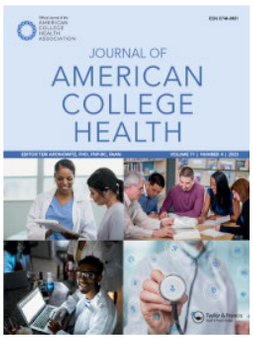

Journal of American College Health

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/vach20

Does variability across three universities in the implementation of a college course on human flourishing affect student outcomes?

Karen Kurotsuchi Inkelas, Blake A. Colaianne, Matthew J. Hirshberg, Mark T. Greenberg, Richard J. Davidson, John D. Dunne, David Germano & Robert W. Roeser

To cite this article: Karen Kurotsuchi Inkelas, Blake A. Colaianne, Matthew J. Hirshberg, Mark T. Greenberg, Richard J. Davidson, John D. Dunne, David Germano & Robert W. Roeser (2023) Does variability across three universities in the implementation of a college course on human flourishing affect student outcomes?, Journal of American College Health, 71:4, 1111-1124, DOI: 10.1080/07448481.2021.1920956

To link to this article: https://doi.org/10.1080/07448481.2021.1920956

Published online: 09 Jul 2021.

JOURNAL OF AMERICAN COLLEGE HEALTH
2023, VOL. 71, NO. 4, 1111–1124
https://doi.org/10.1080/07448481.2021.1920956

Routledge
Taylor & Francis Group

MAJOR ARTICLE

Does variability across three universities in the implementation of a college course on human flourishing affect student outcomes?

Karen Kurotsuchi Inkelas, PhD[a], Blake A. Colaianne, MS[b], Matthew J. Hirshberg, PhD[c], Mark T. Greenberg, PhD[b], Richard J. Davidson, PhD[c], John D. Dunne, PhD[c], David Germano, PhD[a] and Robert W. Roeser, PhD[b]

[a]University of Virginia, Charlottesville, Virginia, USA; [b]Pennsylvania State University, University Park, Pennsylvania, USA; [c]University of Wisconsin, Madison, Wisconsin, USA

ABSTRACT

Objective: This study explores whether variability in the implementation of an undergraduate course on human flourishing is differentially associated with student outcomes.
Participants: 101 students in the "Art and Science of Human Flourishing" course across three large, public, R1 universities in Fall 2018 participated in the study.
Methods: Formative course data included researcher observations of weekly class pedagogy, students' weekly meditation practice logs and end-of-course assessments, and pre/post surveys measuring changes in participating students' outcomes related to flourishing (e.g., attentional skills, social-emotional skills, perspectives on flourishing, mental and physical health).
Results: Although course pedagogy and student engagement varied across the three universities, students' outcomes were nonetheless similar.
Conclusions: Variability in course implementation did not appear to differentially affect students' outcomes. We tentatively conclude that other institutions interested in offering the flourishing course may make limited adaptations to fit their pedagogical preferences without concern for altering its impact on students.

ARTICLE HISTORY
Received 26 October 2020
Revised 31 March 2021
Accepted 18 April 2021

KEYWORDS
Flourishing; teaching; wellbeing; stress; holistic education

Today's colleges are increasingly challenged with how to manage and reduce the high levels of stress and anxiety experienced among their students.[1] In a 2019 study of over 30,000 undergraduates at 58 higher education institutions across the United States, 77% reported moderate-to-high levels of stress in the past 30 days, and 41% reported moderate to severe psychological distress. Moreover, 40% of students reported that their stress negatively impacted their academic performance.[2] Traditionally, colleges and universities have referred students with psychological distress concerns to Student Health or Counseling Centers. However, many college mental health services cannot keep pace with the widespread number of students seeking such care.[1] Thus, innovative curricular, co-curricular, and extra-curricular approaches have emerged that aim to introduce students to various wellbeing-related skills.[3,4]

Relatedly, those interested in reform in higher education have called more broadly for a return to a holistic and experiential approach to teaching and learning in the liberal education tradition.[5,6] The contemporary undergraduate academic curriculum is composed of general education requirements, major requirements, and electives. While the major requirements allow students to probe a particular discipline more deeply, it is the role of the general education curriculum to provide students with a holistic education, one that is integrative and draws together humanistic, scientific, and experiential ways of knowing.[5] Indeed, Walker and Soltis[7] identified three purposes of a general education for the betterment of society: a) transmitting knowledge to future generations; b) preparing students to work and live in a democratic society; and c) equipping students for their futures by knowing their own potentials.

One option for addressing the twin challenges of students' mental health needs and their needs for more holistic forms of education is through the introduction of general education, for-credit courses that focus on the concept of human flourishing. Several conceptualizations of human flourishing appear in the psychological literature,[8,9] but the term broadly refers to promoting a positive perspective on life that includes elements such as resiliency in the face of adversity, supportive relationships, and a life of meaning and purpose. Recently, offerings to support student flourishing have become popular in many forms in higher education, such as co- or

CONTACT Karen Kurotsuchi Inkelas kki5x@virginia.edu School of Education & Human Development, University of Virginia, 405 Emmet Street South, 298 Ridley Hall, Charlottesville, VA 22904, USA

extra-curricular mindfulness workshops, yoga or meditation recreational classes, or academic skills and/or resilience coaching.[10,11] However, these offerings are optional, and as such, many college students will never engage with them.

There are several challenges to creating college courses around human flourishing, including the need for academic rigor, the difficulty in combining experiential content with intellectual content, and challenges involving the instruction of the course—including the disciplinary background of the instructor and the pedagogical choices used in classroom teaching. To address such challenges, Palmer and Zajonc[5] provide insight into holistic educational approaches, including how best to teach in an interdisciplinary manner: apply theory to practice in ways that bring intellectual content to life, and engage students in ways that deepen their understandings of the "purpose, meaning, limits, and aspirations of their lives."[5(p10)] Adopting these ideas, a collaborative group of professors across three universities created a credit-bearing course on human flourishing, integrated into the general education curriculum, that aimed to reduce student stress, promote wellbeing, and engage a unique holistic approach to teaching and learning at the post-secondary level. The course was taught on three university campuses in Fall 2018, and this study examines whether variations in the course instruction across the three universities may have affected students' outcomes.

Art and science of human flourishing course

In 2015, scholars from three research universities began a collaboration to develop the general education, for-credit academic course titled, "Art and Science of Human Flourishing" (ASHF). The collaborative included experts in religion, languages and cultures, education, various fields of psychology, and neuroscience. The theory of flourishing undergirding the course was drawn from multiple research fields and the group members' work in domains that have been variously called Contemplative Science, Contemplative Education, Contemplative Teaching and Learning, and Contemplative Studies.[12,13] These domains represent interdisciplinary efforts to draw together ancient philosophical and practice traditions of contemplation with the contemporary study of wellbeing in the human sciences, with the aim of improving individual and collective flourishing.

The ASHF course model is similar to extant scientific models of flourishing in focusing on human potential and agency, and its exploration of happiness, purpose, social relationships, and contributions to something bigger than the self. For example, Keyes[8] defined flourishing as "a state in which an individual feels positive emotion toward life and is functioning well psychologically and socially."[8(p294)] He later identified 13 empirically validated dimensions representing flourishing that he grouped into three categories: a) Positive Emotions (Emotional Well-Being): positive affect, avowed quality of life; b) Positive Psychological Functioning (Psychological Well-Being): self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, positive relations with others; and c) Positive Social Functioning (Social Well-Being): social acceptance, social actualization, social contribution, social coherence, social integration.[14]

Similarly, Seligman[9] developed an empirically-derived, multi-faceted definition of flourishing that included five key dimensions: positive emotion, engagement, relationships, meaning, and accomplishment (i.e., the PERMA Model). Positive emotion is described as the ability to remain optimistic and keep a positive perspective. Engagement refers to pursuing activities that are challenging so that success in them elicits fulfillment. Relationships include interpersonal connections that promote love, intimacy, and strong emotional affect. Meaning relates to an individual's sense making about their purpose in life, and Accomplishments represents the achievement of goals and ambitions.

Core themes and dimensions of flourishing explored in the ASHF course are related to these theories of human flourishing, as well as insights from the fields of social-emotional learning, contemplative science, and contemplative education.[12,13] The curriculum encompasses five dimensions of flourishing: a) Foundations (flourishing, transformation, resilience), b) Awareness (emotion, focus, mindfulness), c) Connection (interdependence, compassion, belonging), d) Insight (identity, values, aesthetics), and e) Integration (courage, community, embodiment). These five dimensions are explored through the 15 related qualities of flourishing listed in parentheses above. Each quality corresponds to a single week of course content (see Figure 1). Rather than provide a "recipe" for flourishing, the course exposes students to these 15 different "ingredients" of flourishing and poses an open-ended inquiry into how best to incorporate these elements into their own lives. Our hope is that by introducing students to a variety of different practices and perspectives on flourishing, students will continue to draw on these experiences as they move through the challenges of the transition to adulthood and beyond.

The ASHF course is unique from other perspectives on flourishing through its emphasis on attention/awareness and compassion and the arts and aesthetic experience as foundational dimensions.[15,16] These dimensions are drawn more from ancient philosophic and practice traditions including Stoicism and Buddhism. According to these traditions, it is awareness, interconnection, and insight that lead to flourishing. Finally, the ASHF model also focuses on the qualities of personal relationships within wider issues of communal flourishing. Put simply, communal flourishing is possible only when equal rights and opportunities for all have been attained. Students explore this big idea throughout the course through the concepts of interdependence, systems thinking skills, and

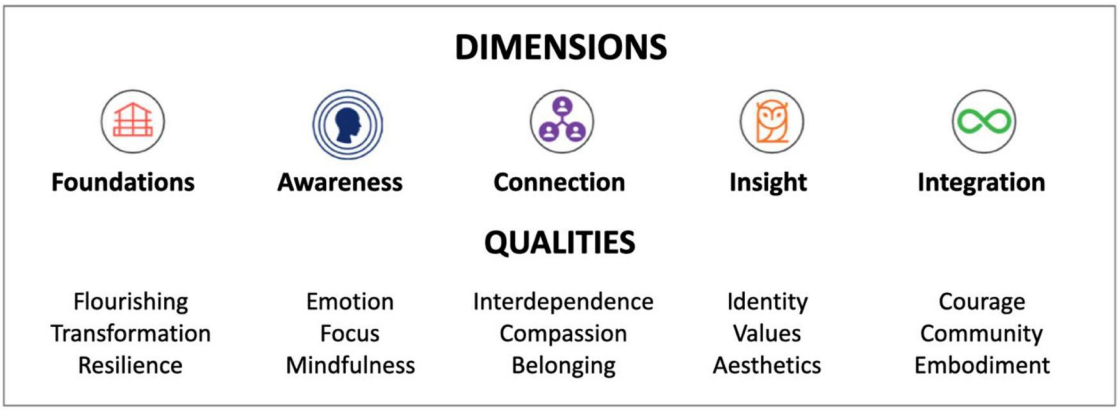

Figure 1. ASHF model of student flourishing. The Art and Science of Human Flourishing course addresses 15 qualities of flourishing in five general dimensions.

"secular ethics."[17] Finally, and perhaps most importantly, the course emphasizes both declarative and procedural forms of learning, with emphasis on the latter.

Declarative and procedural learning

A key part of the ASHF course is not just teaching students what flourishing is, but also the malleable skills that they can develop to set themselves on a path to flourishing. This approach is consistent with Barr & Tagg's[18] argument that college instruction should transition from a "teaching" paradigm to a "learning" paradigm: college teaching is now seen less as knowledge transfer and more as facilitating within students their own ability to construct and create their own knowledge. Key to this facilitation of students' knowledge construction is active learning, or instructional activities involving students "doing things and thinking about what they are doing."[19] Active learning activities can range from peer discussions of the course material to case studies, problem solving, or laboratory experiments.[19–22]

While some active learning activities may be used once or twice to reinforce a concept, other types of learning require regular practice in order to achieve mastery. Gagne, Yekovich and Yekovich[23] distinguish between two types of learning: declarative and procedural. Declarative learning happens through the acquisition of knowledge, while procedural learning occurs through the repeated performance of certain tasks or skills. For example, a pianist might use declarative knowledge to know what kind of musical tradition a certain piece is derived from and how a composer might have preferred the piece be played, but they will use procedural learning to master the keystrokes that make up the piece, practicing again and again until they gain expertise and the ability to play it relatively effortlessly. In learning environments, Kolb[24] argues that the most optimal learning must include both declarative and procedural elements. Repeated practice, he asserts, may not necessarily lead to learning and improved performance if the practice is without form or foundation, which is acquired through declarative learning. On the other hand, repetition of a task can help solidify the concepts until they become habits of the mind.

The ASHF course was designed in a flipped classroom format to maximize active, declarative, and procedural learning. Students were assigned common readings and video-recorded lectures to read and watch before each respective class session. They were also asked to continually reflect on their learning and experiences in the course. In class, students reviewed the flourishing concepts, engaged in in-class experiential activities that reinforced the concepts individually or in small groups, reflected on these experiential activities, and participated in weekly contemplative meditation practices aligned with the weekly concept. In addition to the two weekly class sessions, a novel feature of the course was the weekly contemplative lab in which smaller groups of students met with a teaching assistant who introduced a weekly meditation practice (e.g., breath awareness, loving-kindness) and provided space for a deeper exploration of the practice and the week's topic.[25]

The instructors and teaching assistants at the three universities came from different disciplinary backgrounds: Religious Studies (i.e., Buddhist Scholar), Psychology (i.e., Affective Neuroscientist), and Human Development (i.e., Applied Developmental Psychologist). However, there was at least one instructor on each campus who studied some form of Contemplative Studies from their disciplinary perspective, and there was at least one instructor who had experience teaching contemplative practices, such as breathing techniques or other forms of meditation (e.g., body scan). The collaborative group of scholars that developed the ASHF course believed that these two sets of qualifications were essential for the teaching of the course. It was important that one of the instructors have a grounding in the scholarly literature on either the art and/or science of flourishing. Equally, it was crucial that one of the instructors (which could be the same person) had

experience teaching contemplative practices so that the practices could be introduced competently and appropriately to the students, who would in turn develop procedural skill in the practices through repetition over the semester and beyond.

Theory of change

The theory of change for the ASHF course combines theories of flourishing with concepts of declarative and procedural learning to predict developmental outcomes for students. Figure 2 presents the theory of change for the ASHF course, i.e., how the course structure and activities are hypothesized to impact student outcomes. Students are introduced to the five dimensions (and 15 qualities) through both declarative (academic learning opportunities) and procedural (experiential learning opportunities) means in whole class sessions, smaller contemplative lab sections, and out-of-class coursework and practices. As a result, they emerge with three sets of learning outcomes immediately after completion of the course (i.e., proximal outcomes): a) attentional skills (attention regulation and mindfulness), b) social-emotional skills (self-compassion and compassion for others), and c) perspectives on flourishing (meaning in life and common humanity). The cultivation of those skills will improve distal developmental outcomes that they will use in subsequent college experiences, such as: a) mental health (psychological wellbeing and distress, b) physical health (overall physical health and sleep), and c) lower risk behaviors (alcohol and substance use and their consequences).

The theory of change outlines optimal outcomes and is developmental in nature. We do not expect that all students will master all the skills and perspectives we present by the conclusion of the course. Instead, these outcomes may unfold and manifest over time as students solidify their declarative knowledge and consistently hone their new procedural habits of flourishing.

Purpose of the study

After two years of formative evaluation and course revisions, the Fall 2018 class was the first to be formally studied. Each ASHF course on its respective campus used the same readings, video lectures, and assignments, and enrolled between 60 and 100 mostly first-year students. We conducted a quasi-experimental, propensity-score matched research project on students' proximal and distal outcomes in Fall 2018. Results indicated that, compared to control students, students in the ASHF course showed significant reductions in symptoms of anxiety and depression, and improved attentional skills (e.g., mindfulness), social-emotional skills (e.g., self-compassion, empathy), and perspectives on flourishing (e.g., meaning in life, common humanity).[26] Results from the same study design with students from Fall 2019 replicated most of the observed effects from the 2018 sample.

In Fall 2018, we also conducted end-of-course student evaluations and class-by-class accounts of the course implementation at each university (e.g., amount of lecture, group discussion, experiential learning, contemplative practice, etc.). These data were planned because course implementation and employed pedagogy were intended to be at the discretion of each instructor, who came from different disciplines and teaching modalities. We expected that their diverse backgrounds might be associated with different instructional approaches. The purpose of this study is to examine whether pedagogical differences in instruction across the three universities affected students' flourishing outcomes. The study focuses on two main research questions:

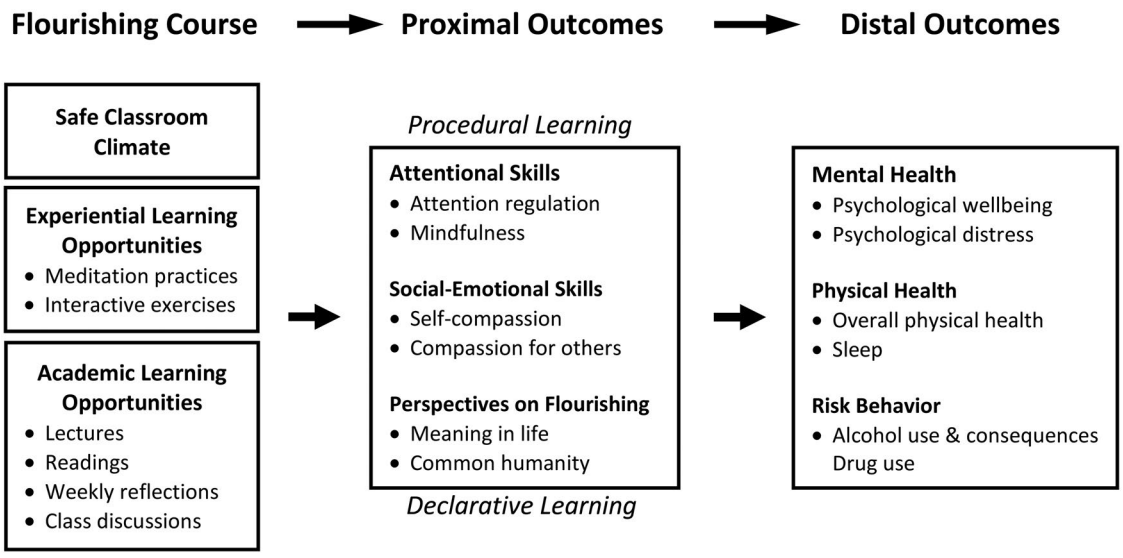

Figure 2. ASHF theory of change model. The Art and Science of Human Flourishing course is composed of multiple experiential and academic learning opportunities, which are theorized to lead to several proximal and distal outcomes.

1. How did instructors with different disciplinary backgrounds and preferences teach the ASHF course at the three college campuses?
2. Are the impacts of the course on students' outcomes similar or different across campuses (i.e., are there differences in flourishing outcomes for ASHF students across the three universities)?

From data on these two research questions, we aim to interpret descriptively if and how instructional variation and student outcomes may have been linked. Exploring these questions will inform future implementations of the course in different departments with different instructors.

Method

This study examines variations in the instruction of the ASHF course across the three campuses and variations in students' proximal and distal outcomes in an effort to understand the potential relationship between them. The data are drawn from four sources: class-by-class formative assessments of the ASHF pedagogy (class diaries); student reports of out of class contemplative practice (practice logs); student end-of-course assessments; and student self-reports from a pre/post-survey. Here we examine data from only students who took the course (i.e., no control group students), and conceptualize course impacts in terms of pre/post change in outcomes among class participants. This study received Institutional Review Board (IRB) approval from all three universities separately; in addition, the study obtained a National Institutes of Health (NIH) Certificate of Confidentiality.

Sample

In all, there were 186 undergraduates enrolled in the ASHF course across the three universities (University 1: $n = 61$; University 2: $n = 54$; University 3: $n = 71$). Among those who enrolled in the ASHF course, 105 respondents consented to participate in this research and completed the pre- and post-surveys from the three universities (University 1: $n = 41$; University 2: $n = 35$; University 3: $n = 29$). The overall response rate for consent was 56.5%. Participants self-reported their gender identity as 74.3% female ($n = 75$) and 25.7% male ($n = 26$). The sample primarily self-reported as White/Caucasian (65.3%, $n = 66$), with 17.8% reporting as Asian/Pacific Islander ($n = 18$), 3.9% reporting as Black/African American ($n = 4$), 5.0% reporting as Hispanic/Latinx ($n = 5$), and 7.9% preferring not to say or self-describing as another race/ethnicity ($n = 8$). The average age was 18.6, and 5.9% of the sample were international students ($n = 6$).

Institutional contexts and instructor backgrounds

This study was conducted at three public four-year universities in the United States. All three are classified as R1 Doctoral Universities (very high research activity) by the Carnegie Commission on Higher Education.

Institution 1 is located in the Mid-Atlantic region and has just over 17,000 undergraduate students. The student body is 55% women, 13% under-represented minorities (URM, or African American, Latinx, and Native American or Alaskan Native), and 69% in-state. It has a 95% six-year graduation rate and 24% admissions offer rate. There were two instructors for the ASHF course at Institution 1. One had a disciplinary background in East Asian Religions and Dance, and taught yoga, meditation, and mindfulness to students, faculty, and staff. The other instructor directed the educational activities of the university's Contemplative Sciences Center, taught courses and workshops in mindfulness and compassion, and holds a doctorate in Higher Education. There were two graduate assistants assisting the ASHF course at Institution 1, and both are pursuing doctorates in Religious Studies with a specialty in Buddhism. One TA also taught meditation part-time.

Institution 2 is located in the Northeast and has over 40,000 undergraduate students. Its student body is 47% women, 11% URM, and 58% in-state. It has an 86% graduation rate and admits 50% of its applicants. The main instructor was an educational and developmental psychologist and clinical social worker with extensive contemplative practice experience who has been teaching courses that incorporate contemplative practices for over 25 years. In addition, a yoga instructor taught one section and there were two graduate assistants assisting the ASHF course at Institution 2; one purusing a doctorate in Human Development and Family Studies and one pursuing a doctorate in Clinical Psychology. Both studied the effects of contemplative practice in their research and had experience teaching meditation.

Institution 3 is located in the Midwest. and has over 31,000 undergraduates. Its student profile is 52% women, 13% URM, and 56% in-state students. Its six-year graduation rate is 88% and its admissions rate is 54%. The lead instructor had over 40 years of academic and personal study of contemplative traditions. The two TAs that supported instruction and led the contemplative labs both had a decade or more of contemplative practice and teaching experience. One TA had also been a yoga instructor for over 20 years.

Formative assessment

Three different data collection strategies were used for the formative assessment of the ASHF course: class diaries, practice logs, and an end-of-course assessment.

Class diaries

For each class meeting, the respective teaching assistant (TA) on each campus used a pre-formatted class diary to document—from the moment the class began until dismissal—the activities taking place in the classroom. The pre-formatted class diary was in the form of a fillable table, with the following fields to be filled in by the course TA: the activity being performed at a given time, a brief description of the activity, what the students were asked to do for the activity, what the instructors were doing during the activity, and the start and end time of the activity. The course TAs were asked to fill in as many activities in the table as were conducted during each class meeting.

Practice logs

Students were required to practice their weekly contemplative exercises on their own and record the number of minutes they practiced per day in a log. However, the method through which each course collected this data varied; at one institution, the students logged their practice time into an online application, at another institution, students entered their daily practice time into a spreadsheet embedded into the course management system, and the third institution asked students to submit their practice logs on paper, which were subsequently entered into a database.

End-of-course assessment

In addition to the standard student course evaluations distributed at each university, the study distributed a custom course assessment in the final week of the course. Topics in the custom end-of-course assessment were students' perceptions of different facets of the course instruction; their ratings of the contemplative lab; their enjoyment of different contemplative practices; their opinions regarding the classroom climate; and their overall satisfaction with the course. The response rate for the end-of-course assessment across the three universities was: 81.9% ($N = 154$; University 1: $n = 60$; University 2: $n = 32$; University 3: $n = 62$).

Pre/post survey

As described previously, the three universities collected data on various dimensions of flourishing through two surveys: a pre-survey conducted at the beginning of the Fall 2018 semester and a post-survey at the end of the Fall 2018 semester. The pre- and post-surveys were administered online using Qualtrics and were left open for approximately two weeks for each round of data collection. The pre- and post-surveys consisted of 20 validated composite scales or individual items measuring key constructs that aligned with the course's proximal and distal outcomes (see Figure 2 Theory of Change). Roeser[26] describes the constructs that comprise the composite scales, and Appendix A summarizes the composite scales, the constructs they measure, the internal consistency (α) of the scales, and a single-item example from each scale.

Analysis

Using the data from the formative assessment, we applied different analytical methods to characterize the pedagogical strategies used in each version of the course. First, the activities in the raw class diaries were coded into the following categories: lecture, contemplative practice, class activity, announcement, reflection, question-and-answer, or multimedia. Then, the total number of minutes devoted to each of the above categories was summed for each class period and transformed into a percentage of total class time spent on each activity. This procedure allowed us to compare and contrast how class time was utilized across each of the three universities.

Second, all of the practice log data were combined into a master database by individual student. Daily practice minutes were averaged into weekly practice minutes and combined by week by institution to create a chart of average practice time per university. Third, we utilized one-way ANOVA models to assess differences in students' perceptions of the course vis-à-vis the end-of-course-assessment across the three universities, and Tukey's post hoc was used to further probe any significant differences.

Finally, using the pre/post-survey data from the ASHF group only, we estimated a series of multiple regression models with the 20 post-test scores of the measures as the dependent variables and a three-level categorical variable for site as the variable of interest, while controlling for the pretest score, gender, race (white/student of color), and undergraduate year (first-year/not first-year). We then extracted three sets of contrasts by site (site 1 versus site 2; site 1 versus site 3; site 2 versus site 3) and estimated an effect size of the magnitude of the difference in change for each contrast.

Results

Overall use of classroom time

The class time diaries revealed that, despite an identical reading list and set of videotaped lectures shared across the three universities, each instructor used in-class time differently. Figure 3 shows that, overall, the instructor(s) at Institution 3 spent over half of the total class time lecturing. Meanwhile, the instructor(s) at Institution 1 spent about one-third of class time doing class activities, and approximately 2% of the time lecturing and practicing contemplative exercises, respectively. Finally, the instructors at Institution 2 spent almost half of total

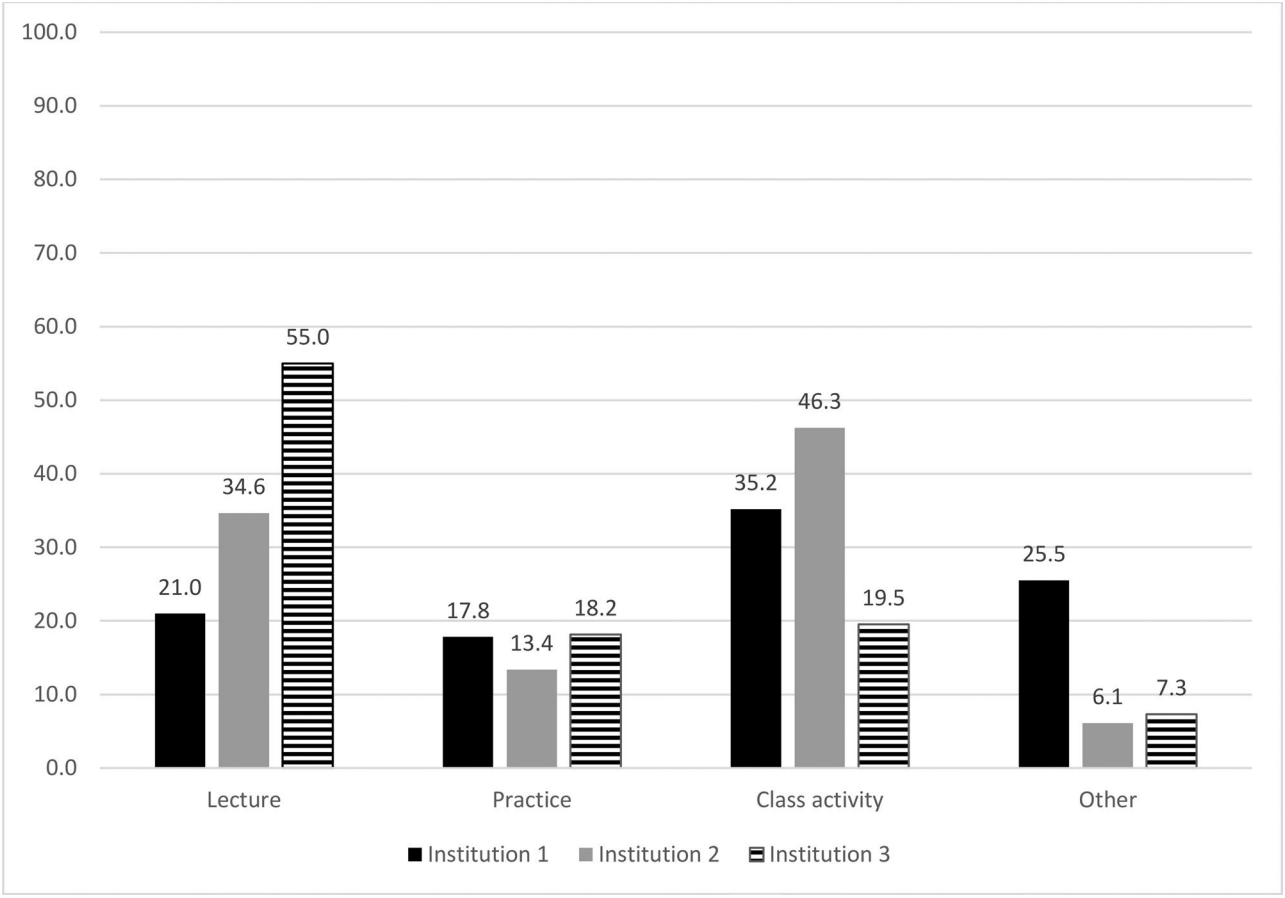

Figure 3. Overall average percentage of ASHF class time spent using various pedagogical techniques across three institutions. Overall, the three universities in the study tended to use different pedagogies in the ASHF course: Institutions 1 and 2 most heavily relied on class activities and Institution 3 utilized lecture the most. *Note:* "Other" category includes announcements, reflection, Q&A, and multimedia use.

class time doing class activities, and slightly more than one-third of the time lecturing, with only 13% of the time devoted to contemplative practice.

However, Figure 3 only provides a rough snapshot of three 15-week long courses. As is the case for many courses that seek to vary pedagogical strategies, instructors may use class time differently week-to-week when addressing different topics or as the term progresses. As seen in Figure 4, the instructor(s) at Institution 1 tended to vary the use of three primary pedagogical strategies over time: lecture, practice, and in-class activities. However, for eight of the 15 weeks, they tended to spend more time on in-class activities.

Meanwhile, at Institution 2, practicing contemplative exercises in class was usually utilized less frequently (with the notable exception of the week covering "Aesthetics"). And, it appears that the instructor(s) tended to alternate—almost weekly during the 5th (Attention/Focus) to 10th (Diversity) weeks of class—between lecturing and in-class activities as the dominant mode of instruction. Finally, lecturing was the primary classroom pedagogical strategy at Institution 3. There is less of a clear pattern for in-class activities and contemplative practices at Institution 3. For some weeks, more time was spent in class on in-class activities, and for others (particularly, Mindfulness), more time was spent on practices.

Time spent practicing contemplative exercises outside of class

Students at the three universities also showed considerable variability in the number of hours outside of class time that they practiced contemplative exercises. Students at Institution 2 tended to practice the highest average number of hours per week, and the number of hours practiced increased over the semester (see Figure 5). Students at Universities 1 and 3 practiced a similar number of hours for the first half of the semester, and tended to practice fewer hours as the semester progressed. Students at Institution 3 dramatically reduced their practice hours approximately two-thirds of the way through the semester, while students at Institution 1 steadily increased their average practice hours until the "Identity" weekly topic, for which there was missing data, and then subsequently averaged a lower number of hours toward the end of the semester.

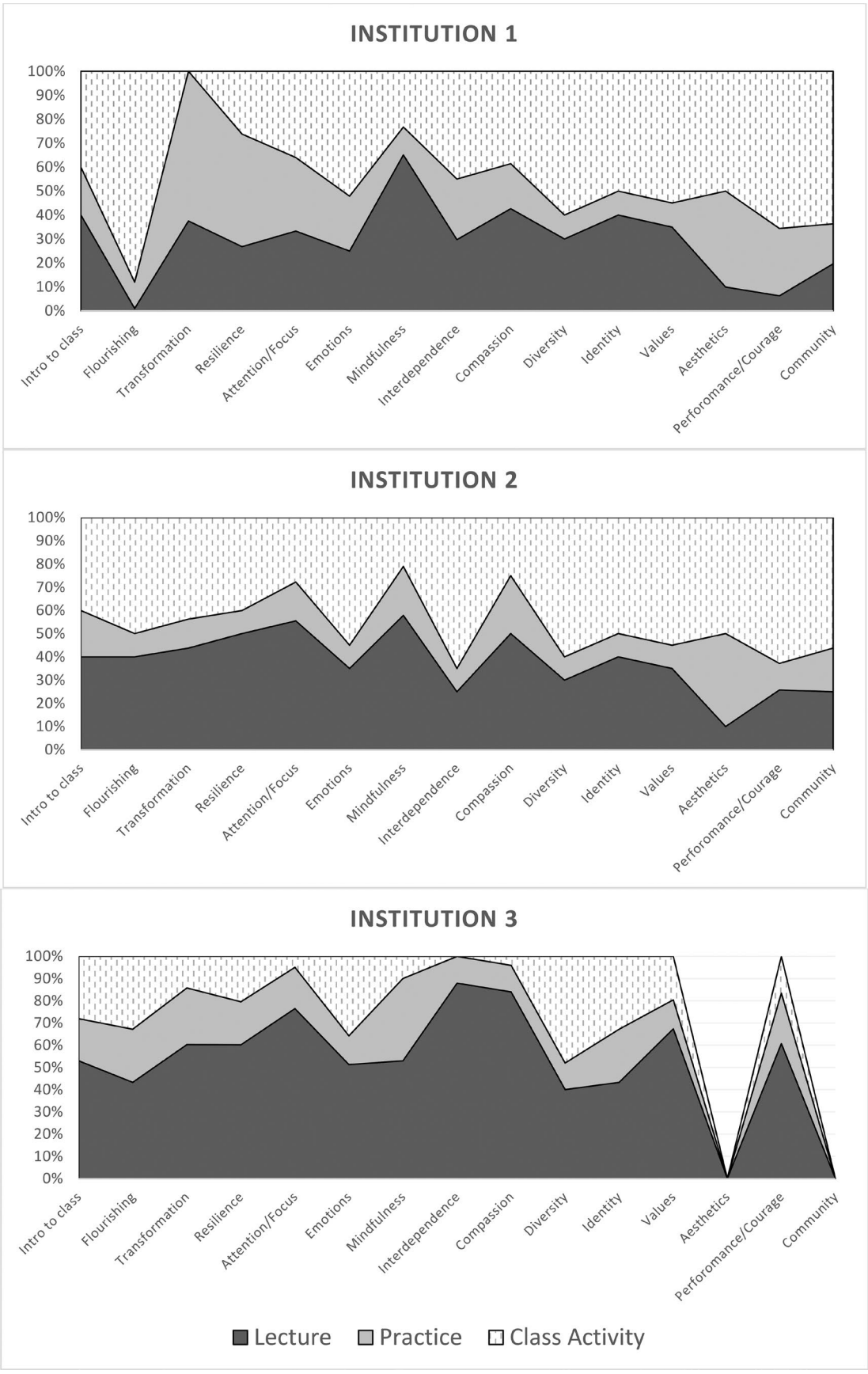

Figure 4. Week-by-week average percentage of ASHF class time spent using various pedagogical techniques by institution. A week-by-week look at average ASHF class time spent reveals that Institution 1 tended to use different pedagogies the most during different weeks in the semester, Institution 2 (particularly toward the end of the semester) used in-class activities the most, and Institution 3 consistently lectured the most. *Note:* Time diary data at Institution 3 was missing for week 13 "Aesthetics," and week 15 "Community."

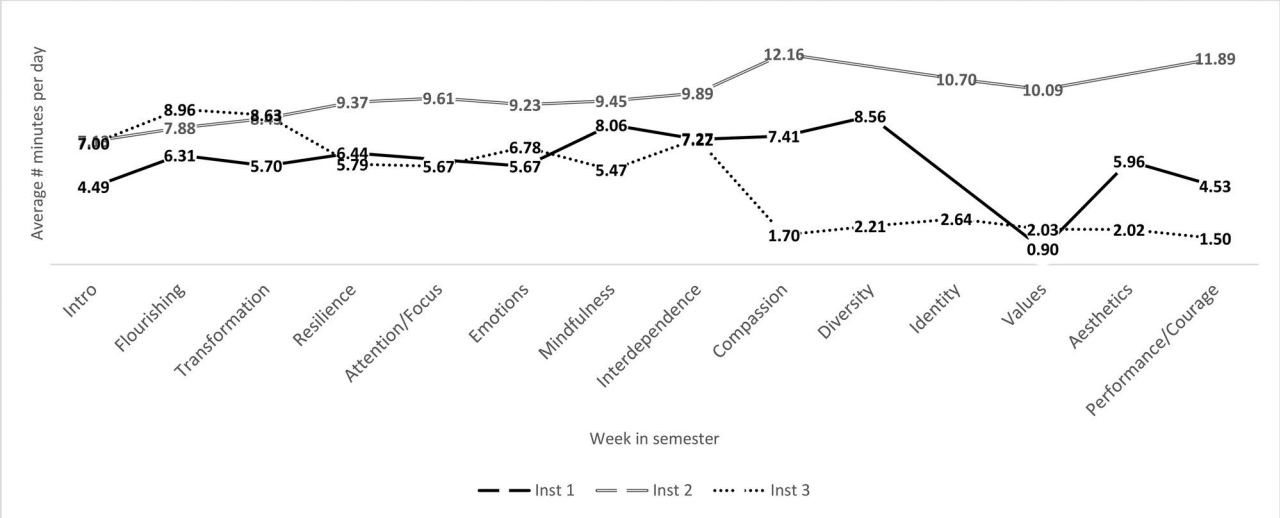

Figure 5. Week-by-week average percentage of class time spent doing contemplative practices outside of class across three institutions. Overall, students at Institution 2 spent the greatest average amount of time doing their contemplative exercises outside of class, and their average practice hours gradually increased over the span of the semester. Institutions 1 and 3 showed declines in average practice hours, especially Institution 3, toward the end of the semester. *Note:* Practice log data at Institution 1 was missing for week 5 "Attention/Focus" and week 11 "Identity." Additionally, practice log data at Institution 2 was missing for week 10 "Diversity" and week 13 "Aesthetics."

Students' perceptions of the course through the end-of-course assessment

Despite significant differences in the way the courses were taught and the average number of hours students practiced contemplative exercises outside of class, the ASHF end-of-course assessment revealed that students across the three universities had similar opinions about their experiences in the course. Students at all three universities did not differ significantly in their satisfaction with aspects of the course or the contemplative lab (see Table 1). Most class and contemplative lab elements across the three universities were rated between "like somewhat" and "strongly like." However, students were less satisfied with the video lectures they watched at home than other aspects of the course: the average means across all three universities for listening to the lectures at home ranged from "dislike somewhat" to "neutral or no opinion." Thus, despite the fact that one institution utilized a more frequent in-class lecture format, while another favored in-class activities, and the third had students who practiced contemplative exercises more outside of class, the one-way ANOVA analyses indicated that students at the three universities did not significantly differ in their satisfaction with the lectures, in-class activities, and contemplative labs.

Because flourishing was operationalized as the result of constituent skills that are learnable with no terminable end, student expectations for continued practice are of particular interest. As shown in Table 1, the mindful breathing and body scan meditations were the most common meditation practices students at all three universities planned to continue using after the course ended. However, students at Institution 1 were less likely than students at Institutions 2 and 3 to indicate they would continue to use mindful breathing. Students at all three universities were slightly less likely to indicate that they would continue using the sense meditation and compassion meditation, but the average responses clustered around "maybe use."

As shown in Table 1, students at all three universities described the classroom climate (i.e., peer and professor support) as being supportive. Although student reports at Institution 1 significantly differed from Institution 2 on two items, mean scores indicated that the great majority of students on all three campuses found their course peers and professors to be strong sources of learning and emotional support. Most mean responses were between "somewhat agree" and "strongly agree" for the survey items on classroom climate. The students were slightly less likely to have stated that they made a personal connection with their professor, although the mean values were between "neutral or no opinion" and "somewhat agree," with Institution 1 slightly lower than Institution 2. Finally, no significant group differences were found in students' overall sentiments about the course; students at all three universities agreed that they would be interested in taking more courses on flourishing and would recommend this course to other students (see Table 1).

Student outcomes from the pre/post survey

We compared the changes between pre and post-test between the three university courses, thus examining three contrasts for each of the 20 outcomes (i.e., 60 tests). The results indicate that there were no significant differences between outcomes at the three universities ($p < .05$) after controlling for multiple statistical tests

with false discovery rate (FDR) correction.[26] A few between site contrasts were of moderate magnitude (see Tables 2 and 3).

Discussion

This study examined whether pedagogical differences in the instruction of a course entitled the Art and Science of Human Flourishing (ASHF) affected students' outcomes differently. First, using formative assessment data from the ASHF course, we found that there were notable differences in instruction across the three campuses where the course was taught. One institution relied most heavily on in-class lecture, and on average, its students reported the least amount of contemplative practice outside of class, particularly toward the end of the semester. Another institution tended to use in-class activities most frequently, and its students had the highest average amount of contemplative practice time out of class. Finally, the last institution tended to vary the pedagogy it used from class session-to-session between lecture, in-class activities, and contemplative practice.

The second question we explored was whether the pedagogical variations among the courses were related to differences in students' outcomes across the three institutions. Among 20 different outcomes measured via the course's theory of change model (attentional skills, social-emotional skills, perspectives on flourishing, psychological distress, psychological well-being, physical health, and risk behavior), there were no statistically significant differences by site. In other words, ASHF students' outcomes across the 20 domains measured did not differ significantly by institution. This suggests that the positive impact of the course among the ASHF students for all three of the proximal outcomes (attentional skills, social-emotional skills, and perspectives on flourishing) and the mental health domains in the distal outcomes were uniformly positive on all three campuses and did not differ significantly in magnitude.[26]

These findings would suggest that, although the ASHF course was taught somewhat differently on the three campuses, these pedagogical differences did not significantly alter the positive effects of the course on the students enrolled. This is an important implication for other institutions who might consider adopting the ASHF curriculum. While certain aspects of the course were pre-determined and must be adhered to, including: a) using the same content and material (i.e., readings, videos, and assignments); b) following the course's theory of change model in sequence; and c) employing instructors with a scholarly background in the art and/

Table 1. Results from the end-of-course assessment.

	(1) Institution 1 ($n=60$)		(2) Institution 2 ($n=32$)		(3) Institution 3 ($n=62$)			
Measure	Mean	SD	Mean	SD	Mean	SD	$F(2,146)$	Tukey's post hoc
Satisfaction with aspects of course[1]								
Listening to lectures at home	2.96	1.28	2.75	1.27	2.74	1.04	0.60	
Participating in interactive exercises followed by student pair-share conversation	3.95	0.97	4.16	1.11	4.15	1.01	0.70	
Dialogue in class with another student	4.04	1.02	4.22	1.01	4.31	0.92	1.14	
Satisfaction with aspects of contemplative lab[1]								
Group meditation practice	4.51	0.69	4.66	0.55	4.66	0.54	1.09	
Group discussions	4.05	0.85	4.38	0.87	4.39	0.69	3.00	
Plans to use various meditation practices after course ends[2]								
Mindful breathing	3.33	0.77	3.69	0.59	3.82	0.39	10.37***	1 < 2,3
Body scan	3.22	0.74	3.06	0.76	3.44	0.69	3.07	
Sense meditation	2.69	0.90	3.13	0.71	2.92	0.84	2.86	
Compassion meditation	2.73	0.99	3.22	0.66	3.02	0.80	3.70*	1 < 2
Comparisons to other courses taken during Fall 2018 semester[3]								
I was more likely to make new friends	3.96	1.02	4.00	0.88	3.82	1.04	0.46	
I learned from other students in the class	4.04	0.94	4.38	0.71	4.38	0.71	3.01	
I made a personal connection with the professor	3.27	0.97	3.51	0.92	3.51	1.01	4.18*	1 < 2
This professor was particularly interested in the students and their learning	4.51	0.64	4.66	0.70	4.44	0.72	1.02	
The professor created a safe and supportive learning environment	4.53	0.74	4.84	0.37	4.69	0.58	3.78*	1 < 2
Overall sentiments about course[3]								
I would be interested in taking more courses on flourishing, etc.	4.00	1.09	4.31	0.82	4.15	1.05	0.97	
I would recommend this course to other students like me	4.56	0.86	4.72	0.58	4.49	0.87	0.82	

Note: [1]1 = strongly dislike; 2 = dislike somewhat; 3 = neutral, no opinion; 4 = like somewhat; 5 = strongly like. [2]1 = will not use; 2 = unlikely to use; 3 = maybe use; 4 = definitely use. [3]1 = strongly disagree; 2 = somewhat disagree; 3 = neutral, no opinion; 4 = somewhat agree; 5 = strongly agree.
*$p < .05$; *** $p < .001$.

Table 2. Effect sizes of university differences in proximal skills and perspectives.

	U1-U2	U3-U2	U1-U3
	d [95% CI]	*d* [95% CI]	*d* [95% CI]
Attentional Skills			
Attention Function Index	−0.04 [-0.45, 0.37]	−0.29 [-0.74, 0.16]	0.20 [-0.23, 0.63]
MAIA Somatic Awareness	0.26 [-0.18, 0.69]	0.15 [-0.32, 0.62]	0.13 [-0.33, 0.58]
Mindfulness	0.18 [-0.23, 0.58]	0.04 [-0.40, 0.49]	0.14 [-0.28, 0.57]
Fusion	−0.20 [-0.60, 0.21]	−0.08 [-0.52, 0.36]	−0.13 [-0.56, 0.29]
Social-Emotional Skills			
MAIA Self-Regulation	0.07 [-0.35, 0.49]	0.04 [0.42, 0.50]	0.04 [-0.40, 0.48]
MAIA Distress Tolerance	−0.06 [-0.44, 0.33]	−0.13 [-0.55, 0.29]	0.05 [-0.35, 0.46]
Self-compassion	0.09 [-0.31, 0.49]	−0.35 [-0.79, 0.10]	0.44 [0.01, 0.87]
IRI Perspective Taking	−0.09 [-0.44, 0.26]	0.09 [-0.29, 0.47]	−0.15 [-0.52, 0.22]
IRI Empathic Concern for Others	0.04 [-0.36, 0.43]	0.20 [-0.23, 0.63]	−0.15 [-0.57, 0.26]
Compassion for Roommates	0.08 [-0.32, 0.49]	−0.02 [-0.46, 0.42]	0.11 [-0.32, 0.54]
Compassionate for Others	0.10 [-0.29, 0.48]	0.26 [-0.16, 0.68]	−0.12 [-0.53, 0.28]
Perspectives on Flourishing			
Meaning in Life	0.05 [-0.36, 0.46]	−0.31 [-0.76, 0.14]	0.34 [-0.09, 0.78]
Common Humanity	0.22 [-0.17, 0.61]	0.10 [-0.32, 0.53]	0.14 [-0.26, 0.55]
Social Awareness and Concern	0.13 [-0.21, 0.46]	−0.04 [-0.41, 0.33]	0.18 [-0.18, 0.53]

Note: 1= University 1 ($N = 38$); 2 = University 2 ($N = 34$); 3 = University 3: $N = 29$).
Cohen's *d* are from the site contrast in a multiple regression model with multiple imputation with baseline score, first-year student status, race, and gender as covariates. *d* = Cohen's *d*. CI = confidence interval. No effect sizes were statistically significant ($p > 0.05$).

Table 3. Effect sizes of university differences in mental health, physical health, and risk behavior.

	U1-U2	U3-U2	U1-U3
	d [95% CI]	*d* [95% CI]	d [95% CI]
Psychological Distress			
Life Stress	0.13 [-0.32, 0.58]	0.17 [-0.33, 0.66]	−0.01 [-0.49, 0.46]
Symptoms of Depression	0.07 [-0.30, 0.44]	0.30 [-0.10, 0.71]	−0.22 [-0.62, 0.17]
Symptoms of Anxiety	0.04 [-0.37, 0.44]	0.20 [-0.24, 0.65]	−0.14 [-0.57, 0.29]
Psychological Well-being			
Pemberton Happiness Index	0.11 [-0.27, 0.49]	−0.18 [-0.60, 0.24]	0.27 [-0.13, 0.67]
ESQ Healthy Emotionality	0.03 [-0.33, 0.39]	0.00 [-0.39, 0.39]	0.02 [-0.35, 0.40]
Physical Health			
Overall Physical Health	0.01 [-0.43, 0.45]	−0.04 [-0.52, 0.45]	0.04 [-0.42, 0.51]
Sleep Quality	−0.26 [-0.72, 0.20]	−0.03 [-0.53, 0.48]	−0.27 [-0.75, 0.22]
Sleep Quantity	0.11 [-0.35, 0.57]	−0.23 [-0.74, 0.27]	0.32 [-0.17, 0.80]
Risk Behavior			
Binge Drinking	0.17 [-0.24, 0.59]	0.20 [-0.25, 0.65]	0.01 [-0.42, 0.44]
Alcohol Consequences	−0.26 [-0.61, 0.09]	−0.06 [-0.44, 0.32]	−0.21 [-0.58, 0.16]
Marijuana Use	−0.13 [-0.43, 0.17]	0.01 [-0.32, 0.34]	−0.15 [-0.46, 0.17]
Tobacco Use	0.17 [-0.23, 0.57]	0.05 [-0.39, 0.49]	0.13 [-0.29, 0.55]

Note: U1= University 1 ($N = 38$); U2 = University 2 ($N = 34$); U3 = University 3: $N = 29$).
Cohen's *d* are from the site contrast in a multiple regression model with multiple imputation with baseline score, first-year student status, race, and gender as covariates. *d* = Cohen's *d*. CI = confidence interval. CI = confidence interval. No effect sizes were statistically significant ($p > 0.05$).

or science of flourishing as well as an expertise in teaching contemplative practices (e.g., meditation, body scans), it appears that instructors can teach the course in a manner that best fits their preferences and the institution's unique context. Pedagogical variations, as preliminarily discerned from this study, should not negatively alter students' reduced anxiety/depression outcomes or their improved attentional, social-emotional, and perspectives on flourishing outcomes. Thus, it is likely that instructors can exercise a sense of freedom in bringing their own pedagogical styles to the course without negatively affecting the impact of the course, assuming some expertise in the domains of flourishing and contemplation.

There are limitations to this study to consider. Data were collected at only three institutions, and all were large, public, R1 research universities. A small amount of the formative data, including class diaries and practice logs were missing: two out of 45 of the total class diaries were missing, or 4.4% of the diary data, and four out of 45 of the total practice logs were missing, or 8.8% of the practice log data. However, in general, there was sufficient data to form an overall impression of the courses. Finally, while pedagogical differences in instruction across the three institutions were observed, the data collected made no evaluation of the quality of instruction at each site, other than the students' own evaluations, which were uniformly positive. Moreover, some of the aspects of the course that were not well-received by students during the pilot year (e.g., enjoyment of listening to the video lectures at home) are in the

process of being addressed for future iterations of the course.

Along with the findings of Roeser,[26] this study demonstrates that the concepts of flourishing can be offered in a credit-bearing academic course that facilitates positive change in students in the form of both proximal and distal outcomes, and that these beneficial outcomes are not significantly altered by pedagogical differences in instruction.

Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States of America and received approval from the Institutional Review Boards of Pennsylvania State University, the University of Virginia, and the University of Wisconsin, Madison.

Funding

No funding was used to support this research and/or the preparation of the manuscript.

ORCID

Richard J. Davidson http://orcid.org/0000-0002-8506-4964
Robert W. Roeser http://orcid.org/0000-0003-3326-5921
Matthew J. Hirshberg http://orcid.org/0000-0001-9070-1270

References

1. Thielking M. Surging demand for mental health care jams college services. Sci Am. 2017;316(2). https://www.scientificamerican.com/article/surging-demand-for-mental-health-care-jams-college-services/. Accessed October 20, 2020.
2. American College Health Association. American College Health Association/National College Health Assessment Undergraduate Student Reference Group Data Report. https://www.acha.org/documents/ncha/NCHA-III_FALL_2019_UNDERGRADUATE_REFERENCE_GROUP_DATA_REPORT.pdf. Published 2019. Accessed October 20, 2020.
3. Dvořáková K, Greenberg MT, Roeser RW. On the role of mindfulness and compassion skills in students' coping, well-being, and development across the transition to college: a conceptual analysis. Stress Health. 2019;35(2):146–156. doi:10.1002/smi.2850.
4. Shapiro SL, Brown K, Astin J. Toward the integration of meditation into higher education: a review of research evidence. Teachers Coll Record. 2011;113(3):493–528.
5. Palmer PJ, Zajonc A. The Heart of Higher Education: A Call to Renewal. Transforming the Academy through Collegial Conversations. San Francisco, CA: Jossey-Bass; 2010.
6. National Association of Student Personnel Administrators & American College Personnel Association. Learning reconsidered: a campus-wide focus on the student experience. https://www.naspa.org/images/uploads/main/Learning_Reconsidered_Report.pdf. Published 2004. Accessed October 20, 2020.
7. Walker DF, Soltis JF. Curriculum and Aims: Thinking about Education Series. New York: Teachers College Press; 1997.
8. Keyes CLM. The mental health continuum: From languishing to flourishing in life. J Health Soc Behav. 2002;43(2):207–222. doi:10.2307/3090197.
9. Seligman M. Flourish: A Visionary New Understanding of Happiness and Well-Being. New York: Free Press, a division of Simon & Schuster; 2011.
10. Klawe M. Supporting health and well-being on college camł puses. Forbes Magazine. https://www.forbes.com/sites/mariaklawe/2019/07/24/supporting-health-and-well-being-on-college-campuses/#18feb43d10d6. Published 2019. Accessed October 20, 2020.
11. Watts P. A new model for campus health: Integrating well-beg ing into campus life. https://www.naspa.org/blog/a-new-model-for-campus-health-integrating-well-being-into-campus-life. Published 2017. Accessed October 20, 2020.
12. Goleman D, Davidson RJ. Altered Traits: Science Reveals How Meditation Changes Your Mind, Brain, and Body. New York: Penguin Random House; 2017.
13. MLERN. Final Report of the Mind and Life Educational Research Network. Boulder, CO: Mind and Life Institute; 2009.
14. Keyes CLM. Promoting and protecting mental health as flourh ishing: a complementary strategy for improving national mental health. Am Psychol. 2007;62(2):95–108. doi:10.1037/0003-066X.62.2.95.
15. Davidson RJ, Begley S. The Emotional Life of Your Brain: How Its Unique Patterns Affect the Way You Think, Feel, and Live–and How You Can Change Them. New York: Penguin; 2013.
16. Fox M. The A.W.E. Project: Reinventing Education, Reinventing the Human. Kelowna, BC, Canada: Wood Lake Publishing; 2006.
17. Lama D. Beyond Religion: Ethics for a Whole World. New York: Random House; 2012.
18. Barr RB, Tagg J. From teaching to learning—a new paradigm for undergraduate education. Change Mag Higher Learn. 1995;27(6):12–26. doi:10.1080/00091383.1995.10544672.
19. Bonwell CC, Eison JA. Active Learning: Creating Excitement in the Classroom. ASHE-ERIC Higher Education Report No. 1. Washington, DC: School of Education and Human Development, George Washington University; 1991.
20. Campbell WE, Smith KA. New Paradigms for College Teaching. Edina, MN: Interaction; 1997.
21. Felder RM. Active-inductive-cooperative learning: an instruci tional model for chemistry?J Chem Educ. 1996;73(9):832–836. doi:10.1021/ed073p832.
22. Goodsell A, Maher M, Tinto VM. Collaborative Learning: A Sourcebook for Higher Education. University Park. PA: The National Center on Postsecondary Teaching, Learning, and Assessment; 1992.
23. Gagne ED, Yekovich CW, Yekovich KR. The Cognitive Psychology of School Learning. New York: Allyn & Bacon; 1993.
24. Kolb DA. Experiential Learning: Experience as the Source of Learning and Development. Upper Saddle River, NJ: Pearson; 2015.
25. Contemplative Sciences Center. Student Flourishing Initiative. University of Virginia; 2020. https://csc.virginia.edu/page/student-flourishing-initiative. Accessed April 19, 2021.
26. Roeser RW. Art & Science of Human Flourishing: Conceptualizations and research example with college students. Paper presented at: the Prevention Research Center Seminar; October 13, 2020. State College, PA.
27. Cimprich B, Visovatti M, Ronis DL. The Attentional Function Index—a self-report cognitive measure. Psycho-Oncol. 2011;20(2):194–202. doi:10.1002/pon.1729.
28. Mehling WE, Price C, Daubenmier JJ, Acree M, Bartmess E, Stewart A. The Multidimensional Assessment of Interoceptive Awareness (MAIA). PLoS One. 2012;7(11):e48230. doi:10.1371/journal.pone.0048230.
29. Baer RA, Smith GT, Lykins E, et al. Construct validity of the five facet mindfulness questionnaire in meditating and non-

meditating samples. Assessment. 2008;15(3):329–342. doi:10.1177/1073191107313003.
30. Gillanders DT, Bolderston H, Bond FW, et al. The development and initial validation of the cognitive fusion questionnaire. Behavior Therapy. 2014;45(1):83–101. doi:10.1016/j.beth.2013.09.001.
31. Crocker J, Canevello A. Creating and undermining social support in communal relationships: the role of compassionate and self-image goals. J Pers Soc Psychol. 2008;95(3):555–575. doi:10.1037/0022-3514.95.3.555.
32. Raes F, Pommier E, Neff KD, Van Gucht D. Construction and factorial validation of a short form of the self-compassion scale. Clin Psychol Psychother. 2011;18(3):250–255. doi:10.1002/cpp.702.
33. Davis MH. Interpersonal Reactivity Index. New York: Edwin Mellen Press; 1980.
34. Gilbert P, Catarino F, Duarte C, et al. The development of compassionate engagement and action scales for self and others. J Compassionate Health Care. 2017;4(1). doi:10.1186/s40639-017-0033-3.
35. Steger MF, Frazier P, Oishi S, Kaler M. The meaning in life questionnaire: assessing the presence of and search for meaning in life. J Counseling Psychol. 2006;53(1):80–93. doi:10.1037/0022-0167.53.1.80.
36. Piedmont RL. Does spirituality represent the sixth factor of personality? Spiritual transcendence and the five-factor model. J Pers. 1999;67(6):985–1013. doi:10.1111/1467-6494.00080.
37. Lerner RM, Roeser RW, Phelps E. Positive Youth Development & Spirituality: From Theory to Research. West Conshohocken, PA: Templeton Foundation Press; 2008.
38. American College Health Association. American College Health Association-National College Health Assessment II. https://www.acha.org/documents/ncha/ACHA-NCHA-II_ReferenceGroup_ExecutiveSummary_Spring2013.pdf. Published 2013. Accessed October 20, 2020.
39. Spitzer R, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Archiv Intern Med. 2006;166(10):1092–1097. doi:10.1001/archinte.166.10.1092.
40. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606–613. doi:10.1046/j.1525-1497.2001.016009606.x.
41. Hervás G, Vázquez C. Construction and validation of a measure of integrative well-being in seven languages: the Pemberton Happiness Index. Health Qual Life Outcomes. 2013;11(1):66. doi:10.1186/1477-7525-11-66.
42. Kesebir P, Gasiorowska A, Goldman R, Hirshberg MJ, Davidson RJ. Emotional Style Questionnaire: a multidimensional measure of healthy emotionality. Psychol Assess. 2019;31(10):1234–1246. doi:10.1037/pas0000745.
43. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psychiatry Res. 1989;28(2):193–213. doi:10.1016/0165-1781(89)90047-4.
44. Kahler CW, Strong DR, Read JP. Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: the Brief Young Adult Alcohol Consequences Questionnaire. Alcohol Clin Exp Res. 2005;29(7):1180–1189.

Appendix A. Composite scales from the 2018 pre- and post-survey

Scale name	Construct measured (n items)	α T1/T2	Example item
Attention skills			
Attentional Function Index[27]	Attention functioning (10)	.86/.89	"Keeping your mind on what you are doing"
Multidimensional Assessment of Interoceptive Awareness[28]	Attention regulation (3)	.63/.69	"I am able to consciously focus on my body as a whole"
Five Facet Mindfulness Questionnaire[29]	Mindfulness (24)	.80/.85	"It seems I am 'running on automatic' without much awareness of what I'm doing" (reversed)
Cognitive Fusion Questionnaire[30]	Ruminative thought (7)	.94/.95	"I tend to get very entangled in my thoughts"
Social-emotional skills			
Multidimensional Assessment of Interoceptive Awareness[28]	1. Distress tolerance (2)	.74/.81	"I can notice an unpleasant body sensation without worrying about it"
	2. Self-regulation (4)	.81/.85	"I can use my breath to reduce tension"
Compassionate Goals[31]	Roommate compassion (9)	.88/.90	"Have compassion for your roommate's mistakes and weaknesses"
Self-compassion Short-Form[32]	Self-compassion (12)	.86/.88	"I try to be understanding and patient towards those aspects of my personality I don't like"
Interpersonal Reactivity Index[33]	1. Empathic Concern (4)	.83/.87	"I often have tender, concerned feelings for people less fortunate than me"
	2. Perspective-taking (3)	.80/.82	"I try to look at everybody's side of a disagreement before I make a decision"
Compassion for Others[34]	Compassion (8)	.82/.84	"I am emotionally moved by expression of distress in others"
Perspectives on flourishing			
Meaning in life[35]	Search for meaning (3)	.84/.85	"I have a good sense of what makes my life meaningful"
Spiritual Transcendence Scale[36]	Common humanity (4)	.88/.90	"I believe that all of life is interconnected"
Social Awareness Index[37]	Fairness & equity (7)	.92/.91	"It is important to me to make the world a better place to live in"
Mental health - distress			
American College Health Questionnaire Stress-item[38]	Stress (1)	NA	General levels of stress over the prior 30 days
Generalized Anxiety Disorder-7[39]	Anxiety Symptoms (7)	.91/.92	"Not being able to stop or control worrying"
Patient Health Questionnaire-9[40]	Depressive Symptoms (8)	.88/.90	"Feeling down, depressed, or hopeless"
Mental health - flourishing			
Pemberton Happiness Index[41]	Happiness (11)	.93/.93	"I am satisfied with myself"
Emotional Styles Questionnaire[42]	Healthy Emotionality (24)	.87/.89	"I am very good at seeing the positive side of things"
Physical health			
American College Health Questionnaire[38]	Physical Health (1)	NA	General health over the prior 30 days
Pittsburgh Sleep Quality Index[43]	1. Sleep quality (1)	NA	"During the past month, how would you rate your sleep quality overall?"
	2. Sleep quantity (1)	NA	"About how many hours of ACTUAL SLEEP did you get at night?"
Risk behaviors			
American College Health Questionnaire[38]	1. Alcohol (1) 2. Tobacco (4) 3. Illicit drug use (6)	NA	1. Binge drinking episodes (2-weeks) 2. Mean of tobacco use (30 days) 3. Mean of prescription/other illegal drugs and marijuana (30 days)
Alcohol Consequences Questionnaire[44]	Adverse alcohol effects (11)	.88/.89	"I have passed out from drinking"