Three Case Studies: Integrating Mindfulness-based Micro-Lessons into Higher Education

January 2019-May 2020

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Abstract

The purpose of this three-part case study was to determine the efficacy of offering mindfulness-based social/emotional learning micro lessons on a digital platform to reduce stress and anxiety, improve focus and attention, and to improve student and instructor engagement. The Levelhead team worked with instructors at seven universities; 46 classrooms over three semesters from January 2019 through May 2020 to deliver the Levelhead-Ed program to over 1000 students. The quantitative and qualitative results indicated that (1) social and emotional learning content via mobile learning platform can effectively be introduced to a variety of course content and formats, (2) pre and post assessments showed a statistically significant improvement in perceived stress and focus and attention, and (3) evidence suggests that students who engaged in the content indicated that they gained skills they could use to manage stress and anxiety and to train their attention in the future. Overall, the findings from this three-part study indicates that a digital-based program such as *Learning to Thrive* is an effective approach for offering instruction on social/emotional skill-building.

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Introduction to Study

Overview. The goal of a college education is to strengthen a student's intellectual abilities and prepare them for a productive and successful life. However, the high rate of mental health concerns such as stress and anxiety may undermine the overall purpose of higher education. Stress, depression, anxiety, and panic attacks have steadily increased in the past 10 to 15 years with academic stress being the most common emotional or mental state among college students (Coiro et al., 2017; Lederer et al., 2017; Ramli et al., 2018).

High societal expectations to perform as well as undefined, inconsistent, and often unachievable roles in today's complex socio-cultural, economic, and bureaucratic contexts cause heavy levels of stress on students (Ramli et al., 2018). In 2017, college students reported higher levels of stress than older generations and indicated that they could not adequately address their stress with positive coping mechanisms (American Psychological Association, 2017). Researchers posit that much of the stress students feel is related to over-inflated expectations for this generation due to their perceived proficiency in technology and access to anytime resources delivered via the web (Howe et al., 2007; Ramli et al., 2018). See Table 1 for more information on stress and anxiety in college students.

Table 1.

National College Health Assessment (NCHA, Spring, 2019)

College Student Responses	Felt very sad	Felt overwhelming anxiety	So depressed difficult to function	Seriously considered suicide
Any time in the last 12 months	72.%	66.4%	46.2%	14.4%

Data from 93 institutions between 2009 and 2015 showed that on average, the growth in the number of students seeking mental health services was more than five times

the growth rate in enrollment (Center for Collegiate Mental Health, 2016). This increase is thought to be precipitated by a wide range of unique pressures of students such as financial concerns, future career worries, balancing demands of work, extracurricular activities, managing lifestyle changes, and adjusting to constant assessment (Hurst et al., 2013). As a result of the need for increased mental health resources, higher education administrators are looking for low-cost, effective, preventive programs to help stem the tide of the demand for mental health resources (Center for Collegiate Mental Health, 2016).

Mindfulness training. A significant amount of research related to mindfulness interventions both in general populations and college students show there are long-term well-being benefits to these types of interventions (Azam et al., 2016; Cavanagh et al., 2013). Mindful training supports the development of emotional regulation by promoting the practice of non-judgmental awareness of present moment experiences. This type of training helps participants learn to separate themselves from their experienced thoughts, feelings, and emotions and to learn to accept and observe pleasant ones (Galla et al., 2016). Mindfulness practice also allows a greater awareness of emotions which includes the ability to label one's emotions and to discriminate and differentiate between emotions. This type of training results in less emotional reactivity to stressors and less emotional fluctuation (Greco et al., 2011). In summary, a systematic review of the literature related to mindfulness interventions, resulted in an abundance of evidence that mindfulness enhances mood, reduces mind wandering, decreased levels of stress, anxiety, and depressive symptoms, and improved psychological well-being (Altinyelken, 2019).

Mindfulness for students. The college experience provides an opportunity to help students develop life-long skills for adapting and coping with stress and anxiety. A well-established technique for managing stress and anxiety is mindfulness which involves the ability to focus on the present moment and non-judgmental awareness of thoughts and emotions (Kabat-Zinn, 1990). Research related to students has shown that mindfulness interventions can improve self-regulation and provide students with the tools and skills they need to cope with the stress of daily life as a student and prevent long-term mental health issues (Ramli et al., 2018). Furthermore, a review of 83 controlled interventions at higher education institutions that focused on social and emotional skills, self-perceptions, and emotional distress concluded that mindfulness training was the most effective type of intervention (Conley et al, 2013). Furthermore, a review of stress-targeted interventions for college indicated that mindfulness-based programs consistently showed a positive impact on students' psychosocial wellbeing (Ramler et al., 2016; Regeher et al., 2013).

The research on mindfulness interventions in the college population has demonstrated a wide range of benefits such as a reduction in stress, overall emotional well-being, improved interpersonal relationships, and even improved health-related behaviors such as improved attention to exercise, healthy eating, and sleep habits (Dvořáková et al., 2017). Recently, there is a growing interest in incorporating mindfulness programs into higher education to enhance the understanding of a particular subject matter and to build skills specifically related to the learning process such as attention, focus, open-mindedness, and information processing (Altinyelken, 2019).

In summary, brief and cost-effective interventions that offer students the means to build skills needed for emotional regulation and coping mechanisms may help buffer the

effects of stress and support positive functioning (Progrebtsova et al., 2018). This is critically important because distress during college years correlates with academic impairment and mental illness later in life. Therefore, it is essential that universities look for preventive interventions that help students develop the skills they need to deal with stress during their educational experience and once they are in the work world (Keyes et al., 2012).

Mindfulness training for professors. Teaching is a stressful human service occupation largely due to the inherent social-emotional demands of working with students with a variety of levels of commitment, skills, motivation, and emotional stability (Crain et al., 2017). Other challenges instructors face are heavy workloads, lack of time for collaboration with colleagues, and often without the necessary support and resources from administration. Unfortunately, teacher and professional development programs rarely address the considerable stress related dimensions of their profession (Schonert-Reichl et al., 2015). Many researchers have posited that the lack of stress management strategies may be related to burnout and reduced student engagement (Crain et al., 2017).

Mindfulness in the workplace. Leading the way in offering mindfulness in the workplace are recognizable names such as Google, Aetna, Mayo Clinic and, the U. S. Army (Lutz et al., 2015; Tan, 2012; Wolever, et al., 2012). While a few organizations were at the forefront, a 2016 study found that 22% of companies surveyed said that they have already implemented a mindfulness-training component and another 21% say they plan to add this type of training in 2017 (Altizer, 2017; Hassell, 2016; Taylor, 2016). Another study found that 13% of U. S. workers indicated that they engage in some sort of

mindfulness or reflective practice regularly (Olano et al., 2015). The reason for this interest by employees and organization is that mindfulness practice has been shown to impact the way we think, feel, act and relate to others.

As organizations consider how they can best offer a mindfulness program, they are increasingly looking to technology for solutions. For example, mobile devices, because of their ubiquity and ability to access programs anytime, anywhere, are an ideal, affordable solution for today's geographically diverse workplace. Furthermore, utilizing technology allows organizations to measure effectiveness and usage, respond to workplace needs quickly, and to integrate mindfulness programs into other employee offerings.

While most of the scholarly research done to-date has been related to in-person mindfulness interventions, more and more researchers are focusing their attention on the efficacy of technology-delivered solutions. An analysis of three peer-reviewed research studies indicate that these types of interventions offer many advantages over in-person interventions and are an affordable solution to offer programs across a wide geography. In addition, organizations have access to real-time data on usage and effectiveness. These studies demonstrate that programs delivered via technology offer similar benefits to individuals and organizations as in-person programs (Bostock et al., 2019; Howells & Eiroa-Orosa, 2016; Laurie & Blandford, 2016).

Mobile Learning

The definition of mobile learning (m-learning) is the use of mobile technology to aid in the learning, reference, or exploration of information to an individual at a moment of need or context (Cisco, 2017). The lives of millennials born between the mid-1980's

and the 2000's have been shaped by technology, social networks and video games. This has resulted in shorter attention spans, less time in reflection, a smaller sense of history, and expected a very different educational experience than their predecessors (Veltsos, 2017). These trends prompt educators in higher education to examine how they engage, motivate, and empower students to engage with course content.

Because of the capacity to provide learning content anytime, anywhere, mobile learning has become the focus of many pedagogical interventions (Nickerson et al., 2017). Mobile learning is not just about the device, it is about the opportunity to learn across different contexts, including the use of multiple communication methods that merge social interactivity with personalized and individualized learning (Park, 2011). The following figure depicts the main effects of mobile learning.
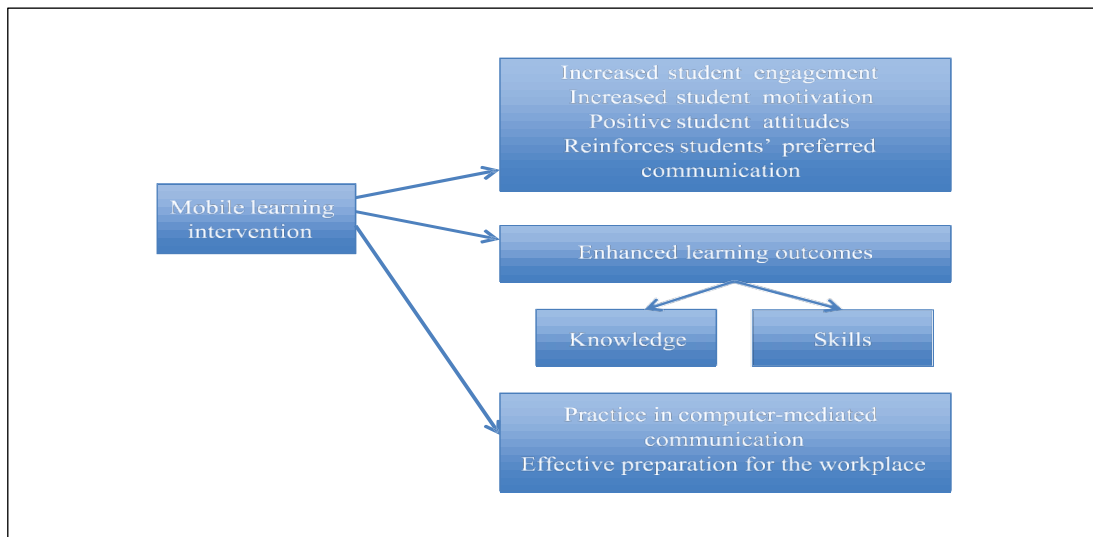
Figure 1. Summary of the effects of mobile learning

Note: Source (Nickerson et al., 2017)

Mobile learning vs. e-learning. Mobile learning is not e-learning on a smartphone. It is a distinct and different form of instruction. Mobile learning (m-learning) is more dynamic than e-learning. An individual can access while on-the-go such

as during a commute or in-between classes. The content is concise and to the point. Also, the content is chunked into bite-sized micro-lessons. In addition, m-learning allows for interactive elements. Mobile learning is a means to transcend the formal learning space and to bring structured learning into an informal learning space. That's because informal learning happens mostly embedded in other tasks and is contextual and self-directed.

The differences between mobile learning and e-learning fall into six categories (1) objective/purpose, (2) approach, (3) devices, (4) content type and design, (5) time, and (6) user access. Table 2 briefly compares the two approaches. Differences between m-learning and e-learning do not suggest that one is better than the other. They are both appropriate in the right situation. For example, no one would want their doctor to take a refresher on a complicated surgery technique before surgery. However, a patient might be comfortable if their doctor pulled out his iPhone to confirm the side effects of a new medication.

Table 2.

Mobile Learning Compared to E-Learning

Feature	Mobile Learning	E-Learning
Aim	Knowledge distributed for just-in time, personalized learning Instant accessibility of information Quick knowledge distribution	Knowledge presentation Just-in case learning In-depth knowledge of subject
Approach	Flexible more informal but can be structured and unstructured	Formal structure
Medium	Smart phones	Computer or laptop
Content Design	Easy navigation Concise micro-lessons Pictures, video, audio Search enabled	Comprehensive Concepts, principles, facts, and process Follows a linear process
Time	Bite-sized (avg 5-10 min)	20 minutes to an hour
User Access	Anywhere, anytime	More static

Gamification. One of the ways education can evolve to meet students where they are is in the use of gamification in education. Common elements of gamification include

storytelling, challenges, immediate feedback, problem-solving, sense of accomplishment, and autonomy (Veltsos, 2017). Many researchers have argued that games are a valuable pedagogical design because they require students to take control of their learning and require instructors to continually reflect and refine the design of instruction (Finseth, 2015). While there is not a lot of research related to gamification for learning, there are promising correlations with increased student engagement, motivation, and feelings of autonomy and control that are related to improved learning outcomes (Aguilar et al., 2015; Jabbar & Felica, 2015). Four key game characteristics that are essential to enhancing the learning experience are (1) freedom to fail, (2) immediate feedback, (3) rewards for progress, (4) progression in challenges, and (5) a playful yet purpose-driven attitude (Stott & Neustaedter, 2013; Veltsos, 2017).

About Levelhead

Levelhead is a digital engagement program designed to improve overall well-being and employee engagement in the workplace. Its unique combination of bite-sized, mindfulness-based practices can be done anytime, anywhere. Utilizing the latest digital engagement tools such as badges, stickers, and a leaderboard, teams within an organization can encourage each other as they practice and move toward a healthier, happier life. Add leadership modules and development, robust measurement tools, and ongoing education via blogs and mini podcasts, the Levelhead program is more than just another mindfulness app.

Since 2017, Levelhead has offered mindfulness-based micro-lessons in the workplace to a wide variety of industries including technology, health care, energy, financial services, and many others. With each engagement with an organization,

Levelhead offers a pre and post-assessment of its program. Since its inception, the Levelhead program has been consistently shown to reduce stress and improve focus and attention. Learn more at www.getlevelhead.com.

About Levelhead-Ed

In Fall 2018, the Levelhead team began to explore if the program offered in the workplace might be a solution to the increasing need to support students in higher education. Specifically, the goal was to determine if Levelhead would be beneficial to students in acquiring the skills they need to manage stress and anxiety during their educational experience and to successfully transition into the workplace. This exploration began with reaching out to professors through the professional network of the Levelhead team to identify individuals that would be willing to participate in a case study to determine the applicability of the Levelhead program use in higher education classrooms. Based on feedback and planning with a group of professors, the first case study was initiated in Spring 2019 with two subsequent studies in Fall 2019 and in Spring 2020. Learn more at www.getlevelheaded.com.

Purpose of the Three Case Studies

The purpose of these three case studies was to determine the efficacy of offering mindfulness-based social/emotional learning micro-lessons on a digital platform to reduce stress and anxiety, improve focus and attention, and to improve student and instructor engagement. While the purpose was the same for each of the three case studies, learnings from each were incorporated into the next. The goal was to incorporate learnings from one case study to the other to determine if these changes could improve outcomes.

Research Questions and Hypotheses

The case study involved a mixed methods approach with both quantitative and qualitive measures. The hypotheses for the quantitative approach were:

H_{01}: Implementation of the Levelhead-Ed program does not reduce perceived stress from pre to post assessment as measured by the Perceived Stress Survey-14 (PSS-14).

H_{1a}: Implementation of the Levelhead-Ed program does reduce perceived stress as from pre to post assessment as measured by Perceived Stress Survey-14 (PSS-14).

H_{02}: Implementation of the Levelhead-Ed program does not improve focus and attention from pre to post assessment as measured by the Five-Facet Mindfulness Questionnaire (FFMQ).

H_{2a}: Implementation of the Levelhead-Ed program does improve focus and attention from pre to post assessment as measured by the Five-Facet Mindfulness Questionnaire (FFMQ).

H_{03}: Implementation of the Levelhead-Ed program does not increase student engagement pre to post assessment as measured by the Utrecht Work Engagement Scale (UWES) adapted for students.

H_{3a}: Implementation of the Levelhead-Ed program does increase student engagement pre to post assessment as measured by the Utrecht Work Engagement Scale (UWES) adapted for students.

The qualitative portion of the case study attempted to answer the following research questions:

RQ1: What impact does the Levelhead-Ed program have on the overall learning experience for students?

RQ2: What experiences and changes do students perceive in themselves and others?

RQ3: What changes are needed to the content and instructor resources to improve student receptivity and engagement?

RQ4: What is the receptiveness from students to content and practices delivered via a mobile platform?

Significance of the Study

Research related to the use of mobile learning solutions in higher education is unusual. A study conducted by Huberty et al. (2019) was the only study identified that utilized an app to reduce stress among college students. This study asked students to meditate for 10 minutes a day for 8 weeks which resulted in a reduction in perceived stress, improved mindfulness scores, and higher levels of self-compassion. This intervention was not integrated into an existing classroom nor was it led by an instructor. However, this study resulted in significant differences in all outcomes of stress, mindfulness, and self-compassion between the intervention and control groups (Huberty et al., 2019). This study is important because it demonstrates that offering a mobile solution to college students can deliver improvement in key outcomes. Therefore, it is reasonable to assume that offering a mobile solution integrated into course curriculum may have equal or better results. If this assumption is found to be valid, this approach

may offer an effective, low-cost, and scalable approach to provide students to acquire social and emotional skills needed for the educational experience and in life.

Methodology

For each of the three case studies, participating students were asked to complete a 5-6-minute survey delivered via Survey Monkey during the first week of class. A post-assessment was conducted the final week of class.

Instruments. Spring 2019 and Fall 2019 both utilized Perceived Stress Survey-14 (PSS-14), Five Factor Mindfulness Questionnaire (FFMQ), and Utrecht Work Engagement Scale (UWES) as the pre and post assessments. However, in Spring 2020, a self-compassion assessment was added as a measure in addition to the PSS-14, FFMQ, and UWES. The following sections provide a brief overview of each of the assessments.

PSS-14. The purpose of the PSS-14 is to assess the degree to which people perceive their lives as stressful. High levels of stress are associated with poor self-reported health, elevated blood pressure, depression, and susceptibility to infection. Subjects indicate how often they have found their lives unpredictable, uncontrollable, and overloaded in the last month. The PSS-14 was designed for use with community samples with at least a junior high school education. The items are easy to understand and the response alternatives are simple to grasp. Moreover, the questions are quite general in nature and hence relatively free of content specific to any sub-population group. In light of the generality of the scale content and simplicity of the language and response alternatives, we concluded that data from the representative samples of the student population would not differ significantly from those reported in the workplace.

FFMQ. The FFMQ tool has demonstrated that it can measure mindfulness with the ability to segment users with consistency and provides the ability to distinguish sub-groups. It has incremental validity in predicting well-being across segments of users who are skilled at mindfulness and those without the current skill. The higher the score, the better. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928699/.

The assessment consists of five related dimensions:

1. *Observing* refers to attending or noticing internal and external experiences (e.g., sounds, emotions, thoughts, bodily sensations, smells).

2. *Describing* includes the ability to express one's experiences in words.

3. *Acting with awareness* involves attending to one's present moment activity, rather than being on "autopilot," or behaving automatically while attention is focused elsewhere.

4. *Non-judging of inner experiences* involves accepting and not evaluating thoughts and emotions (e.g., as "good" or "bad").

5. *Nonreactivity to inner experiences* refers to the ability to detach from thoughts and emotions, allowing them to come and go without getting involved or carried away by them.

UWES. The UWES measures the concept of work engagement described as a positive fulfilling work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli et al. 2002). This construct has also been applied to the activities that students perform related to academic engagement (Schaufeli et al., 2002). The assumption behind an application to students related to characterizing work for students as goal directed activities related to the educational experience (Carmona-Halty et al., 2019).

Carmona-Halty et al. (2019) found that the three subscales of vigor, dedication and absorption and the overall UWES-09 showed satisfactory internal consistency for higher education students. The three subscales are:

- **Vigo**r: refers to a high level of energy and mental resilience while attending school, the willingness to invest effort in school, and persistence in the face of difficulties.

- **Dedication:** refers to being involved in schoolwork, finding meaning in one's work, being challenged, and experiencing a sense of enthusiasm, inspiration and pride.

- **Absorption**: refers to being fully concentrated and engrossed in school, whereby time passes quickly, and one has difficulties detaching oneself from school and schoolwork.

As a result, these are good predictors of burnout and insecurity (negative relationship), and organizational support, school (positive relationship). The higher the score the better. (Scale 0-6). (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5650702/)

Self-compassion Scale (SCS-SF). Self-compassion involves being kind and understanding toward oneself in situations where an individual is facing psychological or physical pain or is facing failure rather than being self-critical. Self-compassion involves perceiving one's experiences as part of the larger human experience instead of seeing them as personal and isolating. The briefer 12-item was utilized instead of the longer 26 item survey developed by Kristin Neff. The short-scale has near-perfect correlation with the long scale when examining total scores (Raes et al., 2011). The SCS-SF was used only in pre-assessments in Spring 2020.

Data collection and analysis. Instructors were asked to provide the link for both the pre and post-survey to their students. The Levelhead-Ed team provided instructors an update on response rates and asked instructors to encourage their students to complete the assessment. Whenever possible instructors gave students time during class to complete the assessments. Each student was asked to create an anonymous code to be used for both the pre and post-assessment. The anonymity of the participants was maintained throughout the process. Data was held on Survey Monkey until the outside consultant

pulled the data for analysis. No one on the Levelhead team had access to the data either during data collection or analysis. The only data used in comparing pre and post-assessments were those situations where the pre assessment could be matched to a post-assessment. This process reduced the number of data points that could be used for this analysis.

Case Study 1: Spring 2019

Introduction. In Fall, 2018, the Levelhead team began to focus their attention on the feasibility of offering Levelhead in the educational setting. Since the content was developed for the workplace, higher education seemed to be the best fit for both the content and structure. To test this hypothesis, the team identified a psychology professor at Glendale Community College to pilot the use of Levelhead in the classroom. The instructor positioned the use of the app as voluntary and an opportunity for the students to preview a mindfulness app.

Overall, there was limited use of the app by the students. While there were a few students who actively engaged in the exercises, most of the students only completed two to three exercises. A debrief of the instructor and students resulted in determining that the contributing factors to the limited use were 1) lack of structure in what exercises to complete, (2) limited linkage of the topics to the class topics, and (3) lack of ability to earn points toward a grade for completing exercises. The results of the pilot study suggested that another study was needed to determine if the Levelhead program was a viable program to be used in the workplace.

Purpose of study. The purpose of the Spring 2019 case study was to incorporate the findings from the pilot completed in Fall 2018 to further explore the effectiveness of

using the Levelhead content and digital engagement platform as a classroom tool for improving stress, classroom engagement, and increasing focus and attention. Table 3 provides a brief overview of the timeframe, number of students, universities, and classroom. More information is included in the following sections.

Table 3.

Overview of Case Study 1

Case Study	Study 1
Timeframe	January 2019 And Concluding In May 2019
# Students	237
# Universities	3
# Classrooms	9

Participating colleges and universities. The following universities and colleges had at least one class participating in the case study.

- Glendale Community College located (GCC) in Glendale, Arizona has more than 100 degree and certificate programs, affordable classes, and services such as one-on-one tutoring. GCC is part of the ten-college network of the Maricopa Community College System.

- Quinnipiac University is a private university in Hamden, Connecticut. The university grants undergraduate, graduate, and professional degrees through its College of Arts and Sciences, School of Business and Engineering, School of Communication, School of Health Sciences, School of Law, School of Medicine, School of Nursing, and School of Education. The university also hosts the Quinnipiac University Polling Institute.

- The University of Wisconsin-Oshkosh (also known as UW-Oshkosh) is the third-largest university in Wisconsin. As part of the University of Wisconsin system, UW-Oshkosh offers bachelor, master, and doctoral degrees in an annual on- and off-campus enrollment of nearly 14,000.

Recruiting. The Levelhead team utilized their network to identify professors who were willing to participate in a case study in Spring 2019. This resulted in identifying instructors at Quinnipiac University, Glendale Community College, and the University of

Wisconsin-Oshkosh. All of the instructors were involved in the planning process and adapted the program to fit their teaching style and to course content. None of the instructors were compensated for their time or participation in the study. Furthermore, the program was provided to the students for use during the class at no charge and was given access to the program for one year.

Description of classes. The majority of the class types were in the school of business. Two of the classrooms at Quinnipiac were taught by the same professor and included two undergraduate entrepreneurial classes and were all in-person classes. At the University of Wisconsin-Oshkosh, the same professor taught two undergraduate sustainability classes, one entrepreneurial class, and an online master's level business law class. Glendale Community College (GCC) had two instructors involved in the case study. Two in-person classes of positive psychology were taught by one professor at GCC and one in-person Healthy living class taught by another instructor.

Planning and execution. Planning meetings were held with all the professors individually and as a group to plan the rollout. These meetings discussed how the program would be introduced, incorporated into classroom content, and if and how they would incorporate grading for participation. The content and processes used in this study was the same as Levelhead uses in the workplace. That is, the students were free to explore the 180 exercises on the Levelhead app, given the opportunity to send and receive stickers, earn badges, and save exercises as favorites.

None of the instructors required the students to participate. However, all instructors allowed students to obtain points toward their grade. The Levelhead team

participated via zoom in all classroom kick-offs. Invitation codes were sent out while the students were in class and were given time to download the app.

Methodology. Instructors were provided a link that they could provide to their students to complete both the pre and post-assessments. Estimated time to complete both the pre and the post-survey was 6-7 minutes. Many of the instructors gave students time to complete the survey during class and communicated that completing the survey was voluntary. To improve the response rate, Levelhead provided each instructor an update on the number of responses and ask that they remind and encourage the student to complete the survey. Students were asked to create a code that would protect their identity from both Levelhead and the instructor. Of the 237 students included in the study, only 202 students were asked by their instructors to participate in a 6-7 minute survey which was delivered utilizing Survey Monkey.

Quantitative results. Both pre and post-assessments were conducted utilizing three validated instruments: Perceived Stress Survey-14 (PSS-14), Utrecht Work Engagement Survey, and Five-Factor Mindfulness Questionnaire (FFMQ). The selection of these instruments was based on a review of peer-reviewed research conducted in the workplace and in higher education. This review of the research indicated that the PSS-14 and FFMQ are effective instruments to measure underlying constructs of stress and anxiety and focus and attention.

Assessment results. This section provides the results for each of the three instruments pre and post-intervention. For each of the assessments, there is a brief explanation of the scores followed by charts and graphs of the results. The following figures provide the pre and post results for the PSS-14, FFMQ, and UWES. All of the

results you see include only matched pairs of pre and post. Matched pairs mean that only

data from individuals who completed both a pre and post-assessment was used in the

results. See Table 4 for detail of response rates and the number of matched pairs used in

the analysis.

Table 4.

Response rates

Assessment Type	# Pre-Responses	Pre-Assessment Response Rate	# Post-Reponses	Post Assessment Response Rate	#Matched Pairs
PSS	118	58.4%	96	47.5%	52
FFMQ	119	58.4%	99	49.0%	50
UWES	119	58.9%	97	48.0%	49

Background of students. The pre assessment included the three assessments

described above as well as six questions related to their experience with mindfulness and

contemplative practices. Table 5 is a brief summary of the responses.

Table 5.

Background of Students

Question	Response
Understanding of concept of mindfulness	23% indicated that they completely understand it 14% I've heard of it, but can't define it 5% No understanding 72% Somewhat understand
Do you currently participate in yoga, Tai Chi, meditation, prayer, or similar contemplative practices	68.5% indicated no 31.5% indicated yes
If you answered yes to the previous question, how often do you practice?	52.4% Few times a month 3.2% Few times a week 8.9% Daily 18.5% Rarely
What are your goals for undertaking a mindfulness practice?* *Could select more than one response*	71.8% Reduce stress and anxiety 62.9% Improve focus 34.7% Increase creativity 25.0% Build relationships 66.0% Improve overall wellbeing 12.1% Don't know

Given that most exercises take only 3-5 minutes, how often do you expect to practice using the Levelhead program?	8.1% A few times a month 45.2% A few times per week 43.5% Daily 3.2% Not at all
What do you see as the greatest challenge in your academic success?	26.6% Heavy workload 37.1% Stress 11.3 % Social life 11.3% Unclear objectives 4.0 % Unrealistic timeframes

PSS-14. Individual scores on the PSS can range from 0 to 56 with higher scores indicating higher perceived stress. It is important to remember that the perceived stress is *related to the individual,* not the school environment, home environment; but the composite life of the individual.

- Scores ranging from 0-18 would be considered low stress.

- Scores ranging from 19-36 would be considered moderate stress.

- Scores ranging from 37-56 would be considered high perceived stress.

While we saw some improvement in perceived stress scores, it was not statistically significant at the p=.01. See Table 6 for more detail.

Table 6.

Key Statistics for Pre/Post PSS-14

Assessments	Mean	Standard Deviation	R Score	T Score	Statistically significant?	Overall Alpha
Pre	28.3	8.54				
Post	26.05	9.04				
Pre post comparison			.0634	-2.109	P=.035/no	.88
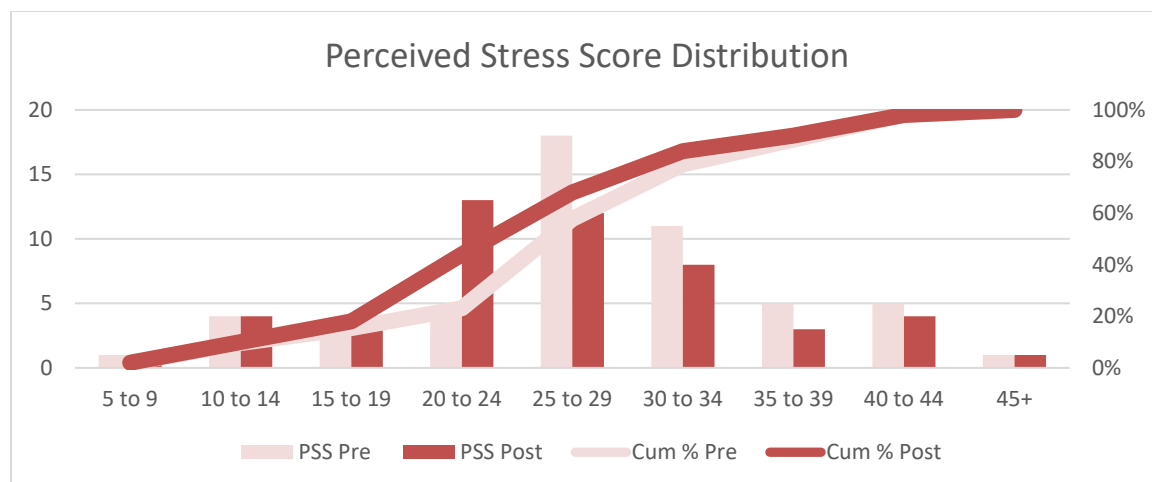
Figure 2. PSS-14 Score Distribution

FFMQ results. The FFMQ tool has demonstrated that it can measure mindfulness with the ability to segment users with consistency and provides ability to distinguish subgroups. It has incremental validity in predicting and well-being across segments of users who are skilled at mindfulness and those without the current skill. While there was improvement in scores from pre to post, the change was not statistically significant. However, within the five factors of the survey, the factor of *observe* was significant at the P=.0002 level.

Table 7.

Key Statistics for Pre/Post FFMQ

Total Score Assessment	Mean	Standard Deviation	R Score	T Score	Statistically significant?	Alpha
Pre	47.47	7.72				
Post	49.51	7.7				
Pre post comparison			.0617	-2.169	P=.035/no	.766
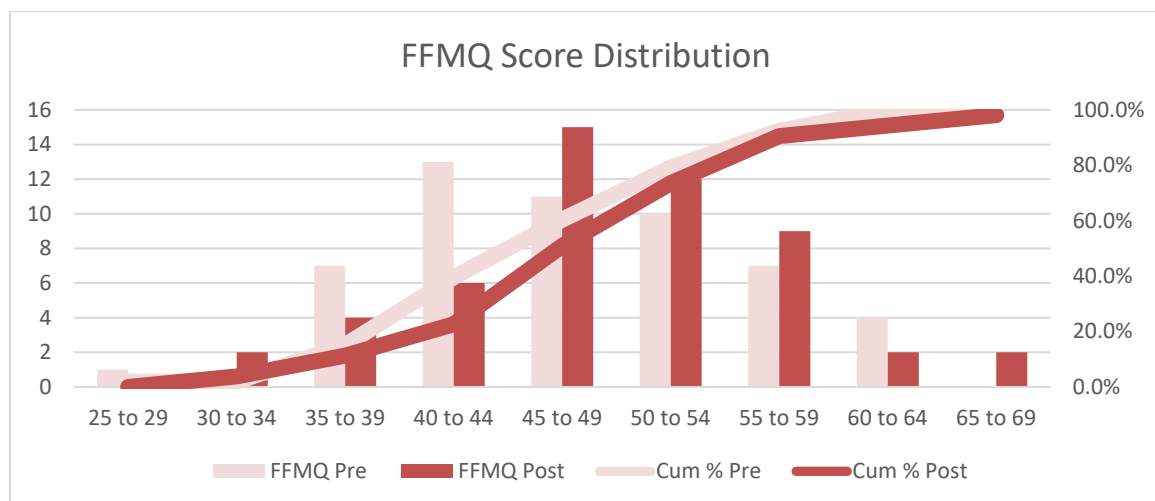
Figure 3. FFMQ-15 Score Distribution

UWES-9S. The UWES-9S has been shown to be reliable and a valid scale to assess academic engagement in undergraduate university students (Carmona-Halty et al., 2019). As Table 8 indicates, the overall difference between pre and post showed improvement. However, the improvement was not statistically significant with p=.04.

Table 8.

Key Statistics for UWES-9S

Total Score Assessment	Mean	Standard Deviation	R Score	T Score	Statistically significant?	Alpha
Pre	3.22	.812				
Post	3.45	.692				
Pre post comparison			.0493	-2.109	p=.04/no	.873
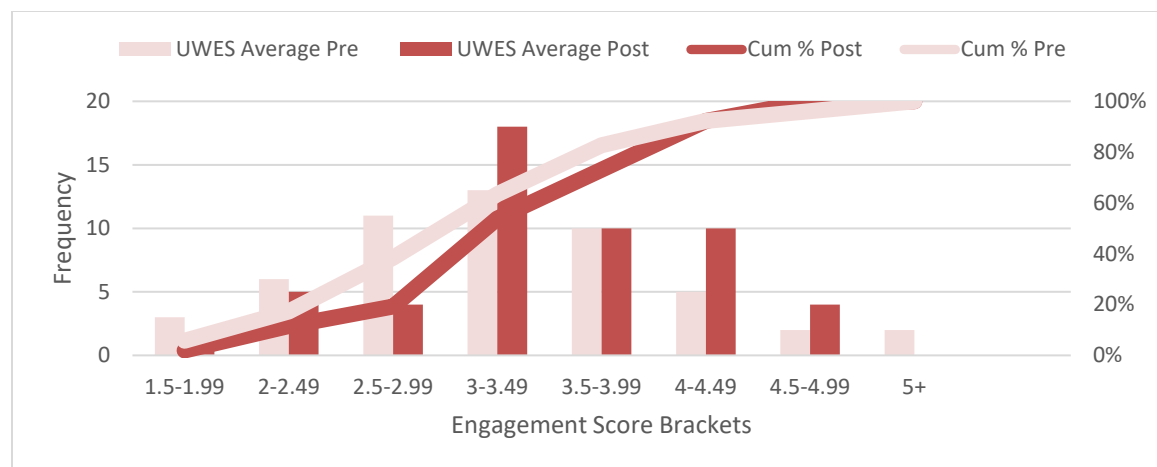
Figure 4. UWES Score Distribution

Qualitative Results

Interview feedback. Group level video feedback sessions were conducted with 70 students from three classrooms to provide feedback on their Levelhead experience. Instructors facilitated the sessions. No script or questions were provided to the instructors. Approximately 110 comments were recorded from the students. Each of the comments were coded into one of three categories.

- Thumbs Up – Favorite exercises and observed personal/workplace benefits.

- Thumbs Down – Comments related to a lack of perceived value for the student personally, or they could not see the relevance to their educational experience or had another reflective practice that worked for them.

- Neutral/Recommendations – Ideas and suggestions to improve the usability of the program, more effectively position the program, or incorporate the Levelhead topics into the content of the course.

Table 9 provides more detail on the percentages and overall description of the comments. See Appendix A for representative comments by category.

Table 9.

Summary of Qualitative Feedback

Category	Percentage of responses	Descriptions
Thumbs Up	75%	Included personal insights gained through the various practices. Shared how they applied what they learned at home/ at school.
Thumbs Down	10%	Comments generally fit into the following categories: Too busy to use Felt stress because exercises were tied to grade Redundancy and/or comments on the "voice"
Neutral	15%	Neutral/Recommendations comments generally fit into the following categories: Insights on being patient; best time to practice; instilling a routine Ideas to provide education on the "why" Suggestions on app enhancements

Reflective journal analysis. The instructor for the online graduate course asked students to submit periodic journal entries reflecting their experiences with the Levelhead program. Twenty-three students submitted 112 comments which were coded into three categories: thumbs up, thumbs down, and neutral. Table 10 provides a summary of those comments.

Table 10.

Summary of MBA Reflective Journal Entries

Coding Category	Thumbs Up	Thumps Down	Neutral
% of Total Responses	74%	18%	8%
Description of comments	About half of the participants had **only** "thumbs-up" comments.	In total, 19 comments were "thumbs down" and they generally fit into the following categories:	Neutral/Recommendations comments generally fit into the following categories:

Most were about specific exercises that they found helpful.	Didn't see the value of the program	Ideas to pre-position the rationale for how Levelhead fit into the class topic
Included personal insights gained through the various practices.	Exercises helped their issues, but they already have a practice that worked for them	Suggestions related to the exercises
Shared how they applied what they learned at home/at work.	Too busy to use	Suggestions on app enhancements
	Irritated because they couldn't see the relevance	
	About half of these comments came from two participants.	
	The remaining comments came from participants who also had either *an equal number of "thumbs up" or more "thumbs up" than "thumbs down"*	

See Appendix B for more detail.

Findings

The following were the key insights and findings from Case Study 1 Spring 2019:

- Practicing mindfulness was a new experience for most students. Since this was a new experience, it took a little time for them to figure out how to incorporate the practices into their lives.

- Students were very open about the obstacles and challenges they have in practicing.

- Students expressed a variety of benefits to practicing, such as reduced stress and anxiety, improved sleep quality, enhanced relationships, improved focus and attention, reduction in multitasking, and the ability to put events into perspective.

- Because professors/instructors varied greatly in how they incorporated the program into the classroom, it was difficult to draw a conclusion as to what approach was most effective.

- The lack of control groups made it difficult to determine if the changes in the scores from pre/post were due to other factors. For example, do students get more or less stressed over the course of a semester?

- Some students had a difficult time in making the connection as to how this program was relevant to the course curriculum.

Conclusions

Based on a review of the quantitative and qualitative data, there was a strong indication that a digitally delivered program like Levelhead may be an effective solution to help students learn to ***manage stress and anxiety, engage in the educational experience, and build "soft skills" associated with emotional regulation and self-awareness.***

To improve the effectiveness of the program for the student population, Levelhead plans explored the following:

- Customize content tailored to the needs of university and college students.

- Organize student tracks to follow a course structure, with topics and practices that will make it easy to incorporate into a class syllabus.

- Record the audio with a younger sounding voice .

- Develop an Instructor Guide with ideas of how to incorporate into the course content.

Case Study 2: Fall 2019

Introduction to the study. Planning and recruiting for Case Study 2 began in the summer of 2019. Many of the activities began before completing the analysis of the data from the assessments conducted in Spring 2019. During the Summer of 2019, the Levelhead team conducted a series of webinars to provide insights related to Case Study 1. The purpose of these webinars was to recruit universities and colleges to participate in the Fall 2019 case study. Table 11 provides an overview of Case Study 2.

Purpose of the study. The purpose of this study was to assess the acceptability of the *Learning to Thrive* content delivered on the Levelhead digital engagement platform as a classroom tool for improving stress, classroom engagement, and increasing focus and attention with an expanded population of students.

Table 11.

Summary of Case Study 2

Timeframe	August 2019-December 2019
# Students	354
# Universities	7
# Total Classrooms	15
# In-person classes	11
# Online classes	4

Recruiting. The Levelhead team utilized their network and periodic webinars to identify institutions and professors who were willing to participate in the second case study. This resulted in identifying instructors at Quinnipiac University, Glendale Community College, University of Jamestown, Marquette University, University of Wisconsin-Superior, University of Nebraska, and the University of Wisconsin-Oshkosh. All of the instructors were involved in the planning process and adapted the program to fit their teaching style and to course content. None of the instructors were compensated for their time or participation in the study. Furthermore, the program was provided to the students for use during the class at no charge and were given access to the program for one year.

Participating colleges and universities. The following universities and colleges participated with at least one classroom.

- Glendale Community College located (GCC) in Glendale, Arizona has more than 100 degree and certificate programs, affordable classes, and services such as one-on-one tutoring. GCC is part of the ten-college network of the Maricopa Community College System.

- Quinnipiac University is a private university in Hamden, Connecticut. The university grants undergraduate, graduate, and professional degrees through its College of Arts and Sciences, School of Business and Engineering, School of Communication, School of Health Sciences, School of Law, School of Medicine, School of Nursing, and School of Education. The university also hosts the Quinnipiac University Polling Institute.

- The University of Wisconsin-Oshkosh (also known as UW-Oshkosh) is the third-largest university in Wisconsin. As part of the University of Wisconsin system, UW-Oshkosh offers bachelor, master, and doctoral degrees in an annual on- and off-campus enrollment of nearly 14,000.

- Marquette University is a Catholic, Jesuit university located near the heart of downtown Milwaukee, Wis., that offers a comprehensive range of majors in 11 nationally and internationally recognized colleges and schools.

- University of Jamestown established in 1883 as Jamestown College is private, liberal arts university granting Bachelor of Arts, science and science in nursing degrees, as well as master's degrees in education and leadership. The campus is located in Jamestown, North Dakota.

- University of Nebraska located in Lincoln, Nebraska, charted in 1869 is an education institution of international stature. Nebraska, a member of the Big-Ten Conference and the Big Ten Academic Alliance, is classified with the Carnegie " R1:Doctoral Universities-Highest Research Activity.

- University of Wisconsin-Superior. One of the campuses of the Wisconsin university systems located in Superior, Wisconsin. UW-Superior focuses on academic programs to meet the needs of students and employers. The university has programs such as Legal Studies, Art Therapy, Transportation and Logistics Management and Sustainability Management.

Description of classes. This section describes the 15 classes involved in the case study. Three in-person classrooms were at Glendale Community College taught by one professor and included one positive psychology class and two lifespan development classes. One in-person classroom at the University of Jamestown was included described as Skills for Academic Success which included students who were conditionally admitted

to the university. There were three in-person classrooms and one online class at Quinnipiac University taught by one professor which included two Introduction to Entrepreneurship, one Family Business class, and one Strategic Management class. At the University of Wisconsin-Oshkosh there were two in-person classes one named 21st Century Business Strategy and the other named Well Organizations taught by the same professor. At Marquette University, there were three online communications classes taught by two professors. At the University of Nebraska, the participants were student volunteer coaches for other students in Resilience and Well-Being directed by one instructor. The University of Wisconsin-Superior included one in-person Victimology class.

Planning and execution. Planning meetings were held with all the professors individually and as a group to plan the rollout. These meetings discussed how the program would be introduced, incorporated into classroom content, and if and how they would incorporate grading for participation. Significant changes were made to improve the efficacy of the Levelhead program for education. The following are some of the critical changes to the program based on findings from the Spring 2019 Case Study:

- Created the Levelhead-Ed brand which included new graphics and messaging targeted at the student population

- Introduced new content called *Learning to Thrive*. This new program was 120 exercises that could be incorporated into the class syllabus by the instructor.

- Instructor and student resource guides were created and provided to the instructors and students.

- None of the instructors required the students to participate. However, all of them gave students the opportunity to secure points toward their grade.

- The Levelhead team participated via zoom in some of the classroom kick-offs. For instructors who did not ask the Levelhead team to participate, the instructors

were provided materials they could us for the kick-off. Invitation codes were sent out while the students were in class and were given time to download the app.

Methodology. Instructors were provided a link that they could provide to their students to complete both the pre and post-assessments. Estimated time to complete both the pre and the post-survey was a 6-7 minute. Many of the instructors gave students time to complete the survey during class and communicated that completing the survey was voluntary. To improve the response rate, Levelhead provided each instructor an update on the number of responses and ask that they remind and encourage the student to complete the survey. Students were asked to create a code that would protect their identity from both Levelhead and the instructor. See Table 12 for detail on response rates for pre and post.

Table 12.

Response rates

Assessment Type	# Pre-Responses	Pre-Assessment Response Rate	# Post-Reponses	Post Assessment Response Rate	#Matched Pairs
PSS	322	90.9%	198	55.9%	155
FFMQ	319	90.1%	195	55.1%	156
UWES	323	91.2%	196	55.4%	156

Both pre and post assessments were conducted utilizing three validated instruments: Perceived Stress Survey-14 (PSS-14), Utrecht Work Engagement Survey, and Five Factor Mindfulness Questionnaire (FFMQ). The selection of these instruments was based on a review of peer-reviewed research conducted in the workplace and in the higher education setting. This review of the research indicated that the PSS-14 and FFMQ are effective instruments to measure underlying constructs of stress and anxiety and focus and attention.

Background of students. The pre assessment included the three assessments

described above as well as six questions related to their experience with mindfulness and

contemplative practices. Table 13 is a brief summary of the responses.

Table 13.

Background of Students

Question	Response
Understanding of concept of mindfulness	19.8% indicated that they completely understand it 18.3% I've heard of it, but can't define it 3.0%. No understanding 58.9 %Somewhat understand
Do you currently participate in yoga, Tai Chi, meditation, prayer, or similar contemplative practices	61.9% indicated no 38.1% indicated yes
If you answered yes to the previous question, how often do you practice?	50.5% Few times a month 6.3% Few times a week 8.7% Daily 17.7% Rarely
What are your goals for undertaking a mindfulness practice?* *Could select more than one response*	79.6% Reduce stress and anxiety 68.2% Improve focus 45.3% Increase creativity 38.40% Build relationships 70.00% Improve overall wellbeing 10.2% Don't know
Given that most exercises take only 3-5 minutes, how often do you expect to practice using the Levelhead program?	9.9% A few times a month 50.4% A few times per week 29.7% Daily 8.4% Not at all

Assessment results. This section provides the results for each of three

instruments pre and post intervention. For each of the assessments, there is a brief

explanation of the scores followed by charts and graphs of the results. The following

figures provide the pre and post results for the PSS-14, FFMQ, and UWES. All of the

results you see include only matched pairs of pre and post. Matched pairs mean that only

data from individuals who completed both a pre and post assessment was used in the

results.

PSS-14. Individual scores on the PSS can range from 0 to 56 with higher scores

indicating higher perceived stress. It is important to remember that the perceived stress is

related to the individual, not the school environment, home environment; but the

composite life of the individual.

- Scores ranging from 0-18 would be considered low stress.

- Scores ranging from 19-36 would be considered moderate stress.

- Scores ranging from 37-56 would be considered high perceived stress.

Table 14.

Key Statistics for Pre/Post PSS-14

Assessments	Mean	Standard Deviation	R Score	T Score	Statistical significant?	Overall Cronbach Alpha
Pre	26.52	7.91				
Post	25.04	7.51				
Pre post comparison			.515	2.418	P=.017/yes	.879

Below is the score distribution for PSS-14 pre and post assessments.
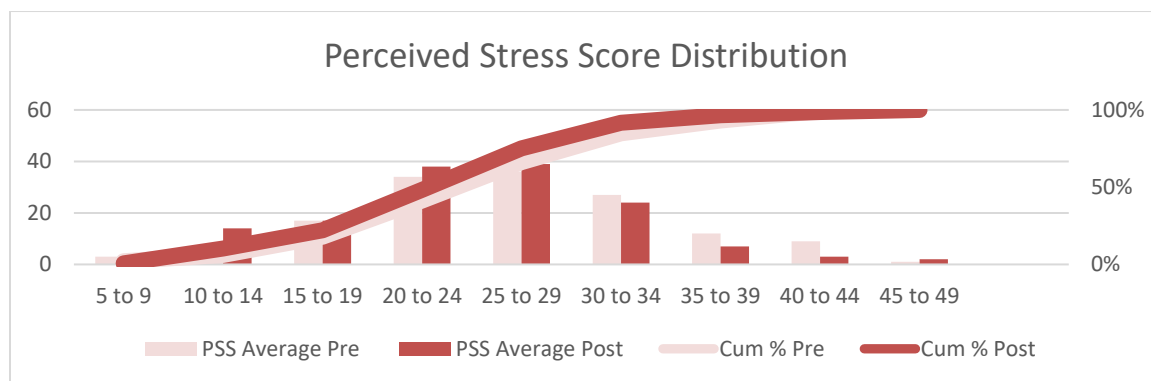
Figure 5. PSS-14 Stress Score Distribution

FFMQ results. The FFMQ tool has demonstrated that it can measure mindfulness

with the ability to segment users with consistency and provides ability to distinguish

subgroups. It has incremental validity in predicting well-being across segments of users

who are skilled at mindfulness and those without the current skill.

Table 15.

Key Statistics for Pre/Post FFMQ

Total Score Assessment	Mean	Standard Deviation	R Score	T Score	Statistically significant?	Overall Cronbach Alpha
Pre	47.26	7.14				
Post	49.44	7.08				
Pre post comparison			.608	-4.32	p=.000028/yes	.761

The following figure outlines the score distribution for pre and post assessment scores for the FFMQ.
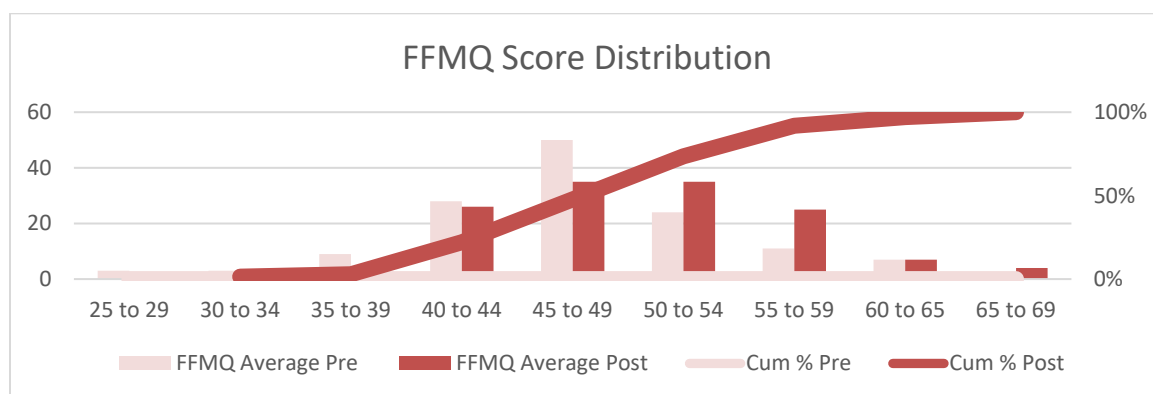
Figure 6. FFMQ-15 Score Distribution

UWES-9S. The UWES-9S has been shown to be reliable and a valid scale to assess academic engagement in undergraduate university students (Carmona-Halty et al., 2019). As Table 16 indicates, the overall difference between pre and post showed improvement. However, the improvement was not statistically significant with p=.04.

Table 16.

Key Statistics for UWES-9S

Total Score Assessment	Mean	Standard Deviation	R Score	T Score	Statistically significant?	Alpha
Pre	3.84	.925				

Post	4.00	.926			
Pre post comparison			.66	-2.659	p=.009/yes	.861

Professor differences in results. Sample size per classroom was too small for determining differences among classrooms from pre to post assessment. The size was large enough to compare professors who had multiple classrooms. Table 17 compares differences by professor.

Table 17.

Instructor Differences Between Pre and Post Assessment Scores

Assessment	Instructor A	Instructor B	Instructor C
UWES-9SCS	NS	Marginal Significant	Marginal Significant
PSS	NS	NS	Significant difference
FFMQ	Significant difference	NS	Significant difference
SCS	Significant difference	Significant difference	Significant difference

NS=no significance

Qualitative Results

Qualitative analysis included an analysis of the number, type, and content of messages sent between students as well as stickers sent to and from instructors. Digital stickers are icon representations of messages that were designed to recognize and send positive or affirmative messages. There are 13 sticker choices that are listed in Table 18 that can be sent from the app to anyone who is part of the team or classroom. Both the administrator which was someone on the Levelhead team and the designated instructor had the capability to send a digital sticker along with a message. The message sent with the content of the message is private to the receiver, the sender, and the administrator.

In the previous case study, Spring 2019, one of the professors suggested adding a sticker called "journal" that students could use to send a message to the instructor. The instructors who used this function asked students to send a message once a week.

Table 18.

Stickers by Type
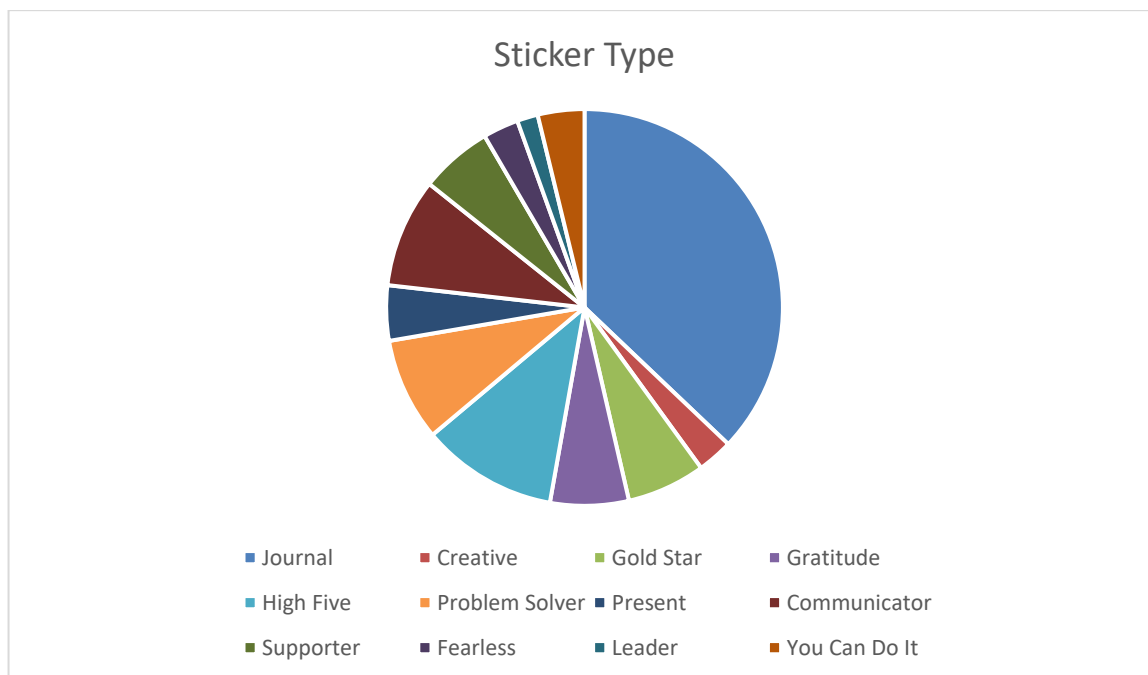
Table 19 represents sample messages that students sent as journal stickers in response to directions from instructors. Not all instructors used the journal sticker for reflection.

Table 19.

Representative Journal Sticker Messages

Thank you for that thoughtful reply on my gratitude paper. It helped a lot! ♡
I was very relaxed when doing the exercises. It put me in a positive mood when it said slow down and be thankful for another day.
Just finished day 1. I did it on my living room couch. This was a good exercise. It did it right when I woke up and it make me feel good!
Thinking outside the box and solving problems is important for entrepreneurship
These exercises are kinda lame but they're pretty cool
It's only been a couple days from using this app, and I am not only impressed but I also have a feeling of excitement. Really nice u you tff

After completing the Stress & Anxiety exercise, I have learned a few coping mechanisms that can help such as breathing and journaling.
I did the leaving your thoughts behind also before bed. It was a good way to prepare myself mentally for classes tomorrow and to sleep tonight
Just listened to turn camera around. A good reminder to take the focus off of yourself and look around you/ see the good that's there
I'm so grateful for this head level Video and it's encouraging me greatly and I love and appreciate the kindness of the organization

Table 20 is a sample of the messages that students sent to and from each other. These were not required by the instructors. However, many of the instructors led by example in sending messages to students.

Table 20.

Representative Stickers Sent to and From Students

Thank you for being a good listener and giving me advice! 😊 😊
Hope you have a good weekend! come back and help me meditate better lol
I need you to be great today Hersh let's go
You helped me with the app
Thank you for always helping me solve all the problems with the newsletter! You have been such a help to me this semester!
You're a good noodle
Great Job !
You got this girl!
I know you can do it
You inspire me 😆
I'm grateful for you ♡

Findings. The following were the key insights and findings from Case Study Fall 2019:

- Instructors were able to adapt *Learning to Thrive* into their classroom types and content. What they appreciated was that the structure could be adapted to the length of class whether it was an 8 week or a 16-week class.

- Establishing a weekly focus provided structure for student engagement, both in and outside the classroom

- Instructors who activity engaged with students by using stickers and the digital journal had statistically significantly better results than instructors who did not engage in this manner.

- Students expressed a variety of benefits to practicing, such as reduced stress and anxiety, improved sleep quality, enhanced relationships, improved focus and attention, reduction in multitasking, and the ability to put events into perspective.

- Care was taken to reinforce to instructors to provide students a rationale for why the Levelhead program was offered during this class. As a result, there were fewer comments from students regarding the applicability of the program to the class.

- While each instructor had a slightly different approach, they encouraged participation with grading, instructors believed incorporating grading into use was essential. Incorporating journal entries and lesson completion into the grade was key to seeing better student outcomes even if it was a small portion of the overall grade.

- While there was no clear pattern of favorite micro-lessons, the brevity of the micro-lessons was appreciated.

- Students indicated that a digital tool provided flexibility to practice on their schedule.

- Similar to the previous case study, students indicated that their primary reason for practicing was to reduce stress caused by heavy workload and busy schedules

Conclusions and next steps. Based on a review of the quantitative and qualitative data, the introduction *Learning to Thrive* program was a key factor in seeing a statistically significant improvement in measures from pre to post. To improve the effectiveness of the program for the student population, Levelhead explored the following:

- Identify a focal point at a university to assist in the recruiting and positioning of Levelhead-Ed at the university to address the needs of university and college students.

- Continue to refine instructor materials to reflect the needs of different types of classes.

- Ask instructors who have participated previously in the program to assist in on-boarding new instructors

Case Study 3: Spring 2020

  Introduction to the study. Planning and recruiting for Case Study 3 began in Fall 2019. Many of the activities began before completing the analysis of the data from the assessments conducted in Fall 2019. During Fall 2019, the Levelhead team conducted a series of webinars to provide insights related to Case Studies 1 and 2. The purpose of these webinars was to recruit universities and colleges to participate in the Spring 2020 case study. Table 21 provides an overview of Case Study 3. Please note that Table 21 indicates the type of class as the semester began. All classes went online as universities and colleges closed down in response to the Covid-19 crisis.

  Purpose of the Study. The purpose of this study was to assess the acceptability of the *Learning to Thrive* content delivered on the Levelhead digital engagement platform as a classroom tool for improving stress, classroom engagement, and increasing focus and attention with an expanded population of students. The findings from Case Studies 1 and 2 were incorporated in the communication, rollout, and tracking for the instructors. Because University Wisconsin-Superior had 13 classes involved in this case study, the Levelhead team had a goal for this case study to identify the issues involved in conducting a campus-wide rollout. For example, the Levelhead team had a goal of understanding what types of partnerships/sponsorships would be needed to execute on a larger program at a university.

Table 21.

Summary of Case Study 3

Timeframe	January 2020- May 2020
# Students	487
# Universities	4

# Total Classrooms	22
# In-person classes	13
# Online classes	3
# Hybrid	6

Participating colleges and universities. The following universities and colleges

participated with at least one classroom.

- Glendale Community College located (GCC) in Glendale, Arizona has more than 100 degree and certificate programs, affordable classes, and services such as one-on-one tutoring. GCC is part of the ten-college network of the Maricopa Community College System.

- The University of Wisconsin-Oshkosh (also known as UW-Oshkosh) is the third-largest university in Wisconsin. As part of the University of Wisconsin system, UW-Oshkosh offers bachelor, master, and doctoral degrees in an annual on- and off-campus enrollment of nearly 14,000.

- Marquette University is a Catholic, Jesuit university located near the heart of downtown Milwaukee, Wis., that offers a comprehensive range of majors in 11 nationally and internationally recognized colleges and schools.

- University of Wisconsin-Superior. One of the campuses of the Wisconsin university systems located in Superior, Wisconsin. UW-Superior focuses on academic programs to meet the needs of students and employers. The university has programs such as Legal Studies, Art Therapy, Transportation and Logistics Management and Sustainability Management.

Recruiting. The Levelhead team utilized their network and periodic webinars to

identify institutions and professors to participate in this case study. What differentiates

this case study was the partnership with the Pruitt Center for Mindfulness at the

University of Wisconsin-Superior. Our contacts at the Pruitt Center were the primary

means to identify instructors who would be interested in participating. This resulted in

including 13 classrooms which included two athletic teams. All of the instructors were

involved in the planning process and adapted the program to fit their teaching style and

course content. None of the instructors were compensated for their time or participation

in the study. Furthermore, the program was provided to the students for use during the class at no charge and were given access to the program for one year.

Description of classes. There were 22 total classrooms across four universities. There were two instructors who taught seven classes. One instructor taught four principles of human nutrition which were a combination of classroom and lab. The other three classrooms at GCC were taught by one instructor and included one positive psychology class and two lifespan development classes. One online classroom was a General business class at the University of Wisconsin Oshkosh. At Marquette University, there was one online communications class. Table 22 outlines the variety of classes and participation at the University of Wisconsin-Superior (UWS):

Table 22.

Description of Classes at UWS

Class Type (Prior to move to online for Covid-19 Crisis)	Class Name
Hybrid	Intramural
In-person	Drugs, Health, & Human Behavior
In-person	Crisis Intervention
Hybrid	Women's Soccer
Hybrid	Men's Soccer
In-person	Judicial Process
In-person	Delinquency & Juvenile Justice
In-person	Law & Human Behavior
In-person	Crime Behavior & Social Control
In-person	Crime Behavior & Social Control
In-person	Multicultural Education
In-person	Middle School and Its Students
Online	Applied Behavior Analysis

Planning and execution. Planning meetings were held with all the professors individually and as a group to plan the rollout. These meetings discussed how the program would be introduced, incorporated into classroom content, and if and how they would incorporate grading for participation. Significant changes were made to improve

the efficacy of the Levelhead program for education. The primary difference for Spring 2020 was the introduction of a partner with the Pruitt Mindfulness Center in the planning and execution of classrooms at the UWS.

None of the instructors required the students to participate. However, all instructors allowed students to secure points toward their grade. The Levelhead team participated via zoom in some of the classroom kick-offs. For instructors who did not ask the Levelhead team to participate, the instructors were provided materials they could use for the kick-off. Invitation codes were sent out while the students were in class and were given time to download the app.

Methodology. As in the previous two case studies, instructors were provided a link that they could provide to their students to complete both the pre and post-assessments. Estimated time to complete both the pre and the post-survey was 6-7 minutes. Many of the instructors gave students time to complete the survey during class and communicated that completing the survey was voluntary. To improve the response rate, Levelhead provided each instructor an update on the number of responses and asked that they remind and encourage the student to complete the survey. Students were asked to create a code that would protect their identity from both Levelhead and the instructor.

Covid-19 Impact. The value of the pre-assessment data is largely related to the ability to compare pre to post-assessment. Because of the unprecedented impact of Covid-19 and the lack of ability to separate the influence of moving to completely online, the Levelhead team and the instructors agreed that completing a post assessment would likely be influenced by the external event and is not an appropriate measure of the impact of the Levelhead program. Therefore, a customized survey was developed to gather

impact on how students were processing the Covid-19 crisis and to what extent the

Levelhead program helped them manage their stress and anxiety. Out of 437 surveys sent

out, 230 responses were received which was 52.6% response.

Subsequent to the decision of the Levelhead team's to not conduct the post-

assessments as planned, a recent study by the CDC indicated that there was a 3 to 4 times

increase in anxiety and depression in the general population from January -June 2019 and

May 2020. See Figure 7.
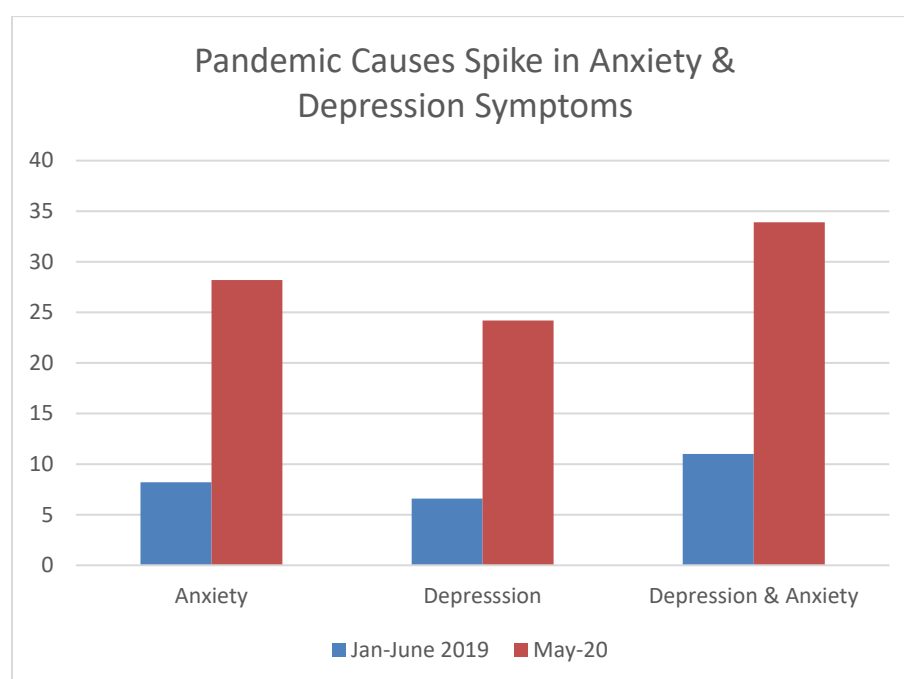
Figure 7. Pandemic Causes Spike in Anxiety & Depression

Note: Self-reported frequency of anxiety and depression symptoms. They are derived
from the responses to the first two questions of the eight-item Patient Health
Questionnaire and the seven-item Generalized Anxiety Disorder.
Sources: CDD, NCHS, U. S. Census Bureau

Profile of students. UWS had the largest number of students participating in the

survey with 152 or 66% of the respondents. GCC had 30 students or 13%; Marquette

University had only 9 students respond representing less than 1%, and UW-Oshkosh had

37 students representing 16% of the response. The students were fairly equally distributed across years in school. However, GCC and UW-Oshkosh had more students indicating they were in their second year. The universities were similar in the percentage of students working part-time. However, UWS had the highest percentage of students working full time at 12.5%. Sixty-six percent of students indicated that they either work or participate in extracurricular activities. See Table 23 for more detail.

Table 23.

Profile of Students

Profile Questions	Response Choices	%
In what year school are you?	1st year	19.1
	2nd year	30.0
	3rd year	21.3
	4th year	22.2
Prior to the crisis, did you work full or part time?	Yes, I worked part-time	60.9
	Yes, I worked full-time	11.3
How many hours do you spend in extracurricular activities?	None	14.3
	Less than 5 hours	29.1
	5 to 10 hours	23.9
	11 to 15 hours	17.9
	20+ hours	12.2

Stress and future decisions. As a reminder, the post-survey was conducted late April 2020 through early May 2020. By this time all of the universities and colleges were completely on-line due to the Covid-19 crisis. While overall, 60% of the students responded that their stress levels were somewhat higher to extremely higher than before, there are substantial differences among the universities. Seventy-three percent of the students at UWS indicated that their stress is somewhat higher to extremely higher than before.

Across universities, the most common response to what is the source of stress was course work. The second most commonly reported source of stress were concerns about the future. Because the majority of the classrooms in the study began as in-person or hybrid classrooms, it is not surprising that 74% of students responded that the Covid-19 crisis had impacted their educational experience. Conversely, only 22.2% of students indicated that the crisis might impact their future career decisions. See Table 24 for more details on this section of the survey.

Table 24.

Stress and Future Decisions

Questions	Response choices	%
As compared to pre-Covid-19, I would rate my overall current level of stress and anxiety as:	lower than before	13.9
	about the same	19.1
	somewhat higher than before	34.3
	much higher than before	17.4
	extremely higher	7.8
	not sure	2.6
The primary cause of my current stress is related to: (Multiple answers were allowed	Family	40.9
	Finances	46.5
	Course work	74.3
	Health concerns	22.6
	Future	59.6
The current Covid-19 situation has drastically impacted my *educational experience*	Strongly disagree	3.9
	Disagree	3.0
	Neutral	13.9
	Agree	39.1
	Strongly Agree	35.2
The current Covid-19 situation has drastically impacted *future educational decisions*	Strongly disagree	13.0
	Disagree	28.3
	Neutral	31.7
	Agree	16.1
	Strongly Agree	6.1

Student's perceptions of within changes. A section of the post survey was designed to prompt students to reflect on "to what extent did they perceive changes in themselves and their relationship to others as a result of their Levelhead-Ed experience." The questions in this section were based on questions either in the PSS-14 or the FFMQ. While it is not appropriate to compare these questions to corresponding questions in either of these validated instruments, responses do provide directional information on how the students perceived that the program helped them build the skills needed to manage stress and anxiety.

Table 25 provides detail on the percent of students who responded that they agreed or strongly agreed that the statement was true for them. Responses to questions numbered 2, 3, 5, 6, 9, and 10 are related to mindfulness components as measured by the FFMQ. In question 6, sixty percent of students agreed or strongly agreed that the program and/or instructors helped them to become aware of when they are running on automatic. The lowest agreement of 37.8 % among the questions in Table 25 was to question 4 which relates to the students' ability to manage their internal critic. The highest agreement with the statement was that the program and/or instructor helped them recognize the good things in their lives. Question 1 was second in agreement at 70.4% which relates to whether the student learned skills to help manage stress and anxiety. Question 8 was the third highest level of agreement at 70.0% and is related to the concept of empathy. Table 26 ranks the questions in terms of % agree or strongly agree.

Table 25.

Students' Reflection on Internal Changes

#	Introduction to these Questions This section is intended to measure the degree to which you believe the skills you learned from the Levelhead-Ed program and/or your instructor has helped in the following areas.	% Agree or strongly Agree
1	I have learned skills to help manage my stress and anxiety.	70.4
2	I pause before immediately responding.	63.9
3	I notice when my mind has wandered.	68.3
4	I have the ability to quiet my internal critic.	37.8
5	I pay attention to my external environment such as sounds, smells, sights, and textures.	61.3
6	I am aware of when I am running on automatic and not paying attention to what I am doing.	60.0
7	I recognize the good things in my life, which positively impacts the way I see the world.	73.4
8	I have the ability to understand and respond to the feelings of others.	70.0
9	I recognize when I am judging my thoughts as good or bad.	64.8
10	I have the ability to focus my attention in the present moment.	60.8
11	I have learned skills to help manage my emotions and behavior.	65.7
12	My participation in the Levelhead-Ed program provided me the opportunity to discover valuable insights about myself and others.	65.4

Table 26.

Rank Order of Questions in Table 25 by %

#	Question	% Agree or Strongly Agree
7	I recognize the good things in my life, which positively impacts the way I see the world.	73.4
1	I have learned skills to help manage my stress and anxiety	70.4
8	I have the ability to understand and respond to the feelings of others.	70.0
11	I have learned skills to help manage my emotions and behavior.	65.7
12	My participation in the Levelhead-Ed program provided me the opportunity to discover valuable insights about myself and others	65.4
9	I recognize when I am judging my thoughts as good or bad.	64.8
2	I pause before immediately responding.	63.9
3	I notice when my mind has wandered.	63.8
5	I pay attention to my external environment such as sounds, smells, sights, and textures.	61.3
10	I have the ability to focus my attention in the present moment.	60.8
6	I am aware of when I am running on automatic and not paying attention to what I am doing.	60.0
4	I have the ability to quiet my internal critic.	37.8

Structure of the Levelhead-Ed program. This section of the survey was designed to gain feedback on the integration of the program into class content and grading structure. See Table 27 for responses in this section. In addition, there were questions designed to discover the intentions of the students to continue to use either the app or what they learned during the semester. The question with the highest level of agreement was question 2 in Table 27 with 68.2% of students agreeing or strongly agreeing that they plan to continue to use what they learned from the program. Also, 64% of students agreed or strongly agreed that the program was relevant to course work and professional goals. Over two-thirds of the students agreed or strongly agreed that the exercises or lessons were easily adapted to real-world situations.

Instructor and university. All of the instructors provided the opportunity to earn grade points for participation in the program. Two-thirds of the students indicated that they agreed or strongly agreed that the credit they received for participation was about right. Sixty-seven percent of students indicated that the instructor provided the right level of emphasis on the program. Sixty-four percent agreed or strongly agreed that they probably wouldn't have done a program like this on their own. Also, nearly sixty percent agreed or strongly agreed that their opinion of the university and the instructor was favorably influenced by offering the program. The lowest agreement was to question 6 which asked if they could do the exercise without the use of the app. And finally, in question 13, 55% of students agreed or strongly agreed that the Levelhead program was a good addition to their course work.

Feedback on program features. Stickers are a feature of the program which allows students to send and receive messages and are designed to reinforce positive

messages. Only 40% of students agreed or strongly agreed that it felt good to receive or send a sticker. One of the stickers is designed to be used by instructors at their discretion for sending reflective insights from the students to the instructors. Not all instructors used this function, but for those that did only 17% indicated that it was helpful to be able to do this. During the program, the Levelhead team and a few instructors sent pop-up notices to students through the app as reminders or messages of encouragement. However, in contrast to the response regarding sending and/or receiving stickers, 70% of students agreed or strongly agreed that they would like to see more programs integrated into the course work that would help them live healthier and happier lives.

Table 27.

Feedback-Structure of the Levelhead-Ed Program

	Questions Related to Structure of Program and Plans for Future Use	% Agree or Strongly Agree
1	The content of the Levelhead-Ed program was relevant to my course work and my professional/career goals.	64.0
2	I will continue to apply what I learned from the Levelhead-Ed program beyond this class.	68.2
3	The Levelhead-Ed exercises were about the right length to accommodate my busy life.	58.4
4	The grading/participation credit I received related to Levelhead-Ed requirements was appropriate.	65.9
5	The topics covered in Levelhead-Ed were easily adapted to real situations I am facing in my life.	66.4
6	Once I have practiced an exercise, I can do the exercise without having to listen to the app.	49.0
7	My instructor provided the right level of reinforcement of the topics in Levelhead-Ed.	67.3
8	I am glad Levelhead-Ed was part of my course requirements because otherwise I would not have done something like this on my own	64.0
9	My opinion of the university and my instructor was favorably impacted by offering the Levelhead-Ed experience.	59.8
10	The information I received in pop-up/push notifications on my device was helpful.	43.9
11	It made me feel good to receive or send a sticker.	40.0
12	I found that the journaling sticker was helpful in putting my thoughts, feelings, and experiences into words.	17
13	Overall, I found the Levelhead-Ed experience useful and a good addition to my course work.	55

Table 28.

Yes/No Feedback Question

Question	Yes/No %
I have shared one or more of the exercises with friends or family members.	54/39
During the program I either received or sent a sticker.	62/31
My instructor asked us to utilize the Journaling sticker to send feedback to him or her.	38/55
Would you like to see more courses integrate content that will support the development of skills to help you live healthier and happier lives	70/22

Qualitative Results. Qualitative analysis included an analysis of the number, type, and messages sent between students and stickers sent to and from instructors. In addition, instructors involved in the program for Spring 2020 were interviewed to get their perspective.

Stickers. Digital stickers are icon representations of messages that were designed to recognize and send positive or affirmative messages. There are 12 sticker choices that are listed in Table 29 that can be sent from the app to anyone who is part of the team or classroom. Also, the administrator which was someone on the Levelhead team and the designated instructor had the capability to send a digital sticker along with a message. The message that is sent is private to the receiver and the sender/ administrator. The analysis of stickers was broken down into three categories (a) from instructor/coach to student, (b) from student to professor/coach, and (c) student to student. There was a total of 1737 stickers with 30.1% from students to professor/coach; 44.1% student to professor/coach; and 25.8% student to student. Tables 30-32. shows the distribution of the types of stickers sent and received.
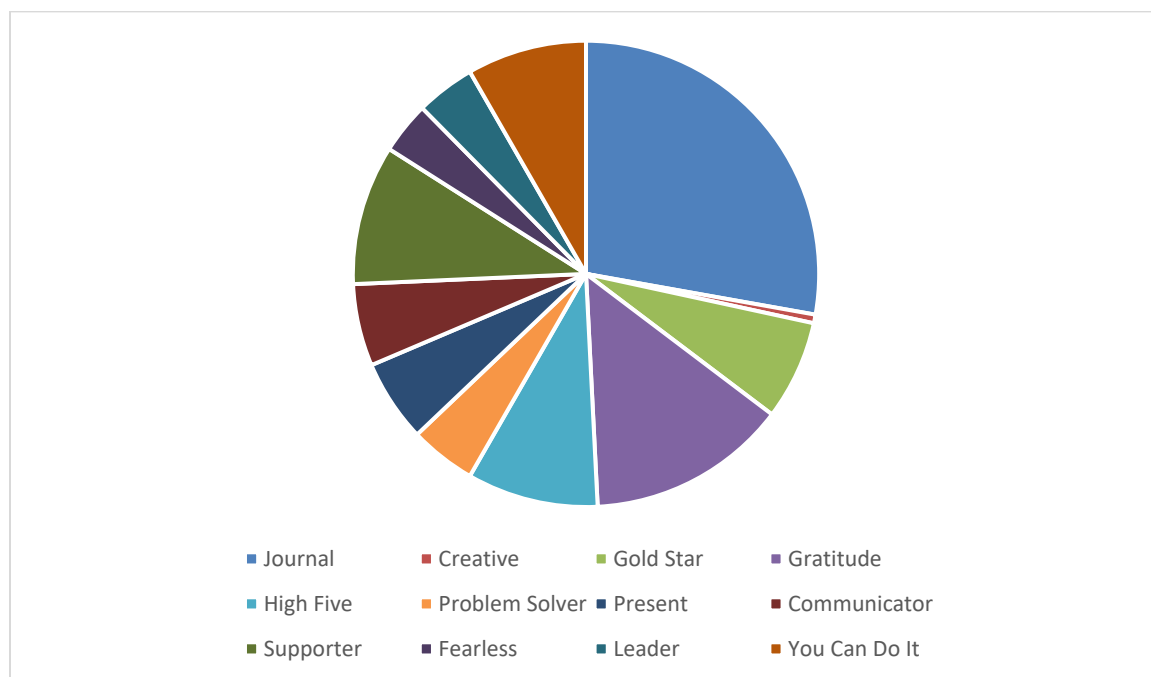
Table 29.

Frequency of Stickers Type

Legend:
- Journal
- Creative
- Gold Star
- Gratitude
- High Five
- Problem Solver
- Present
- Communicator
- Supporter
- Fearless
- Leader
- You Can Do It

Table 30.

Representative Journal Stickers -Student to Prof/Coach

I've been having a very stressful last several days, but taking deep breaths help. I need to do it more.
I was not in a great mood when I got here but now I am way better and I feel like that energy went away .
I am much less stressed! I do a 2 hour transportation run every morning before school - it's a bit taxing.
I lose the most focus when I'm getting tutored in math. I want to work on keeping myself focused during that.
I lose my focus whenever I have time to myself, I want to try and be more productive when I'm in by myself instead of daydreaming
The one thing that I need to work on would have to be my school work and staying consistent with my focus and ability to stay on task.
I want to work on being more grateful for everyone around me.
I would like to be more present at work. I work in a hospital, so there is always SO much going on all the time.
Yes I think my phone distracts me from a lot of daily things. I also think I use my phone a lot for things that help me throughout the day.
Gratitude serves a a positive reinforcer because it shows a reason for drive. Praise in the workforce is an example of positive reinforcement
I find anxiety can cause people to develop habits (negative reinforcement). For example, anxiety can prevent from doing an activity well
When I am stressed/anxious I get angry and mean to myself and others. When I get down on myself it is hard for me to focus on the good.

The activities that I did went into further detail on how to be mindful and it was very similar to the class discussion that we did Monday.
We are only truly present 50% of the time. Mindfulness is a life-long practice. Manage stress levels. negativity bias so focus on positives.
Thanks for being so open and available during this strange semester. I greatly appreciate the time you give for us! It has been awesome!

Table 31.

Student to Professor/Coach-other than Journal Stickers

Stress can influence mindfulness by being distracting and overwhelming. Ex Wanting to relax but have a to-do list, do it, then you can relax
Keeping a positive attitude, taking breaths to center/focus, & acknowledgment of problems in my life in order to deal with them and move on
I see the connection with empathy in a way of helping form uncruel ways of teaching behavior and also thinking about what would be most
"What do I need today to be my best self?" My best self is when I'm ahead in school b/c it's the key to my future and it makes me happy
I enjoyed learning the benefits of this app and how it can help my anxiety, sleeplessness, and more. It is quick, easy and always accessible
LOVED this week! Really seeing the importance of gratitude in my life. Exercises were simple yet influential. Want to continue this practice.
I think what's important in building relationships is honesty.
Building relationships is about communication. Social work is the perfect example of why relationship building is important.
I figured out that each time I looked at my phone I would be distracted. When I looked at my phone I would lose a minute of the reinforcement
I am thankful for you. You strive to build authentic, and healthy relationships, seeing us as an individual. Thank you seeing me.
Thanks for always having a positive attitude!
Thankful for all the hard work you put into our classes ♡

Table 32.

Representative Stickers- Student to Student

Hi Jon! You've done so well communicating your thoughts and ideas despite the "norm" of the class. You question things in the best way!!
You are great at conversing and making one feel comfortable when talking to you :)
Thank you for always sharing your thoughts and experiences in class! Good luck with finals!
Hey Brit! I miss you very much and hope you are doing well. You're a wonderful communicator and a great friend♡
Thanks for working with me this semester! I hope everything goes well!
Thank you for all of the meaningful conversations that you brought to all of the classes that we shared. Good luck with your finals.
Thank you for all of the meaningful conversations that you brought to all of the classes that we shared. Good luck with your finals.
You killed it today roommate 😬 ✏️ love to see the grind 😺 😺
You have been fearless through every semester we've had together, not afraid to grow and be challenged! I have loved getting to know you!
Don't give up! You got this! Hope you have a blessed day! :)

Interviews with instructors. The Levelhead team conducted interviews with five instructors to get feedback regarding the student experience. The instructors were also asked to share what it was like for them to integrate Learning to Thrive into the classroom. Since these interviews were conducted post-quarantine, the Levelhead team was interested in learning how the program worked with the transition to an online class. Table 33 provides representative responses to interview questions.

Table 33.

Interview Questions with Instructors

Question	Instructor	Excerpt from Interviews (verbatims)
Why did you decide to integrate Levelhead into your classroom**?**	1	Primarily. I thought of it in two ways. One is that we all need to learn mindfulness. We all need to be grounded in the practice, but my experience is if I talk about it in that way, students sometimes block me out when we talk about self-care. Ironically, these are the students who will be working with people in crisis situations in very emotionally charged situations. And we need to be grounded in self-care.
		I could explain it to students as I would like, for you to use yourself as a participant in those mindfulness and wellbeing activities that Levelhead has. So, in, in some ways I wanted the students to, to develop a skill in understanding these exercises. I also primarily wanted them to experience the value of it themselves. So I wrapped it into an assignment that I, I presented as both ways, use yourself, see how that does see how it helps you in your life, but also understand that this could be a very core strategy for what you do with your work, with people who have been traumatized.
You were the top user in the digital journal function that the app has. What was it like, you know, receiving and absorbing these messages from your students each week?	1	Wow. It was humbling to read to know that they were sharing very personal reflections with me. I'm always touched as a professor to have that kind of relationship to have that kind of dialogue with students, even though they were short snippets, but they were not just impersonal types of reflections there. I could see the student in each one and the fact that they were willing to do that with me was humbling. It was exciting. It was informative. I

		could see how they were using it in their lives. And I also got glimpses of how they would use it as a future professional. So, for me, the stickers were the most exciting for me to read
Everybody knows that students' stress and anxiety is a burning issue these days but certainly made only worse by recent events. What kinds of things have you been observing with your students?	2	I am always floored by the resilience of my students and young people in general. This has been a very difficult time for my students. Most of them have lost jobs or internships, other wonderful things that they were working on prior to this outbreak. And yet they have stayed incredibly engaged now with the switch to complete online classes.
Notice anything different specifically in your discipline of justice?	2	Well, for the past several years, our legal studies and criminal justice program working in conjunction with the UWS Pruitt center for mindfulness and wellbeing has really woken to the fact that it needs to be a central part of our mission and our curriculum and our duties and obligations as teachers and mentors to prepare those future law enforcement officers and attorneys and paralegals public servants not just with the theory, but also with the self-care and the wellness tools that they will need at that point in their careers.
Have your student been receptive to self-care practices?	2	The students have been receptive. I think there's always at the outset that there's always some hesitation at the outset because it's so different to what has traditionally been done in so many college classrooms. And so we do certainly get some students initially that will have that, well, look, this is not what I signed up for. And yet as the semester goes on, especially when students hear from lawyers, law enforcement officers and judges that have also woken to the importance of the self-care and mindfulness tools, the students have been very receptive
What advice would you have for other schools thinking about implementing a program like Levelhead-Ed?	3	So one of the things that the faculty has talked with us about our work with the level app in their courses is that using the course, the app itself has made them more empathetic and it's made them more understanding of what their students are going through even in a time like this right now. I mean, they might have been more thinking about the, the inability, you know, they're everything's been disruptive and they can't see their students face to face and, and what can they do for them. But they're actually looking at it more like through the eyes of compassion and through the lens of empathy and really feeling what their students are going through and saying, you know what, hold on, let's back up a minute. We don't need to focus right now on grades

Findings. The following were the key insights and findings from Case Study 3

Spring 2020:

- As we saw in Case Study 2, instructors were able to adapt *Learning to Thrive* into their various classroom types and content. What they appreciated was that the structure could be adapted to the length of class whether it was 8 weeks or 16-week class.

- Instructors felt that they were able to connect with students in a personal way that enhanced student engagement and learning.

- Since many of the classes were in-person prior to the Covid-19 crisis, having a digital tool available to instructors and students was valued as everyone adjusted to the new online environment.

- Similar to Case Study 2, instructors provided structure to students for how they wanted their students to utilize the program. Several of them developed themes such as gratitude and wove that topic into course content.

- Sticker use played a more prominent role than previous case studies in all three categories: student to student; student to instructors; and instructor to student. It appears that those classrooms where the instructor led by example in sending stickers to students and positioned the stickers as a meaningful way to engage others saw more engagement. In other words, the messages were less superficial and contained fewer emoji only messages. Given this use of the stickers, it is a little surprising that only 40% agreed or strongly agreed that it felt good to send or receive a sticker.

- As in Case Study 2, instructors were thoughtful about why the program made sense for their class and made sure that they continued to reinforce this message throughout the course. In interviews, instructors said that now that they have been through the program once, they feel they could do an even better job next time.

- Two of the instructors had previous experience with utilizing Levelhead-Ed in their classrooms and made adjustments to grading and participation based on their experiences.

- Based on the findings from the survey, it appears that the students believe that they acquired skills to help them manage stress and anxiety which is especially important as we navigate the Covid-19 crisis.

Conclusions and next steps. Based on a review of the quantitative and

qualitative data, the findings seem to be consistent with the findings in Case Study 2.

Some of the specific conclusions and next steps derived from this case study are listed below:

- There is a need to continuously examine the content to incorporate additional lessons based on feedback from students and instructors. The post survey results seem to indicate that there is a need to revise and perhaps add additional exercises on helping students manage their wandering attention and more exercises on self-compassion.

- The Levelhead team's experience with working with the Pruitt Center for Mindfulness and Wellbeing at the University of Wisconsin-Superior reinforced the importance of having a contact point at the university to facilitate recruitment, communication, and for measuring effectiveness.

- Additional tracks and programs need to be developed that reflect a progression in the program. For example, *Learning to Thrive* may be the introduction to these concepts for students and subsequent programs could build on this introductory course such as *Learning to Thrive* 2 & 3.

- Based on feedback from instructors, it would be helpful to have a recorded webinar that provides information on the program, resources available, tracking, ideas on grading, and sample syllabus would be helpful. While this was done in Case Studies 1 & 2 not all instructors attended due to scheduling conflicts.

Cases Studies 1, 2, and 3: Summary of Findings and Results

The methodology for these three case studies was a mixed method approach. This means that there were both quantitative research hypotheses and qualitative research

questions. The following sections discuss the finding and results of these three case studies in terms both quantitatively and qualitatively.

Quantitative Findings

The following are hypotheses of all three of the case studies and incorporate the findings and results from Fall 2018 through May 2020.

Results H_{01} and H_{1a}.

$H_{01.}$ Implementation of the Levelhead-Ed program does not reduce perceived stress from pre to post assessment as measured by the Perceived Stress Assessment-14 (PSS-14).

$H_{1a.}$ Implementation of the Levelhead-Ed program does reduce perceived stress as from pre to post assessment measured by Perceived Stress Survey-14 (PSS-14).

While there was a reduction in perceived stress score in Case Study 1 Spring 2019, the improvement from pre to post was not statistically significant. Case Study 2 Fall 2019 demonstrated that the Levelhead-ed program did statistically improve perceived stress levels. Unfortunately, we were not able to complete the post assessment as planned for Case Study 3. Because the sample size of the matched pairs in Case Study 2 was adequate to have confidence in the results, we can conclude that the Levelhead-Ed program has the potential to reduce perceived stress in college students. Strengthening support that Levelhead-ed is an effective tool for reducing stress in college students were the findings from Case Study 3. Specifically, 70% of students indicated that the Levelhead-Ed program provided them the tools they need to manage their stress and anxiety.

Results H$_{02}$ and H2a.

H$_{02}$: Implementation of the Levelhead-Ed program does not improve focus and attention from pre to post assessment as measured by the Five-Facet Mindfulness Questionnaire (FFMQ).

H$_{2a}$: Implementation of the Levelhead-Ed program does improve focus and attention from pre to post assessment as measured by the Five-Facet Mindfulness Questionnaire (FFMQ).

In Case Study 1 Spring 2019, there was improvement in FFMQ scores, but the change did not reach a statistical significance at p=.001. However, in Case Study 2 Fall 2019, there was a statistically significant improvement in the overall FFMQ scores. Based on the sample size of Case Study 2 and the level of statistical significance, we can conclude that the Levelhead-Ed program does help students improve their attention and awareness. While we are unable to compare responses pre and post for Case Study 3, there were six statements in the post survey that were aimed to determine the student's perception of the Levelhead-Ed program in managing their attention. For five of these questions, 60% or greater of the students indicated that the program provided tools and awareness of their attention.

Results H03 and H3a.

H$_{03}$: Implementation of the Levelhead-Ed program does not increase student engagement pre to post assessment as measured by the Utrecht Work Assessment (UWES) adapted for students.

H$_{3a:}$ Implementation of the Levelhead-Ed program does increase student engagement pre to post assessment as measured by the Utrecht Work Assessment (UWES) adapted for students.

Similar to other measures in Case Study 1, there was an improvement in UWES from pre to post but did not reach statistical improvement. Also, similar to the other pre and post assessments in Case Study 2, there was a statistical improvement in UWES scores. Furthermore, the post survey for Case Study 3, provides directional information to say that the Levelhead-Ed program does strengthen student's engagement. For example, about two thirds of students agreed or strongly agreed that their instructor provided about the right level of emphasis on the program and nearly 60% of the students said that their opinion of the university and/or instructors was favorably influenced by offering the program. Furthermore, 70% of students indicated that they would like to see more programs integrated into their course work that would help them live healthier and happier lives.

Qualitative Research Questions

The qualitative portion of the case study attempted to answer the following research questions:

Findings RQ1. What impact does the Levelhead-Ed program have on the overall learning experience for students? Based on the findings from all three case studies, the Levelhead-Ed program can be seamlessly integrated into a wide variety of classroom types including in-person and online. This finding is based on feedback from both students and instructors through interviews and analysis of the use of engagement features such as stickers. In addition, students reported that having a digital tool available

to them during the Covid-19 crisis provided a sense of connectivity and tools to manage their stress and anxiety.

Findings RQ2. What experiences and changes do students perceive in themselves and others? The quantitative results from Case Study 2 indicated that the program can reduce stress and anxiety and improve focus and attention. Additionally, the survey results from Case Study 3 indicated that students recognize that they acquired skills to help them manage stress and anxiety. They also have awareness of the need to have control of their attention.

Findings RQ3. What changes are needed to the content and instructor resources to improve student receptivity and engagement? Case Study 3 students and instructors indicated that the reporting, instructor guide, presentation materials, and student guides were appropriate for the program. However, during this study, we created an e-book for use by students with a hearing disability so that they could practice the exercises that were offered by audio. Some of the recommendations that we have received for future programs include:

- Additional sample syllabus for instructors.
- Ideas on how to integrate into online classrooms.
- Support for ways to integrate use of journals and/or journal stickers.
- Additional content for students who have been through *Learning to Thrive* in previous classes.
- Suggestions for engaging students such as campaigns and challenges as we do in the workplace.

Findings RQ4. What is the receptiveness from students to content and practices delivered via a mobile platform? Feedback from students and instructors suggested that

students are very familiar with using apps in various forms and had no difficulty in navigating the program. Many also indicated that the length of the exercises and the ability to listen to the exercise based on their schedule was a convenient way to engage in the content. Students and instructors adapted to using the features and functions of the app easily and were able to utilize a mobile platform along with their learning management software.

Conclusions and Recommendations

The Levelhead team has been engaged in working with students and instructors in higher education since the Fall 2018. We have learned a tremendous amount about the challenges and benefits of working in this sector. While the Levelhead team has a deep understanding of how to execute change in the workplace, we have concluded the following about the opportunity and benefits of working in higher education. The following are a few of the key conclusions we have drawn:

- We are encouraged by the receptivity of instructors and students to accept m-learning as an acceptable medium for learning along with the more traditional approaches. This is a particularly important finding as universities and colleges struggle with solutions that protect students in the physical distancing requirement during the foreseeable future.

- The instructor's engagement in the content and willingness to encourage and provide context and applicability to students for the lessons is the single most important aspect of the Levelhead program. Without the commitment of the instructor to the underlying concepts and willingness to be vulnerable, the Levelhead program is just another app.

- Based on the responses of students to Spring 2020 post survey, students agreed that it would beneficial to have programs like Levelhead-Ed incorporated into their normal course curriculum. They also indicated that they would not independently seek out opportunities without it being incorporated into course work.

- The ideal environment for the underlying concepts delivered in the *Learning to Thrive* program is when:

1) It is part of an overall university or department level initiative and not uncontextualized or one-off activity

2) Execution at the university or department level is best done with a small group of committed instructors who can be coaches and champions for other instructors.

Appendix A. Representative Comments by Category

CATEGORY	COMMENT
THUMBS UP	Appreciated the length of the sizes
THUMBS UP	Exercises were easy enough to do without the app
THUMBS UP	I noticed by anxiety went down by using the breathing exercises
THUMBS UP	The app helped us get more comfortable with each other and weren't afraid to share things in class
THUMBS UP	I get frustrated easily and the breathing exercises helped a lot?
THUMBS UP	I really liked the parts that help deal with difficult people. I deal with a lot of difficult people. Might like to see more content related to romantic relationships
THUMBS UP	I think my biggest change as a result of my Levelhead was being able to go to sleep with ease. Normally I would have a difficult time going to sleep at a decent hour, but with Levelhead I am unable to switch off the app in a way forcing myself to get off my phone and focus on the activity going on. After a certain point, I welcomed the idea of doing Levelhead before bed, and actually rely on it to help m focus on what I was doing to relax myself enough to fall asleep easier
THUMBS UP	For my Levelhead activity, I have noticed a big improvement in my motivation levels and positivity. When I am doing the activity and feel fully into it, I feel more progress but lately I haven't been as into the activities that I do because of everything on my mind and I have noticed the difference it has on my mind negatively. Because of this, I am going to work harder on being in the moment and really fully focusing on the activity while not letting my other thoughts get in the way of it all. My goal is to continue these kinds of activities after classes are finished and break begins so I can keep the habit going and keep my health consistent mentally and physically.
THUMBS UP	As a result of practicing mindfulness, I find that I am able to concentrate longer without my thoughts running all over the place. I think more throughout my day to interactions, and actively choose to be mindful, such as walking without my headphones in, to think instead of listen. I am more aware of myself and my feeling throughout the day when I am mindful. I find ways to improve my mood and thoughts.
THUMBS UP	Three pieces of insight that stick out to me and that I have noticed as a result of Levelhead have been: the power of meditation, simple daily tasks being overlooked, and my overall mindset. I quickly realized the power of meditation and what it can do for you healthwise.
THUMBS UP	Levelhead has helped me block out all the nonsense of the future or the past and just focus on my current self. It has also helped me become a better person overall. I am able to see all the little things in life now and appreciate them when they happen. I use to not care about anything but myself and only cared about what I was going through. Levelhead made me realize that not everything is about me and that others need me as well. It has taught me many things and one crucial thing is that whenever everything is going crazy or seems like everything is going by fast, all I have to do is stop, take a deep breathe and take the moment in. I must live in the present and not in the past or future like I was used to doing. Living in the present is more real life and 100% less stressful.
THUMBS UP	One major change I've seen is a generally more positive outlook on things. Even if I have listened to Levelhead exercises that don't involve something I have personally felt a more positive experience with, I have noticed a positive correlation between the two. I feel like not just the messages, but also having to be more aware of life around me has allowed me to acknowledge and appreciate everything that much more. I have saved some exercises that I feel are valuable to me in my life and can benefit me and improve my standing on my emotions and focus on my future. I think my acknowledgement of

	my responsibilities go beyond just academic bounds however, I feel like Levelhead has, in a way, forced me to be more responsible overall.
THUMBS UP	Levelhead has benefitted me both from an academic and personal perspective. Since I've started using Levelhead I've noticed that I am a lot more stress free and have been making time for myself to have a break from life. Levelhead helped me focus on what is really important at the end of the day and let me have a chance to think about my health and attitude.
THUMBS UP	I think level head has helped me with my anxiety. Anxiety runs in my family, and I get panic attacks when I am super stressed out. This semester my grandma was diagnosed with dementia, so using level head helped me become less stressed out. It also gave me techniques I can use when I am stressed out. I liked the breathing activities the most.
THUMBS DOWN	Maybe more music exercises, but her voice popped up and distracted me.
THUMBS DOWN	Tried, but after first 3 weeks, it got a bit redundant, but I'm very laid back and not stressed. Didn't like taking notes. Endings are repetitive.
THUMBS DOWN	Music was distracting. Talking over the music was distracting. Voice was irritating, good to have multiple voices, maybe a little too smooth-talking
THUMBS DOWN	Level head gave me a chance to start trying to meditate on a regular basis, but in the end, it was very tough for me, because of how tight my schedule is. My day starts at 7 am and doesn't end til about 7:30 pm, which is when I'm tired at night and just waiting to go to bed. I know it sounds silly not being able to take 5 minutes out of my day, but it was really hard to think about and remind myself that it is something I need to do for a grade. I love the purpose behind the level head activity and what it was meant to stand for, but honestly in the end it stressed me out even more because I wasn't getting all 5 days in which drastically hurt my grade. There were some weeks where I did it for only 4 days instead of the full 5, meaning I got no credit which made me even more mad because I was only one day away from completing the assignment for credit. But all in all, when I did the exercises, I did enjoy them, but it was definitely a challenge trying to create a habit to start doing those exercises throughout the day. When I did them it felt like my day and my life slowed down, and I was able to control my life more than before.
THUMBS DOWN	I have noticed personally that Levelhead was a very stressful experience that did not calm me down. Instead, it left me stressed because I was scared about missing a day. I think that if it was not required to do five out of the seven days a week, I would have been less stressed about it, for example, if it was only 3 days a week since our class is only three days a week. Also, everybody's way of meditating is different, some people love to do it everyday, and other people prefer to meditate (or pray) maybe only once to three days a week.
NEUTRAL	Once they figured out when the was the best time to do this exercises, it was easier.
NEUTRAL	Be patient and set goals. Goals for the app, 3 exercises a week. Try to make sure that works, it takes patience. Need to constantly remind myself that change takes time. Life goals should be set too. Athlete: would be good to have specified exercises for athletes. Would help a lot.
NEUTRAL	I'd like to see a desktop version for people who don't use their phones as much. Desktop first, then tablet (preference). Use keywords to search for pertinent exercises.
NEUTRAL	Would like to be able to lock your phone but still hear it.
NEUTRAL	Would be good to have some education on why I should do this, and would be good to be able to fast forward in addition to being able to reverse.
NEUTRAL	Option to activate while using – disable all other notifications etc so that you're not distracted during an exercise.

Appendix B.
Detail Description from MBA Reflective Comments

practicing mindfulness is a great idea for most people and has been beneficial in both my work and personal lives. I have seen great improvements in my e balance and have seen improvement in both my homework and studying for ses. The only thing I wish I could do different is go back to a few years ago and cticing earlier than I did.

This week, I've found some good value in the Levelhead app's activities around device/digital time management. This is something that I've struggled with in the past and that I feel has had a negative impact on my work performance. As a software engineer, deep thought on technical issues is common. Navigating problems that require this is very difficult when I'm constantly viewing emails or checking notifications on my phone. I feel that even in the few days that I've been practicing the techniques that the app mentioned I've gotten much better in this realm.

Over halfway! I am into the positive practices track and am liking these exercises a bit more. I work with engineers and to be honest, engineers are curmudgeons. I am working to try and be more positive and apply gratitude and empathy to those I work with and overall, it's been helpful. Most of my co-workers respond positively to gratitude and I find that they tend to reciprocate. It's amazing how gratitude can be contagious.

For empathy, I am working with a customer that is extremely time pressed for their portion of the project. I have been aware of the demands on their time and looking for ways for us to be more flexible in terms of meetings and messaging pressing for their inputs. I am trying to have our team do the same as too often our teams are in the fray and not seeing the bigger picture (for the project and life in general.

While the meditation piece was not a fit for me, I did find many different perspectives in how I see the world from the exercises. I do not know what the licensing is for the tool and if I will lose access once the semester ends, but if I am able, I will continue to work through the exercises. It is good to have content in an MBA program that allows us to take a step back and think about our personal needs and to de-stress. Life as a professional business person is stressful and that stress can eat a person alive.

I enjoyed the Levelhead exercises and have found myself getting in the habit of doing them right away in the mornings. I have a 50-minute ride into work, so I also found myself listening to them during my morning commute. I think I had 33 days in a row!

One of the skills I really like about this app is acknowledging distractions. Often times my mind wanders and it can kill my focus. However, Levelhead advises me not to not think about it, which by the way only makes me think about more things, but rather to acknowledge it and push it away. Now I feel better about my mind wandering. It's natural. This really helps me to maintain my focus when meditating and get back into a rhythm faster and more naturally.

Don't be too hard on yourself. This is just information. Try not to judge yourself or your thoughts. I think this is the thing I need to be most reminded of. I like that they end some of the activities with "Don't be too hard on yourself." I sometimes think more on my failures, or things I can do better. However, I need to remember how far I've come. I'm not perfect, but that's okay. I will continue to do better. The goal is to be better today than I was yesterday. This is just information. Try not to judge yourself.

The sending stickers seems a little strange and I felt awkward doing that. Although, when I received one, I thought that was cool and it made me feel worthwhile. It made me appreciate someone taking time out of their day to send it.

It made me see more clearly how easily distracted we really are. Finding some time to relax more and take care of myself will make me a better person. I find that exercise is an important part of my life. I miss it when I don't go. I also feel much more mentally stable after I go. It helps me to clear my mind.

The practice that I found had the most positive impact was the transition from work to home. In the past, I have been one to bring my work stressors home with me for the day. I found that making a mental effort to utilize the app's transition practices from work to home really help with improving my relationships at home.

I've probably used the App between once and three times each day this week since I installed the App. I enjoy using the app, and focusing specifically on "being mindful" or on the meditation piece. I utilized a couple of the "Basics" and Meditation exercises before bed, I think they helped me go to sleep right away. They calmed my racing mind about all the things that I needed to do the next day, and helped me focus on the present. I also find myself being more "mindful" at random times after doing some of the exercises – for example. Normally I brush my teeth first thing in the morning, and I just sit there and brush for 5 minutes without thinking about it, but a couple times I really focused on what I was specifically doing, and I think it made it a much more efficient, and even….. "enjoyable?" experience for me.

I continued working on my wandering mind. I've noticed that when I'm practicing these things I'm not thinking about useless things I'm just in the present, more relaxed and in a happy place. I'm starting to know how in control of my emotions and thoughts that I am. Before I had never really given "control of my thoughts" much thought.

This week I tried to focus on "pause before you speak". I know that I am pretty impulsive and can speak sometimes without thinking. Slowing down not only let me have more meaningful conversations but it saved me from saying things in arguments to hurt someone else's feelings. We all know that it doesn't feel better when we say mean things in an argument. It also helped me articulate my thoughts more.

More self-reflection as it is becoming more of a routine for me. My patience is wearing thin with some personnel at my facility and I keep telling myself at the end of the day how would I gone about things differently. I also committed to doing one activity per day more mindfully. I chose activities that would normally be stressful or troublesome. Daily talks with personnel about safety for example. I had one individual on Thursday make disparaging comments about their job and the organization. I found myself doing the breaths and speaking to the individual with calm and collectiveness.

This week, one of the exercises that really hit close to home and made me think hard, was the "Device Free Zone" exercise. I know I spend WAY too much time on devices between my personal cell, my work cell and my computer for both work and school. It is hard to admit it, but my kids will tell me to put my phone and computer away because they want my attention. With the never-ending demands between work and school, it is so hard for me to disconnect at times and truly be present. As the exercise suggested, a couple times I picked to be more focused and device free are during meetings at work and for the first hour after I get home with my kids in the evenings. I know I am going to have to remind myself of my intentions to resist grabbing the device. Overall, I am still enjoyed the levelhead app but still struggling with getting a specific routine, I am using it every day but not at set times. I think for me, this just may be the way it works best for me. When I have a few spare moments, instead of scrolling social media, I have shifted to completing an Levelhead exercise.

This week I focused on the empathy that others may have in their life. Oftentimes, we get annoyed by people we don't know, but we don't know the whole story on what they are going through and it could affect their actions. I wanted to take this week to apply these tactics with coworkers. Sometimes I feel annoyed when driving into work on our long winding road when behind someone slow, but I thought this week about how they might be going through a lot of things at home that I'm not aware of that have their mind elsewhere.

This week I chose the activity "Expressing Gratitude" to add to my repertoire. The exercise itself focused on thinking about expressions of gratitude. However, this activity also tasked me with expressing gratitude to others. After practicing this over the week I realized a couple of things. First, I actually say thank you a lot. Second, there is a difference between a simple "thanks" and a true expression of gratitude. "Thanks" is almost transactional in nature and did not leave me, or likely the other person, with much emotional response. However, true expressions of gratitude almost always resulted in feelings of joy. Being mindful of this distinction is something that I will likely continue after the class is over.

I found myself forgetting about this app and forgetting to take time out of my day to complete my 3 exercises. Of all of the things I have to do in a day, and then the homework and readings I have to complete in the late hours of the night, taking time to do this was often forgotten. If I had to redo this course again, I would try to take the app more seriously, and be mindful in trying to make its practices a routine. Furthermore, I will keep this app, and try to revisit it from time to time. I understand it's purpose and I would like to put it into better practice later.

In all honesty, I have very little personal interest in the app. Its use has turned into little more than work for me. As someone who already practices some forms of meditation (admittedly at a simpler level than the depth that the app teaches), I find the exercises to be somewhat redundant. At this point, I'm only a few days through the initial 7-Day challenge.

I continue to struggle with fully engaging with the majority of the exercises. It sounds like an unfair criticism for a tool meant to improve one's soft skills, but the app itself is too soft for my liking. My mind may be wired a bit differently than others, but I prefer to have less ambiguity in the tasks that I engage in. Indeed, having ambiguity or loss of direction tends to put me at dis-ease.

found the exercises to be a non-value add for me in my personal life. Learning about breathing techniques and becoming aware of how my toes feel in the morning when I wake up, does not help me mange stress, work life balance, or become more aware of my behavior and attitudes. I also did not find value in focusing on how my food felt or tasted when consumed for breakfast lunch or dinner. The music selected to help end my day and self-reflection was unnecessary. My commute is already part of my routine for getting ready for my work day and also preparing to come home and separate work and family. Breathing exercising while driving or finding different route to get home are not helpful and inefficient. At one Point I felt like George Costanza yelling "Serenity Now"

This week was another down week in my usage of the Levelhead app for this class. I still have a hard time finding the time to use the app and to see the value for my specific needs. With two classes running concurrently and large regular work load the app is not top of mind. I can still understand the value of the app for some people, but it just doesn't fit my lifestyle.

Frustrated with the app requirement. I do not see what this has to do with Law, Regulation, or Ethics. The app requires access to my entire internet network and needs permissions that seems quite unnecessary for something that should only be facilitating the practice of mindfulness meditation that I am already familiar with. I have no idea how much I have to do with this app for the class which adds to the frustration. I have tried the app. The exercise that I did focused on being aware of my wandering thoughts. I feel like I was already pretty aware of my thoughts and found the voice telling me to "not get frustrated with my thoughts" to be far more thought-inducing than my mind otherwise was.

I have to say I was very excited when I found out that the practice of meditation was a part of this class. Meditation is something I have always tried time and time again throughout my life. So, right away within the first few weeks I used the app a lot and then my use began to quickly taper off. I have very severe anxiety, I am constantly worrying, and my mind is always racing with no room for pause. So, I am someone who could really use meditation, however, it's also the same reason why I feel it hasn't worked for me. It takes significant effort for me to get my mind to be present. Even with this app, books, yoga, you name it, I've tried it, it's a challenge for me to get my mind to recognize that effort and just stop. For this reason, as much as I wanted Levelhead to help me, it unfortunately didn't. This is of course no fault of the app, it's just something that is a bit more deep-rooted for me.

I downloaded the app and did a few of the initial practices. I'll admit, I don't think it helped too much. I'm a very impatient person and I found it difficult to just sit and listen. My wife often complains about how high-strung and anxious I can be so I am hoping this will help with it. I began practicing yoga a few months ago with my wife and it has helped immensely. I always feel more rested on mornings following an evening of yoga. I believe meditation can be a part of managing risk as well. You can only control so much and learning to let go of things out of your control with the help of meditation might allow one to manage their risks better.

It'd be ideal if there was a bit more customization to the app. There were certain exercises that I had legitimately no connection to. If there were a Pandora-esque thumbs-up/thumbs-

down system that would allow you to avoid similar exercises in the future, I think it would have added quite a bit of value to me.

Related to this being part of the class, I think it would be beneficial to further integrate this into the curriculum, maybe even periodically touched on in the weekly discussions. After spending some time with the material, I see a clear benefit. With a lot of competing items in life right now, I spent more time on the other parts of the class because they were the primary ones getting measured. My approach was to look at the assignments and due dates and back into the necessary work. I could have benefited from including the Levelhead material earlier. That being said, I clearly could have prioritized this myself. I understand that the primary responsibility related to my MBA education is my own and I should have increased my effort earlier.

Levelhead is great, but it might be good to outline specific exercises you would like to be done before the end of the semester to give a range of experiences using the tool. Looking back at the comments in week 4 in the discussions, it may help to show the broad range the Levelhead tool covers and may pique the interests of meditation naysayers. Certainly, let the students pick and choose and do as many as they like, but provide some base level of exercises they should complete.

Overall, I would only recommend continuing the usage of this app for the class if you took something else off the plate and tied it to the course work. The goals of mindfulness and destressing could easily be integrated into the ethics discussions and journal questions.

Appendix C.
Messages From Instructor to Student

Sticker Type	Message
Communicator	Logan try and finish the 7 day challenge
Communicator	You need to get going on these. Try it for the next 5 weeks.
Communicator	Jesus let's keep rolling on the exercises!
Communicator	Let's keep it going Logan!
Communicator	Kyle- let's get rolling on the exercises ok!
Communicator	Keep rolling Paige! Hope you are finding these helpful.
Fearless	Nicely done, Randy! You're doing great... don't stop now! 😊
Fearless	Maggie- I Hope these exercises are in some small way keeping you centered in all of the pandemic issues..hang in there😁
Fearless	Thinking of you, Jordan, and hoping your transition to distance learning has gone well. Keep breathing! 😊
Fearless	Appreciate your strength through adversity and positive contributions in class, Luan! Hang in there - end in sight! -Nate
Gold Star	Fearless is right! Congratulations on completing your first campaign. Win or lose, you have changed this community for the better! -Nate
Gold Star	Amy: Excellent discussion post. Love the quotes you emphasized/connection to course materials from this week & last. Keep up the great work!
Gold Star	John, excellent discussion post this week! Great personal example & connection to this weeks module material. Keep up the great work!!
Gold Star	Great work, Bella! FYI - added communication coming soon on weekly Canvas reflections! Best, Nate
Gold Star	You're "Awakened" & have earned 4 badges, AMAZING! How does that feel? Will you continue these micro-lessons or practices beyond this class?
Gratitude	Thank you so much for your positive energy in class and for completing your stickers. It is not too late to jump back into the App. 😊
Gratitude	Awe, thank you so for your thoughtfulness and kind words Renu! 😊 Your gratitude sticker put the biggest smile on my face!!! 😁
Gratitude	Megan thanks for doing a few of the Gratitude activities on Levelhead. During this pandemic we still have so much to be grateful for.
Gratitude	Blake thanks for doing a few of the Gratitude activities on Levelhead. During this pandemic we still have so much to be grateful for.
Gratitude	Grateful for your years of commitment, Bella! Wishing we could celebrate your service in person as you complete a wonderful collegiate run!

Gratitude	Olivia - I sincerely appreciate your kind, positive and engaged presence in the class. Thank you for all your hard work! Best, Nate
High Five	Awesome progress with Levelhead Claire! Keep up the great work! See you in class, virtually. 😃 Happy Tuesday!!!
High Five	Way to catch up Isabela! Just need to send me a journal sticker (connect/react to App/course material) & you'll be all caught up! 😃
High Five	Going great- remember that the goal is a few exercises per day now.
High Five	Dylan Congrats on completing the Gratitude activities last week. You have earned 10 extra credit points.
High Five	Dylan Congrats on completing the Gratitude activities last week. You have earned 10 extra credit points.
Leader	Great job Tristan! First on the leaderboard! Keep up the good work.
Leader	Awesome job leading off this week's discussion John! Keep up the great work!
Leader	Impressive work completing exercises thus far - keep at it, Bella! Take the gems and jettison what you find unhelpful. Best, Nate
Leader	Ahhhmmmazzing job Jennyfer! You have not missed a single exercise. I am so proud of you. Keep up the great work! 😊
Leader	Amazing job Jenna! Thank you for your commitment to yourself and mindfulness. Keep up the great work 😊
Present	Thinking of you, Tayler, and hoping your transition to distance learning has gone well. Keep breathing! 😊
Present	Thanks for sticking with it, Shandon... and being persistent! You're almost there! 😊
Problem solver	Gavin try and finish the 7 day challenge
Problem solver	Thinking of you, Maya, and hoping your transition to distance learning has gone well. Keep breathing! 😊
Supportive	Thinking of you, Hailey, and hoping your transition to distance learning has gone well. Keep breathing! 😊
Supportive	Thinking of you during these challenging times - hope you and yours are safe and well back home! Thank you for your dedication. -Nate
Supportive	Thinking of you during these challenging times - hope you and yours are safe and well back home! Thank you for your dedication. -Nate
Supportive	Kaitlin. you will receive 10 points for your Mindfulness work on empathy. Empathy is all about recognizing how others feel! Good work.
Supportive	Hi Kate, thank you for sending in your stickers. Try to complete some exercises on the App again. You are worth it! Time well spent for U!
You Can Do It	It's a start Katlyn. Try doing something every day
You Can Do It	How goes the battle, my friend? First game tomorrow I know.
You Can Do It	Hi Kristine! It is never too late to jump back on the App. You started strong and you can do it again. You are worth it! 😊
You Can Do It	Collin thank you for turning in your stickers. Making time for exercises can be challenging, but who is more worthy of your time than you!
You Can Do It	Hey Jordan! Looks like you got a great start... it's easy for motivation to wane about now. Keep going! You got this.

Appendix D.
Messages Student to Instructors

Sticker Type	Message
Communicator	Thanks for being so open and available during this strange semester. I greatly appreciate the time you give for us! It has been awesome!
Communicator	I've noticed my grades suffer when I wander or lose focus. I tend to use my phone to when I wander. Now I concentrate on the present task.
Communicator	Start reading, my mind thinks about what I need to do today, I have to start the paragraph/page over to understand. "Not right now"
Communicator	Just by knowing my problems with attention though I can approach whatever task I'm trying to do with a better mindset and try
Communicator	information. Just by knowing my problems with attention though I can approach whatever task I'm trying to do with a better mindset and try
Communicator	LOVED this week! Really seeing the importance of gratitude in my life. Exercises were simple yet influential. Want to continue this practice.
Creative	To generalize after the course is done, I think I need to remind myself that It's ok to take time to myself to reflect and do the activities
Creative	Empathy is key to ABA and all helping professions because before we try to change their behaviors we must first learn why and how they feel
Creative	Negatively reinforced bc stress & anxiety affect everyone differently. it's hard to think about good things when all you are is stressed
Fearless	Avoidance is a negative reinforcer that occurs because of stress. A negative reinforcer is the removal of my alarm after I start an activity.
Fearless	Truthfully I didn't do any exercises this week, between covid19 & working extra hours I put it on the back burner.
Gold Star	I would like to challenge myself on stuff that I think I'm unable on doing, and I would to focus on the stuff that I had already mastered.
Gold Star	Mindfulness can be negatively reinforced by removing stressful factors like bad thoughts. I experienced this by doing my anxiety meditation
Gold Star	I can see myself using the 15 min mindfulness breathing when I am in stress or feeling overwhelmed about something that I have to do.
Gold Star	When it comes to empathy, I am very open minded because everyone has a story.
Gratitude	I am grateful to have such an involved and caring teacher! This app seems pretty cool.. I look forward to working with you! 😄
Gratitude	I'd like to learn to acknowledge wandering thoughts better throughout my day , and focus on my current moment
Gratitude	Thank you for your hard work in transitioning to online classes, and your continued support as an academic advisor and for PLS😊
Gratitude	Gratitude Challenge: I'm grateful for the Native Nations Student Org and being able to meet with them virtually today!😄
Gratitude	Hi,I am participating in the level head challenge.I am grateful for the effort my professors have put in to keep connected during this time!
Gratitude	It was wonderful to have another class with you. You're great, and you make me want to do better. I really appreciate you. Thank you.
High Five	Mindfulness is NR by stress when you feel say I am stressed so I need to do mindfulness. I feel stress when I miss a day of mindfulness
High Five	I can continue to set reminders and visual prompts to help me remember to stay mindful and do similar activities to what I'm currently doing

High Five	It connects to communication studies because mindfulness sets the tone for all forms of interaction, and it will help me be more intentional
Journal	My AHA moment came when I saw the TED Talk video by Andrea Quijada where she states the importance of media literacy is like a superpower
Journal	I realized how tense my shoulders were and that I may need to try and relax more.
Journal	It feels very good
Journal	I think stopping and taking some quick breaths helps relax your body.
Journal	From walking around campus my heart rate was rapid, this made me feel more relaxed and slowed down my heart rate.
Present	There are various thoughts that I had, so many that I quite easily lose track.
Present	I would really love to improve my attention on homework. I get distracted so easily and that's not good when I'm really trying to focus.
Present	I want to practice focusing and giving people my undivided attention when they're speaking to me.
Present	whenever I'm in the zoom meeting for my science class, I get fidgety and reach for my phone. lacking attention makes it hard to keep up.
Present	I find that if I surround myself with my phone l lose focus and that affects me because I don't try as hard.it helps set a clear way to focus
Leader	I would like to return focus to my martial art school. I would like to focus on helping the other instructors.
Leader	Thanks for being such an amazing leader
Leader	Thank you for all your support in these crazy times!
Problem Solver	I feel like my geology class lecture I tend to dose off a lot. I want to work on improving my focus on it.
Problem Solver	I typically tend to lose focus in lectures that are consistently the same. The classes where all it requires is note taking I lose focus.
Problem Solver	Thank you for all you have done for us this semester! I enjoy you and I'm grateful for you!
Problem Solver	By not acting on instinct so much and taking a few deep even breaths and understanding all the parts of a situation before making a decision
Supporter	Thank you for all of your positive encouragement!
Supporter	Thank you Mary for everything this semester and I am sure I will see you again in future classes! I hope you have a great summer and finals.
Supporter	Continue to leave reminders on my phone to take time for myself and to be in nature. Also keep this app on my phone for future use.
Supporter	Empathy has been the hardest thing for me, not because I don't want to forgive people. it brings up things I'd rather keep buried.
Supporter	I would also say that having support while trying to change is where empathy really comes into play.
Supporter	I would also say that having support while trying to change is where empathy really comes into play.
You Can Do It	Antecedents- looking at my phone every time I sit. Consequences- distracts me from productivity. Approach-start new healthy habit when I sit
You Can Do It	Due to stress, I have breathing problems. So mindfulness helps. Not thinking about where my stress is coming from makes it appear in bad way
You Can Do It	I hope to continue using mindfulness to help maintain my happy level. Once school is done I will have more time for myself and mindfulness.

| You Can Do It | This past week and a half was a little less effective being sick, but the relaxation exercises did help nonetheless. |
| You Can Do It | After watching the "How Often to Practice" segment, I found it extremely clever how the video gave motivation to succeed using this app. |

Appendix E.
Messages Student to Student

Sticker Type	Message
Communicator	You are great at conversing and making one feel comfortable when talking to you :)
Communicator	By being in a group I didn't realize how important that group can mean to you and how it can affect someone so deeply
Communicator	You ask some pretty great questions at times, questions that I find myself asking as well. Also we're in Mythology together and that's dope.
Communicator	So cool that you can speak French!!
Communicator	Hi Jon! You've done so well communicating your thoughts and ideas despite the "norm" of the class. You question things in the best way!!
Creative	You have really great ideas and I love how easy it is to talk to you! (I'm the girl at the end of the row :))
Creative	Thank you for all of the meaningful conversations that you brought to all of the classes that we shared. Good luck with your finals.
Creative	Hannah! It's been great getting to know you and brainstorming with you on what our homework means!
Fearless	You are a hero
Fearless	Being around people that support you and make you happy brings joy to your life! Make more friends that bring this to you.
Fearless	It was fun to do the scene and you really killed it out there and played into the role! Well done!
Fearless	You have been fearless through every semester we've had together, not afraid to grow and be challenged! I have loved getting to know you!
Fearless	You're so close at finishing all the exercises! Keep it up!
Gold Star	Great job on your hockey game at Eau Claire!!
Gold Star	Don't give up! You got this! Hope you have a blessed day! :)
Gold Star	For keeping up with all the work that's been thrown your way so far!
Gold Star	Amazing job at practicing all of the exercises!
Gold Star	Don't give up! Stay safe and motivated you can do it! :)
Gratitude	I'm thankful for always seeing your smiling face in class together!! :)
Gratitude	You make afternoon class suck less and thanks for always sitting by me ♡
Gratitude	You make afternoon class suck less and thanks for always sitting by me ♡
Gratitude	Thanks for talking to me when we were doing AS-L with Upward Bound. I wish you the best of luck with your finals and wherever else you go.
Gratitude	You are such a sweet person! It has been wonderful to get to know you.
Gratitude	I'm grateful for your professionalism and laidback energy! You have such a calming presence and are such a great resource.
High Five	I'm grateful for your professionalism and laidback energy! You have such a calming presence and are such a great resource.
High Five	I miss seeing you in class! You're super fun! Good luck with finals!
High Five	It has been great getting to know you better this semester Kendrick! I love your quirky, outgoing, and awesome personality. Keep being you!
High Five	It has been great getting to know you better this semester Kendrick! I love your quirky, outgoing, and awesome personality. Keep being you!
Leader	Amazing job at keeping up with the practices! Keep up the great work! ☺
Leader	Woo hoo! Over 30! Good job
Leader	You got this virtual class stuff down! See u tuesday!
Present	Keep it rocking girl! I think you've done the most on this app in the whole class.
Present	Amazing job at keeping up with the practices! Keep up the great work! ☺
Problem solver	What I noticed with my attention, is I dont always use all my senses to observe.

Problem solver	I just completed the bad habits mediation. I'd like to work on my habit of eating, drinking, or smoking basically when I'm bored.
Problem solver	I just completed the bad habits mediation. I'd like to work on my habit of eating, drinking, or smoking basically when I'm bored.
Problem solver	Have a great summer and I had a pleasure working on project with you and it was great to meet you!
Supportive	You're so nice and Helpful!
Supportive	You'll get through this semester and finish it strong!! You got this girlie!
Supportive	Always interested in what someone has to say !
Supportive	I know how hard it can be to juggle everything as a parent! But good for you and good luck on everything!
You Can Do It	You can get through this class
You Can Do It	You can get through this class
You Can Do It	Good luck with finals Rebekah! You can do this!
You Can Do It	YOU CAN DOOOO IT!! Lol, keep it rocking.
You Can Do It	I believe in you!

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