than five percent of

all participants may not be replicable in other comparable samples, especially when the analysis is conducted on a relatively small number of participants (Weller et al., 2020).

One final consideration in selecting the final number of profiles is whether the model makes conceptual sense (Collins & Lanza, 2010). The researcher should be able to interpret the meaning of each profile based on the indicators used in the model. If a profile cannot be interpreted, there may be too many profiles.

After selecting the final number of profiles, in Step 2, we obtained estimates of each faculty member's most likely profile and probability of being in each profile (Vermunt & Magidson, 2021). Additionally, we also obtained Bolck-Croon-Hagenaars (BCH) (Bolck et al., 2004) weights for each profile, which were then used in later modeling to account for measurement error in the classifications of faculty members to profiles (Asparouhov & Muthén, 2021).

Next, in Step 3, we conducted the LPA with covariates using the estimates obtained in Step 2. Covariates were incorporated using a multinomial logistic model which examines whether engagement patterns differed by the faculty characteristics described in the Measures section (e.g., gender, years teaching). Each profile represents a category of the dependent variable in the multinomial model.

Before building the final multivariate multinomial model, bivariate analyses were conducted using separate multinomial models for each of eight faculty characteristics. Next, all faculty characteristics that were significant at an alpha level of .10 in the bivariate analyses were included in the final multivariate multinomial model. While an alpha level of .05 is most commonly used in social science research, other researchers have used a .10 alpha level (e.g., Guarino & Borden, 2017; Lopes & de Camargo Santos, 2025; Medina et al., 2024). Since the present study has a relatively modest sample size, concerns about statistical power – i.e., ability to detect "true" differences between groups – are warranted, especially when those differences are small. Increasing alpha from .05 to .10 increases the statistical power to detect small effect size differences between groups. On the other hand, we recognize that increasing alpha has the disadvantage of increasing potential Type I error or "false positive" results. We report the significance levels in all relevant tables, so readers can interpret the likelihood that the findings are due to chance alone.

Results

Principal Components Analysis (PCA)

Table 2 provides an overview of the PCA results. The 38 items were classified into 11 domains (e.g., supporting students' moral/ethical development, fostering peer relationships) based on the item content, ranging from two to seven items. One component was extracted from each domain; the explained variance in the associated items ranged from 43% to 77%. Correlations among the domains range from .20 to .76, suggesting that these domains are positively related but distinct. Furthermore, Cronbach's alpha ranged from .49 for the "meeting with students" domain to .86 for

Table 2 Overview of Each Domain (Indicator) Used in the Latent Profiles

Domain (Indicator)	N	Proportion of Variance Explained	Cronbach's Alpha	Total Items	Example Survey Item
1. Supporting students' moral or ethical development	294	0.63	0.80	4	I incorporate assignments that ask students to consider moral dilemmas.
2. Supporting students' spiritual development	302	0.71	0.60	2	I welcome students to contribute their spiritual or religious beliefs and values in classroom discussions.
3. Supporting students' development of meaning and purpose in their lives	284	0.56	0.86	7	I use material from my class to help students connect how their individual sense of purpose relates to serving other people.
4. Valuing students as people	294	0.56	0.74	4	I strive to create a sense of community in the classroom.
5. Meeting with students	298	0.68	0.49	2	I encourage students to schedule individual meetings with me where we can discuss topics of interest to them.
6. Modifying course to accommodate students' needs	299	0.76	0.69	2	I modify my course to accommodate my students' needs.
7. Fostering peer relationships	292	0.57	0.73	4	I provide students opportunities to get to know their classmates.
8. Proactively supporting students	298	0.69	0.55	2	I contact students who fall behind in class to offer support.
9. Promoting reflective and integrative thinking	296	0.77	0.69	2	I integrate questions that promote reflection in my course.
10. Supporting students' social-emotional development	290	0.53	0.71	4	I offer students opportunities to share how they are doing.
11. Supporting students' intellectual development	290	0.43	0.67	5	I provide opportunities for students to synthesize what they have learned throughout the course.

Table 3 Fit Statistics and Entropy for Latent Profile Models with One to Seven Profiles of Formative Education Online Engagement

Model	Profiles	Log Likelihood	BIC	AIC	No. parameters	Sig. for VLMR	Entropy	Smallest class size
1	1 profile	− 12041	24208	24126	22	--	1.00	100%
2	2 profiles	− 11433	23124	22956	45	0.000	0.89	45%
3	3 profiles	− 11119	22628	22375	68	0.000	0.89	17%
4	4 profiles	− 10975	22471	22132	91	0.000	0.90	10%
5	5 profiles	− 10817	22288	21863	114	0.000	0.91	10%
6	6 profiles	− 10773	22332	21821	137	0.014	0.89	10%
7	7 profiles	− 10709	22335	21738	160	0.001	0.92	5%

Fig. 1 Plot of AIC and BIC Fit Statistics for Models with One to Seven Profiles of Formative Education Online Engagement

"supporting students' development of meaning and purpose in their lives." The two lowest Cronbach's alpha values, unsurprisingly, correspond to domains with only two items.

Latent Profile Analysis (LPA) with Covariates

Baseline Model

The 3-step analysis began with determining the appropriate baseline latent profile model. Models with one to seven profiles were thus compared. Table 3 displays the fit statistics and entropy for these models, while Figure 1 displays the AIC and BIC values.

The following data points were considered when selecting the four-profile solution. First, when examining the fit statistics, the AIC consistently decreased as profiles were added, while the BIC decreased up through the five-profile solution before beginning to increase again. Second, the entropy values for all models were similar (.89 to .92). Third, the VLMR suggested that the addition of each profile improved fit. At this point, the evidence was inconclusive.

Therefore, to further aid model selection, Figure 1 was used similarly to a scree plot in exploratory factor analysis. The most prominent elbow appears to be at profile five, suggesting that the *four*-profile solution may be appropriate. Fifth, when examining the five-profile solution, two of the profiles did not differ significantly on nine of the 11 indicators, suggesting that they were very similar. Since the goal of LPA is to have homogeneous profiles that are distinct from one another, the five-profile solution was ruled out. Also, the final four-profile solution had good entropy (.90) and all four clusters had a meaningful interpretation.

The four clusters were named lowest engagement (10% of instructors), lower middle engagement (36%), upper middle engagement (38%), and highest engagement (16%) (Table 4). Table 4 and Figure 2 display the mean scores on each indicator of formative education online by profile, and Table 5 displays the full model parameters, where the lowest engagement group serves as the reference group. The intercepts correspond to the means for the lowest engagement group and the parameters for the lower middle, upper middle, and highest engagement groups, respectively, indicate the expected increase in mean value on the indicator for faculty in that profile. For example, the highest engagement group is expected to have supporting students' moral/ethical development scores that are 29.08 points higher than the lowest engagement group.

Table 4 Participant Classifications for Final Baseline Model Based on Most Likely Classification and Mean Domain (Indicator) Scores on Engagement in Formative Education Online by Profile (N= 308)

	Lowest engagement	Lower middle engagement	Upper middle engagement	Highest engagement
Participant Classification				
Count (%)	31 (10%)	110 (36%)	118 (38%)	49 (16%)
Engagement Domain Means				
Moral or ethical development	31.18	47.21	53.27	60.26
Spiritual development	36.11	46.48	52.66	60.78
Meaning and purpose	29.86	45.47	54.39	61.50
Valuing students	40.08	44.34	54.31	58.76
Meeting with students	44.38	46.34	51.26	59.09
Modifying course	43.88	45.05	53.04	58.36
Peer relationships	44.26	44.72	53.57	57.04
Proactive student support	41.51	44.23	53.59	60.32
Reflective and integrative thinking	33.98	46.80	53.07	59.53
Social-emotional development	35.69	45.17	53.94	60.59
Intellectual development	35.98	45.77	53.51	60.46
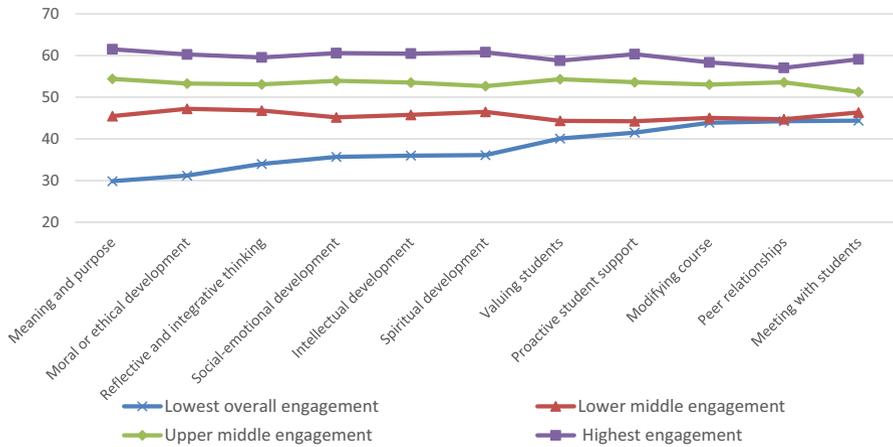
Fig. 2 Formative Education Online Engagement Profiles by Domain (Indicator) Means

In this paragraph, we will provide a description of each profile. First, those in the highest engagement profile have expected indicator average values ranging from 0.70 to 1.15 standard deviations *above* the mean. They have the lowest scores with respect to fostering peer relationships (M= 57.04) and the highest scores with respect to supporting students' development of meaning and purpose in their lives (M= 61.50), suggesting that the former is an area of less variation among all faculty whereas the latter is something that greatly distinguishes those in the highest engagement profile from other faculty. Second, those in the upper middle engagement profile have average expected scores ranging from 0.13 to 0.44 standard deviations *above* the mean on all indicators, with the lowest score for meeting with students (M= 51.26) and the highest for supporting students' development of meaning and purpose in their lives (M= 54.39). Third, those in the lower middle engagement profile have average expected scores ranging from 0.28 to 0.58 standard deviations *below* the mean, with the smallest deviation corresponding to supporting students' moral/ethical development (M= 47.21) and the highest corresponding to proactively supporting students (M= 44.23). Finally, those in the lowest engagement profile have expected scores ranging from 0.56 to 2.01 standard deviations *below* the mean. The smallest deviation corresponds to meeting with students (M= 44.38) and the largest corresponds to supporting students' development of meaning and purpose in their lives (M= 29.86).

Additionally, whereas the highest, upper middle, and lower middle groups had relatively stable scores across all indicators, there was wide variation in scores across the 11 indicators for the lowest engagement group. This group had a mean score of 29.86, or two standard deviations below the mean, for supporting students' development of meaning and purpose. In contrast, their average scores for modifying the course to accommodate students' needs (M= 43.88), fostering peer relationships (M= 44.26), and meeting with students (M= 44.38) were

Table 5 Model Parameters and Standard Errors for the Domains (Indicators) of the Formative Education Online Engagement Profiles

	Intercept	Sig.	Lowest engagement	Lower middle engagement	Upper middle engagement	Highest engagement	Sig.	R^2
1. Moral/ethical development	31.18 (1.44)	<.001	0.00 (–)	16.03 (1.56)	22.08 (1.60)	29.08 (1.60)	<.001	0.59
2. Spiritual development	36.11 (0.79)	<.001	0.00 (–)	10.37 (1.01)	16.55 (1.23)	24.67 (1.28)	<.001	0.45
3. Meaning/purpose	29.86 (1.12)	<.001	0.00 (–)	15.61 (1.26)	24.53 (1.24)	31.64 (1.21)	<.001	0.75
4. Valuing students	40.08 (2.59)	<.001	0.00 (–)	4.25 (2.79)	14.23 (2.63)	18.68 (2.60)	<.001	0.41
5. Meeting with students	44.38 (2.41)	<.001	0.00 (–)	1.96 (2.64)	6.88 (2.56)	14.71 (2.41)	<.001	0.22
6. Modifying course	43.88 (2.41)	<.001	0.00 (–)	1.17 (2.60)	9.17 (2.53)	14.48 (2.53)	<.001	0.27
7. Peer relationships	44.26 (1.90)	<.001	0.00 (–)	0.46 (2.21)	9.31 (2.03)	12.78 (2.20)	<.001	0.26
8. Proactive student support	41.51 (2.10)	<.001	0.00 (–)	2.72 (2.32)	12.08 (2.24)	18.81 (2.18)	<.001	0.41
9. Reflective practices	33.98 (2.68)	<.001	0.00 (–)	12.81 (2.79)	19.09 (2.75)	25.55 (2.70)	<.001	0.47
10. Social/emotional development	35.69 (1.95)	<.001	0.00 (–)	9.48 (2.08)	18.25 (2.07)	24.90 (2.10)	<.001	0.53
11. Intellectual development	35.98 (2.28)	<.001	0.00 (–)	9.79 (2.40)	17.53 (2.38)	24.48 (2.35)	<.001	0.49

Note: Standard error model parameters are in parentheses

comparable to the lower middle engagement group (M= 45.05, M= 44.72, and M= 46.34, respectively).

Identifying Covariates for the Latent Profiles

Bivariate Analyses After selecting the baseline four-profile solution in Step 1, we proceeded to Step 2, where we obtained estimates of each faculty member's most likely profile, probability of being in each profile, and Bolck-Croon-Hagenaars (BCH) weights to account for the uncertainty in these classifications. Then, in Step 3, covariates were individually tested in a series of bivariate analyses, in which gender (Model 8), race/ethnicity (Model 9), spiritual/religious identity (Model 10), years teaching in higher education (Model 11), academic discipline (Model 12), tenure-track or tenured status (Model 13), taught online prior to the pandemic (Model 14), and taught hybrid or blended prior to the pandemic (Model 15) were modeled as separate independent variables. Table 6 displays the results.

The bivariate results indicate that gender ($p<.05$), spiritual/religious identity ($p<.001$), and taught online prior to the pandemic ($p<.05$) were statistically significant. Women, faculty identifying as spiritual and religious, and those with prior online teaching experience were more likely to be in the highest engagement group. Additionally, there was a marginally significant relationship between academic discipline and the engagement profiles ($p<.10$), such that faculty members in nursing, education/human development, social work, and theology were more likely to be in the highest engagement profile.

Multivariate Analyses Gender, spiritual and religious identity, previous online teaching experience, and academic discipline were then jointly entered into one model (Model 16), allowing us to understand whether these faculty characteristics remained significant in the presence of others. In this multivariate model, gender ($p<.05$), religious and spiritual identity ($p<.01$), and academic discipline ($p<.01$) are statistically significant at an alpha level of 0.05, whereas prior online teaching experience is marginally significant ($p<.10$) (see Table 7).

The representation of various identity characteristics across the profiles can be examined in several ways. First, we can use Table 7 to examine how faculty with certain characteristics are most likely to be classified. For example, male faculty, faculty identifying as religious or as neither spiritual nor religious, faculty members in the arts/sciences or in business/law, and faculty with no prior online teaching experience have the highest probabilities of being classified in the lower middle engagement profile relative to the three other profiles. Additionally, female faculty, faculty identifying as spiritual or as both spiritual and religious, faculty members in nursing/education/human development/social work/theology or in other fields/fields not reported, and faculty who have previously taught online have the highest probabilities of being classified in the upper middle engagement profile.

**Table 6** Bivariate Statistical Tests: Formative Education Online Engagement Profiles by Faculty Characteristics

	Bivariate Test			Probability Means			
	N	Wald	Sig.	Lowest engagement	Lower middle engagement	Upper middle engagement	Highest engagement
Model 8: Gender	272	11.39	0.010				
Woman				0.05	0.33	0.44	0.18
Man				0.16	0.40	0.28	0.16
Model 9: Faculty member of color	260	0.84	0.840				
Yes				0.11	0.35	0.41	0.13
No				0.10	0.38	0.34	0.18
Model 10: Spiritual/religious identity	276	31.65	0.000				
Spiritual				0.07	0.34	0.44	0.15
Religious				0.16	0.45	0.31	0.08
Spiritual and religious				0.04	0.29	0.42	0.25
Neither spiritual nor religious				0.23	0.51	0.19	0.07
Model 11: Years teaching in higher education	289	3.34	0.340				
0 to 5 years				0.14	0.40	0.33	0.13
6 to 10 years				0.09	0.44	0.43	0.04
11 to 20 years				0.08	0.30	0.39	0.23
21+ years				0.10	0.35	0.37	0.18
Model 12: Academic discipline	308	15.36	0.081				
Arts and sciences				0.15	0.40	0.30	0.15
Business and law				0.12	0.39	0.41	0.08
Nursing, education/human development, social work, and theology				0.01	0.28	0.48	0.23
Other or not reported				0.03	0.41	0.41	0.15

Table 6 (continued)

	Bivariate Test			Probability Means			
	N	Wald	Sig.	Lowest engagement	Lower middle engagement	Upper middle engagement	Highest engagement
Model 13: Tenure-track or tenured	284	0.34	0.950				
Yes				0.09	0.37	0.36	0.17
No				0.11	0.36	0.38	0.15
Model 14: Taught online prior to pandemic	307	11.10	0.011				
Yes				0.09	0.17	0.44	0.31
No				0.10	0.40	0.36	0.13
Model 15: Taught hybrid or blended prior to pandemic	308	2.11	0.550				
Yes				0.03	0.33	0.44	0.19
No				0.11	0.38	0.36	0.15

Table 7 Probability of Classification into Each Formative Education Online Engagement Profile by Faculty Characteristics Included in the Final Model with Covariates (Model 16)

Model 16	Wald	Sig.	Probability Means				
			Total	Lowest engagement	Lower middle engagement	Upper middle engagement	Highest engagement
Gender	9.46	0.024					
Woman			1.00	0.05	0.34	0.43	0.18
Man			1.00	0.16	0.41	0.27	0.16
Spiritual/religious identity	25.15	0.003					
Spiritual			1.00	0.08	0.33	0.43	0.16
Religious			1.00	0.09	0.52	0.30	0.09
Spiritual and religious			1.00	0.04	0.29	0.42	0.25
Neither spiritual nor religious			1.00	0.24	0.50	0.18	0.08
Academic discipline	23.09	0.006					
Arts and sciences			1.00	0.15	0.40	0.29	0.16
Business and law			1.00	0.14	0.42	0.35	0.09
Nursing, education/human development, social work, and theology			1.00	0.01	0.26	0.48	0.25
Other or not reported			1.00	0.00	0.39	0.46	0.15
Taught online prior to pandemic	7.57	0.056					
Yes			1.00	0.08	0.18	0.40	0.34
No			1.00	0.11	0.40	0.35	0.14
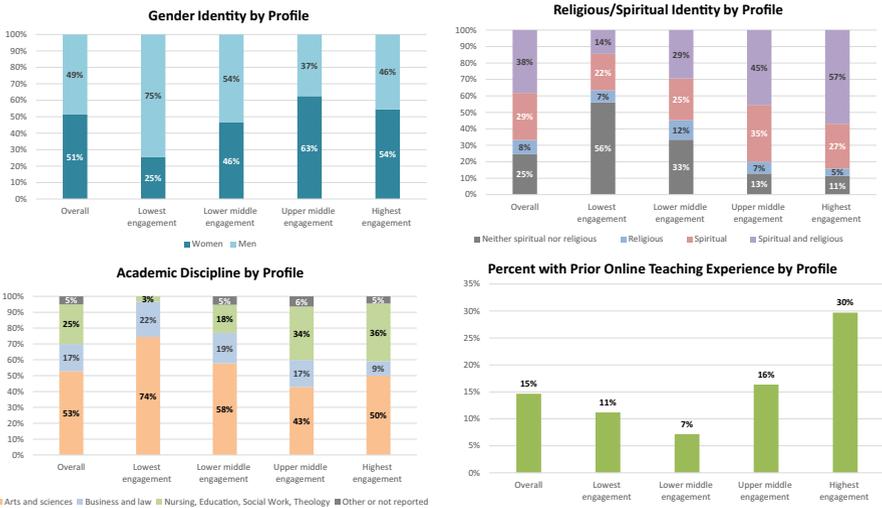
Fig. 3 Gender Identity, Religious and Spiritual Identity, Academic Discipline, and Prior Online Teaching Experience of Faculty Members by Formative Education Online Engagement Profiles

Second, Figure 3 can be used to examine the composition of each profile with respect to gender, spiritual and religious identity, academic discipline, and prior online teaching experience, respectively. For instance, the upper middle and highest engagement profiles have higher representations of women than men faculty. Next, the proportion of faculty members identifying as spiritual and religious increases moving from the lowest engagement to the highest engagement profiles, while the proportion identifying as neither spiritual nor religious decreases. The representation of those identifying as spiritual only is highest in the upper middle engagement group, while those identifying as religious only have the highest representation in the lower middle engagement group. Moreover, faculty members in nursing, education/human development, social work, and theology have higher representations in the upper middle and highest engagement groups. The lowest engagement group includes a notably higher than average representation of arts and sciences faculty. Finally, the highest engagement group includes the largest representation of faculty with prior online teaching experience.

Third, Table 8 provides the parameters for the final multinomial model and indicates which categories within a nominal predictor variable are significantly different from the reference category and for which profiles. For example, female faculty are 5.19 ($p<.01$) and 3.57 ($p<.05$) times more likely than male faculty to be in the upper middle and highest engagement groups, respectively, relative to the lowest engagement group. Women are also 2.69 times more likely than men to be in the lower middle engagement group relative to the lowest engagement group, although this difference is only marginally significant ($p<.10$).

Additionally, individuals identifying as spiritual and religious are 3.56 ($p<.05$), 13.40 ($p<.001$), and 17.49 ($p<.001$) times more likely than those identifying as neither spiritual nor religious to be in the lower middle, upper middle, and highest engagement groups, respectively, relative to the lowest engagement group. Faculty identifying as spiritual only are 6.11 ($p<.01$) and 5.56 ($p<.05$) times more likely than those identifying as neither spiritual nor religious to be in the upper middle and highest engagement groups, respectively, relative to the lowest engagement profile. There are no significant differences in the probability of being in the lower middle, upper middle, or highest engagement profiles relatively to the lowest profile between those identifying as religious only and those identifying as neither spiritual nor religious.

With respect to academic discipline, faculty members in nursing, education/human development, social work, and theology were 11.84 times more likely than faculty members in the arts and sciences to be in the upper middle engagement group over the lowest engagement group ($p<.05$). They were also 9.30 times more likely to be in the highest engagement group, although this difference was marginally significant ($p<.10$). Those in other academic disciplines or faculty who did not report their academic disciplines were also 182.58 ($p<.001$), 328.75 ($p<.001$), and 147.81 ($p<.01$) times more likely to be in the lower middle, upper middle, and highest engagement groups, respectively. These very high odds ratios are due to the near zero probability of those in the other academic disciplines or faculty who did not report their academic disciplines to be in the lowest engagement report. Additionally, there are no significant differences in the probability of being in the lower

Table 8 Model Parameter Coefficients, Standard Errors, and Odds Ratios for the Final Multinomial Model with Covariates (Model 16) Predicting Formative Education Online Engagement Profile (N= 259)

Model 16	Wald	Sig.	Lowest engagement			Lower middle engagement			Upper middle engagement			Highest engagement		
			Coef.	S.E.	OR	Coef.	S.E.	OR	Coef.	S.E.	OR	Coef.	S.E.	OR
Intercept	19.37	0.000	0.00	--	1.00	0.27	0.41	1.31	−1.32*	0.53	0.27	−1.88**	0.65	0.15
Identifies as a woman (ref: Man)	9.46	0.024	0.00	--	1.00	0.99^	0.53	2.69	1.65**	0.55	5.19	1.27*	0.60	3.57
Spiritual/religious identity (ref: Neither spiritual nor religious)	25.15	0.003												
Spiritual.			0.00	--	1.00	0.63	0.61	1.88	1.81**	0.68	6.11	1.72*	0.77	5.56
Religious			0.00	--	1.00	0.81	0.90	2.24	1.12	0.91	3.07	0.79	1.15	2.20
Spiritual and religious			0.00	--	1.00	1.27*	0.64	3.56	2.60***	0.70	13.40	2.86***	0.77	17.49
Academic discipline (ref: Arts and sciences)	23.09	0.006												
Business and law			0.00	--	1.00	0.08	0.56	1.08	0.25	0.62	1.29	−0.49	0.77	0.62
Nursing, education/human development, social work, theology			0.00	--	1.00	1.82	1.21	6.20	2.47*	1.17	11.84	2.23^	1.18	9.30
Other or not reported			0.00	--	1.00	5.21***	1.69	182.58	5.80***	1.41	328.75	5.00**	1.58	147.81
Taught online prior to pandemic (ref: No)	7.57	0.056	0.00	--	1.00	−1.23	0.97	0.29	−0.58	0.88	0.56	0.20	0.88	1.23

S.E. Standard Error, *OR* Odds Ratio, The category differences from the reference group are significant at the ^$p<.10$ level, *$p<.05$ level, **$p<.01$, or ***$p<.001$

middle, upper middle, or highest engagement profiles relative to the lowest profile for those faculty in business and law relative to those in the arts and sciences.

The bivariate test for prior experience with online teaching was statistically significant at an alpha level of .05. However, in the full multinomial model, after controlling for gender, spiritual or religious identity, and academic discipline, it was only marginally significant ($p<.10$). This may be due to the correlation between prior experience teaching online and academic discipline. A chi-square test of independence indicated that there was a significant relationship between prior experience teaching online and academic discipline ($p<.001$; Cramer's V=.272), such that 4% of those in business and law had prior experience, compared to 10% in the arts and sciences; 24% of those in other fields or not reporting their academic discipline; and 30% in those in nursing, education/human development, social work, and theology. Therefore, after accounting for disciplinary differences, prior online experience may lose significance as an independent variable due to the association between these variables.

Discussion

These results suggest that engagement in formative education clusters into four profiles, which we have called lowest engagement, lower middle engagement, upper middle engagement, and highest engagement. In addition, faculty members' gender identity, spiritual and religious identity, academic department, and online teaching experience are associated with their probability of being classified in each profile. From these findings, three additional insights will be discussed below regarding 1) opportunities for professional development in formative education online, 2) equity and gender differences in engagement in formative education online, and 3) making space for spirituality in academia.

Opportunities for Professional Development in Formative Education Online

While prior experience with online teaching was only marginally significant in the multivariate model, the bivariate analysis indicated that those with prior online teaching experience were significantly more likely to be highly engaged in formative education online. In relation, Hebert et al. (2022) found that faculty with more online teaching experience found it easier to adjust to online teaching during the early pandemic. These faculty likely had experience working through common online teaching challenges described by Kebritchi et al. (2017), such as developing content and integrating multimedia. In our study, faculty with pre-pandemic online teaching experience may have been more engaged in formative education online because technical matters required comparatively less of their attention.

Professional development (PD) could enhance online teaching experience. Features of effective PD programs for faculty include opportunities for active learning, interaction with colleagues, and mentoring relationships (Fernandes et al., 2023). If one were to conceptualize engagement in formative education online along a

developmental continuum, the following three activities might be useful first steps in facilitating formative education: modifying the course to accommodate students' needs, fostering peer relationships, and meeting with students. These three areas were selected because the levels of engagement in these areas were nearly the same for the lowest engagement and lower middle engagement profiles. So, when creating PD programs, these might be considered beginning formative education online skills. On the other hand, supporting students' development of meaning/purpose and their moral/ethical development might be considered the most advanced domains on the developmental continuum. These two areas had the two highest predicted average scores for those in the highest engagement group and the two lowest predicted scores for those in the lowest engagement group. Finally, the six remaining domains might be considered intermediate skills: supporting students' spiritual development; supporting students' social-emotional development; supporting students' intellectual development; valuing students as people; proactively supporting students; and promoting reflective and integrative thinking.

Faculty members across academic disciplines were represented in the highest formative engagement profiles, suggesting that engagement in formative education online is possible across fields. Nevertheless, the results suggest that faculty members in nursing, education/human development, social work, and theology were more likely than those in the arts and sciences to be in the upper middle engagement group ($p<.05$) and the highest engagement group (marginal significance at $p<.10$), compared to the lowest engagement group. This suggests that there may be something about these fields that facilitates engagement in formative education online.

As discussed earlier, faculty in an academic discipline often share pedagogical practices and beliefs (Neumann, 2001). Nursing, education/human development, social work, and theology faculty might engage more in formative education because these fields are associated with service and altruism, which may lead faculty to greater engagement in formative education. The coursework in these fields is also often more applied, which lends itself better to formative education.

Since the sample size was relatively modest and faculty members reported their school affiliation within the university rather than their academic department, we did not pre-classify academic disciplines using Biglan (1973a, 1973b) or Holland's (1997) systems. In reviewing our findings, however, we can imagine how our results might connect to these systems. For example, disciplines in nursing, education/human development, social work, and theology would probably be considered low consensus, applied fields using Biglan's (1973a, 1973b) system and "social" academic environments using Holland's (1997) system. Umbach (2007) describes the social Holland environment as "focus[ed] on the healing or teaching of others. [...] Members are regarded for sociability, understanding, empathy, and generosity" (p. 274). Umbach lists education and nursing as two examples of social environments.

Prior research indicates that faculty in lower consensus fields on average spend relatively more time teaching than conducting research (Braxton & Hargens, 1996) and that social disciplines place considerable emphasis on faculty-student interactions (Umbach, 2007). These results are consistent with our finding that faculty from the schools of nursing, education/human development, social work, and theology (i.e., low consensus, social academic environments) are highly engaged in formative

education online. Furthermore, Umbach's (2007) description of the social academic environment includes behaviors such as healing others and personal characteristics such as understanding and empathy that are embodied in a holistic educational approach. It follows that faculty members in schools with social academic cultures would be more inclined to engage in formative education.

Based on these findings, academic administrators might develop a taskforce to brainstorm opportunities to better incorporate formative education across the disciplines when teaching online. PD courses might be tailored to the needs of each academic department.

Equity and Gender Differences in Engagement in Formative Education Online

Faculty members are typically evaluated for tenure and promotion with respect to three domains: research, teaching, and service (Schuster et al., 2006). The precise weights awarded to each of these three criteria are often unclear, but at many institutions faculty recognize that research is given the greatest weight (Schimanski & Alperin, 2018). Education faculty at one research university believed that research accounted for 65.6% of their evaluation in the tenure and promotion process, whereas teaching accounted for 25.6% and service for 8.7% (May, 2005).

Especially at the undergraduate level, formative education is most directly relevant to the teaching domain. Our results indicate that women faculty were more likely than male faculty to be classified in higher formative education online engagement profiles, which means that they were more engaged in work that supports students' holistic development. This work includes encouraging students to schedule individual one-on-one meetings, reaching out to students who fall behind in class, modifying courses in response to students' needs, and organizing the class in a way that supports community and social-emotional development. Goin Kono and Taylor (2021) describe these types of behaviors as demonstrating an "ethos of care" (p. 156). Noddings (2013) contends that "an ethic built on caring is […] characteristically and essentially feminine" (p. 8). Women faculty seem to attend more to care-related work with students. O'Meara et al. (2017) found that male faculty spend a higher share of their time on research, while women faculty spend more time on teaching and advising activities. But this care-related work may be undervalued in the traditional tenure and promotion system.

Women faculty members were responsible for extra caregiving duties during the early period of the pandemic (Davis et al., 2022; Medina et al., 2024). For example, Lane and colleagues (2023) found that Black women faculty experienced greater caregiving responsibilities in terms of caring for their children's remote schooling and their students' needs. Docka-Filipek et al. (2023) found that students believed that women faculty were more responsive to their individual needs during the early period of the pandemic, which the researchers attributed to "women faculty [… being] all-too-aware of the career penalties that can accompany a dip in any monitored performance metrics" (p. 15). In other words, women need to surpass basic expectations to ensure that they are not unduly judged by students. Berheide et al.

argue (2022) that, in comparison to other faculty members, White cisgender male faculty members hold power that shields them from additional requests for assistance from students. The pandemic thus may have reinforced gender inequalities in how labor was distributed, such that women disproportionately engaged in both care-related work for their students and service demands for their institution and department (Lopes & de Camargo Santos, 2025).

These additional caregiving demands limited women faculty members' time for research and increased their stress levels, which impeded their research productivity (Dunn et al., 2022; Esquivel et al., 2023). Roubinov et al. (2022), for example, found that male faculty members submitted more grant proposals than women in 2020. In another study, Ellinas et al. (2022) discovered that men were more likely than women faculty to report increased academic productivity during the early period of the pandemic. In a third study, Bell and Fong (2021) found that the volume of article submissions was higher for both male and female faculty during the early pandemic of the pandemic, but the percentage increase was higher for men than women (23.8% vs. 7.9%).

Since a care-centered ethos is embodied within formative education, it is important that care-centered activities are valued within tenure and promotion systems. Institutions that value formative education may wish to consider increasing the weight placed on teaching in tenure and promotion decisions. Education faculty members at one research university in the United States suggested that the emphasis on teaching (from 25.6% to 37.2%) and service (from 8.7% to 13.5%) should increase, while the emphasis on research should decrease (from 65.6% to 49.6%) (May, 2005). This would be an important step in recognizing the caregiving work that is disproportionately undertaken by women faculty in higher education.

Making Space for Spirituality in Academia

Our findings indicate that faculty members' religious and spiritual identity is related to their engagement in formative education online. Specifically, more than half (57%) of the faculty members in the highest engagement profile identified as *both spiritual and religious* compared to 45%, 29%, and 14% in the upper middle, lower middle, and lowest engagement profiles, respectively. Identifying as *spiritual only* or as *both spiritual and religious* significantly increased faculty members' probabilities of classification in the upper middle or highest formative education online engagement profiles, relative to those identifying as neither spiritual nor religious, whereas identifying as *religious only* did not.

In related work, Lindholm and Astin (2006, 2008) found a relationship between spirituality and student-centered and civic-minded teaching practices. These practices are aligned with formative education because they focus on students' holistic development. Lindholm and Astin (2006) found that 53.6% of faculty members who scored high on spirituality and 8.1% of those who scored low on spirituality also scored high on student-development orientation. Moreover,

29.4%, 33.7%, and 25.7% of those with "high" spirituality also scored "high" on student-centered pedagogy, civic-minded practice, and civic-minded values, respectively, compared to 13.2%, 11.1%, and 8.2%, respectively, scoring "low" on spirituality. In another study, Lindholm and Astin (2008) found that a higher proportion of faculty who scored "high" in spirituality engaged in various student-centered practices in "all" or "most" of their courses compared to those scoring "low" in spirituality.

Faculty spirituality not only has potential benefits for students, but also for faculty themselves and for their institutions. In studies examining workplace practices (not specific to higher education), researchers have found positive relationships between spirituality and employees' engagement (Roof, 2015; Van der Walt, 2018), job satisfaction (Houghton et al., 2016), and organizational commitment (Houghton et al., 2016).

Given our findings and prior research, postsecondary institutions that value holistic student development might consider ways to foster faculty members' spirituality. This may create a dilemma for institutions that are concerned about being seen as interfering in the "private" lives of faculty members. But some of this concern might stem from a misunderstanding about the nature of spirituality and what a campus environment that supports faculty members' spirituality might look like in practice. Lindholm and Astin (2006) argue that "academics too often live fragmented and inauthentic lives, where they act either as if they are not spiritual beings, or as if their spiritual side is irrelevant to their vocation" (p. 65). When faculty detach their academic work from their spiritual selves, they are denied opportunities to connect their work to their personal values and have deep conversations with colleagues about meaning, authenticity, and wholeness in their lives (Lindholm & Astin, 2006). Developing one's spirituality can be thought of as an inner journey of identifying our authentic selves (our values, sense of identity), finding our life purpose, and fostering meaningful relationships within our communities (Lindholm & Astin, 2006). These spiritual development practices are also central components of formative education, which may explain why faculty members who identify as spiritual are more engaged in formative education online.

Postsecondary institutions can support faculty members' development of spirituality through their institutional culture and practices. While spirituality involves our inner lives, it is also relational. Hindman (2002) argues that it "can be enriched or hampered by the relationships that comprise our life" (p. 168). Providing opportunities for faculty members to connect with colleagues socially and professionally can foster a sense of connectedness that supports spirituality (Hindman, 2002). MacKenzie and colleagues (2007) argue that institutions can support faculty members' authenticity, which is central to spiritual development, through policies and practices that not only support spiritual practice but also ideology critique (i.e., questioning unexamined beliefs held by the majority) and psychological awareness. These policies and practices might include support for academic freedom, faculty writing groups, faculty retreats, mentoring, and wellness programs (e.g., exercise classes, nutrition courses, mindfulness courses).

Limitations

Two limitations of the study should be noted. First, the sample size used in the analyses was relatively modest for latent variable modeling. Second, the diversity of the sample was limited in some respects. While the sample was diverse with respect to academic discipline, gender identity, and teaching experience, most faculty identified as White (72%). Given that prior research indicates that faculty members of color, and especially women of color, are more likely to engage in caretaking (Berheide et al., 2022; Lane et al., 2023), it was surprising that faculty members of color were not significantly more likely to be classified in higher engagement profiles. However, the small number of racial/ethnic minorities in the sample might have limited the statistical power needed to detect these differences. Furthermore, the sample included faculty members from only one university. This university is also a Jesuit university, and thus faculty members might on average have higher levels of spirituality than faculty elsewhere and be more open to engaging in formative education online. We recommend that similar studies be conducted with larger and more diverse samples.

Conclusion

This study provides valuable insights into faculty members' engagement in formative or whole-person education online, beginning with the identification of four engagement profiles. Each profile was represented by 11 indicators corresponding to domains of engagement (e.g., fostering peer relationships, supporting students' social-emotional development). In general, the profiles indicated that faculty who demonstrated high engagement in one domain tended to engage highly in the other domains—and vice versa. There was one notable deviation from this trend, however, for the lowest engagement profile. The lowest engagement group fostered peer relationships, modified their course in response to students' needs, and met with students at levels that nearly matched the lower middle engagement group, suggesting that these may be prime areas for initial professional development.

Faculty across all disciplines were represented in the highest engagement profile, indicating that formative education online is not limited to any specific academic field. However, faculty in nursing, education/human development, social work, and theology were more likely than those in the arts and sciences to be in the highest engagement profile. Qualitative research with faculty in nursing, education/human development, social work, and theology may reveal additional insights about formative education online that we could adapt to other fields.

Both the bivariate and multivariate statistical models indicated that women faculty and faculty who identify as spiritual (whether spiritual only or religious too) are more likely to be highly engaged in formative education online. Given the value of formative education, we suggest that postsecondary institutions

identify opportunities to increase the weight of formative education in tenure and promotion decisions, thereby fostering more equitable promotion pathways for women faculty who disproportionately engage in caretaking work, and that they make space in the academy to support faculty members' spiritual development.

Institutions might provide formative education online professional development opportunities that are sensitive to differences across academic disciplines. Riggers-Piehl and Sax (2018), for example, highlight university teaching and learning centers as potential spaces for supporting faculty in articulating affective learning outcomes for their classes. Other scholars have adopted contemplative, reflective teaching practices to support whole-person learning. Baruch (2014), for example, takes moments of silence in his class to allow students to reflect on their personal goals for the course. Crawley et al. (2008) encourage constant self-reflexivity among students through interactive questioning and student-centered assignments.

These strategies are similar to those identified by faculty members in our sample. In 2021, our focal institution developed a practice guide for implementing formative education online (Kim et al., 2021a). Some highlights from this guide include: 1) developing reflective assignments that encourage students to write about spiritual and/or personal issues; 2) providing opportunities for students to select project topics and apply course content beyond the classroom; 3) encouraging students to connect their learning to broader academic and professional goals; 4) incorporating current events into class discussions; 5) utilizing technological tools such as polling to foster broad participation; and 6) inviting community or family members into the classroom through guest lectures or as observers.

One mathematics professor, for example, created a video that students could watch online explaining the meaning of "flattening the curve" in relation to the COVID- 19 pandemic (Kim et al., 2021a). The professor then connected this concept to "area under the curve" in Calculus. A psychology professor developed a tiered online mentoring program with her students and her son, in which her students mentored high school students and the high school students mentored middle school students on Zoom. At each tier, students had an opportunity to develop their advising skills and nurture young people's development, which are important skills for those in psychology-related fields. We hope that such strategies inspire further engagement in formative education.

Data Availability Data are not currently available due to participants' confidentiality agreements. The researchers are happy to answer data-related questions for interested parties upon reasonable request.

Declarations

Ethics Declaration The study (Protocol # 21.023.01e) was approved by the Institutional Review Board at Boston College (United States), in accordance with their standards for human subjects research.

Consent to Participate All participants provided informed consent.

Competing Interest The authors declare no competing interests.

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Katrina Borowiec is a doctoral candidate in the Measurement, Evaluation, Statistics, and Assessment Department at the Boston College Lynch School of Education and Human Development. She uses quantitative, qualitative, and mixed methods approaches to study the development of sense of belonging, community, and well-being in educational institutions and whole-person education.

Stanton Wortham is the Charles F. Donovan, S.J., Dean of the Lynch School of Education and Human Development at Boston College. He was formerly the Berkowitz Professor of Education at the University of Pennsylvania. His books include Learning Identity, Bullish on Uncertainty, Discourse Analysis beyond the Speech Event, and Migration Narratives. His work has yielded films as well as traditional publications (see https://www.adelantethefilm.com/). He has been a W.T. Grant Foundation Distinguished Fellow and is an American Educational Research Association Fellow and an elected member of the National Academy of Education. He has received the American Educational Research Association Cattell Early Career Research Award, the University of Pennsylvania Lindback Award for Distinguished Teaching, and the Society for Linguistic Anthropology Sapir Book Prize. In both research and practice, he and his colleagues at Boston College are implementing a broad vision of "formative education," in which educators are responsible for fostering the development of whole people, including interrelations among interpersonal, emotional, ethical and spiritual dimensions. More information about this vision can be found at https://youtu.be/zV9D_kGKEvI.

Deoksoon Kim is a Professor at Boston College whose research focuses on second language literacy, the integration of instructional technologies in teacher education, and language learning through social media. She has published extensively in top-tier peer-reviewed journals, including AERA Open, Computers & Education, Language Learning Journal, International Journal of Educational Research, Journal of Second Language Writing, and Journal of Educational Computing Research. She has also edited scholarly volumes in her field. Dr. Kim's current projects include research on the CityConnects integrated student support intervention, design experiments using digital storytelling with language learners and in teacher education, and initiatives in formative education. Her innovative scholarship has been recognized with the Journal of Second Language Writing Best Article Award in 2016 for her work on wiki-based collaborative writing, and the 2025 Best Research Paper Award from KAERA. With extensive experience in research, teaching, and professional development across South Korea, the UK, Canada, and the U.S., Dr. Kim brings a global and inclusive perspective to her work. Her scholarship continues to shape the field of language education by bridging technology, culturally responsive pedagogy, and educational equity.

Elizabeth Barsotti is a doctoral candidate in Theology and Education at the Clough School of Theology and Ministry at Boston College. Her research interests include Catholic higher education, formative education, college student development, and the identity and role of the educator.

Authors and Affiliations

Katrina Borowiec[1] · **Stanton Wortham**[1] · **Deoksoon Kim**[1] · **Elizabeth Barsotti**[2]

✉ Katrina Borowiec
   katrina.borowiec@bc.edu

   Stanton Wortham
   stanton.wortham@bc.edu

   Deoksoon Kim
   deoksoon.kim@bc.edu

   Elizabeth Barsotti
   barsotti@bc.edu

1   Lynch School of Education and Human Development, Boston College, 140 Commonwealth Avenue, Chestnut Hill, MA 02467, USA

2   Boston College School of Theology and Ministry, 140 Commonwealth Avenue, Chestnut Hill, MA 02467, USA