

# BEING MINDFUL MAY NOT MAKE YOU A TEAM PLAYER: DOES MEDITATION HELP OR HURT ONLINE GROUP WORK?

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## ABSTRACT

*In higher education, more and more students take part in online courses that require them to engage in virtual work groups. Research has shown that online learners are likely to experience information overload and considerable challenges associated with online learning environments. These challenges are exacerbated when learners have to work as teams online. In this study, we examine whether meditation could aid online student learners as they virtually collaborate with peers. Our findings revealed that online students who meditated report less effective group work behaviors among their peers relative to those who did not meditate. Online meditating learners also report lower levels of mindfulness as compared to those who did not meditate. The implications for research and pedagogy, study limitations, and directions for future research are discussed.*

*Keywords: virtual work groups, student teams, meditation, mindfulness, online learning*

## INTRODUCTION

Recent neuroscience research indicates that the brain is wired to do one thing at a time. Yet today's fast-paced, digitally dependent workers typically multitask despite evidence that engaging in multiple activities simultaneously often impedes cognitive performance (George, 2014). In a way, multitasking is like "drunk driving" as it gives the person the false sense that he or she is functioning well (Roush, 2015). There is a growing need for workers to be mindful in terms of maintaining a clear focus in the midst of time pressures and information overload. Mindful workers are likely to be engaged and observant of new things that put them sensitively and effectively in the present to deal with an uncertain and changing future (Beard, 2014). Being mindful can help hyperconnected employees get in touch with their thoughts and

feelings so they can relax and deal with fast-paced schedules and experience less burnout (Chen, 2015).

Similar to the workplace, higher education is facing related challenges associated with multitasking. In 2014, despite the decline in college enrollments, the proportion of students taking online courses continued to increase (Allen & Seaman, 2016). As the vast majority (72%) of college students attend public institutions, it is important to note that 85% of students enrolled in public colleges or universities take some online courses (Allen & Seaman, 2016). This high enrollment in online college courses raises the question of whether college students are overloaded with information that tends to promote learners' multitasking. Another challenge for online learners is persistence. Attrition rates are higher in online

courses when compared with face-to-face formats (Carr, 2000; Moody, 2004). Lower course retention rates among online students, compared to those taking in-person courses, tend to reflect the social isolation and personal disconnection of the online learner (Rovai & Wighting, 2005; Simpson, 2004). Additionally, some college students taking online courses report feeling overwhelmed with information, messages, and assignments (Gillingham & Molinari, 2012).

Collaborative learning that involves sharing experiences and knowledge through social interaction (Zhu, 2012) is based on the theory of social constructivism, which suggests that knowledge is enhanced through interactions and negotiations with others. Feeling a sense of connection and community within a course is a factor that promotes collaborative learning (Laux, Luse, & Mennecke, 2016). Freeman and colleagues (2014) reported that collaborative learning led to greater retention of first-year college students.

This study examines collaborative online learning and raises the question whether the benefits of collaborative learning can occur in online environments. Online learners are faced with managing multiple distractions without the support of being in a class with peers and instructor. We examine whether cultivating mindfulness, in the form of practicing “deep breathing,” has a role in shaping learners’ group work experiences in online learning environments. We expect that students who practice mindful meditation are more likely to engage in collaborative learning and better manage multiple distractions associated with online learning as they will be more relaxed and open to these group experiences than students not practicing meditation. In turn, meditation is expected to help online learners experience benefits associated with teamwork and collaborative assignments.

### *Benefits of Student Teams*

The rationale for having students collaborate by working in groups was based on the cooperative learning principle that peer collaboration facilitates active learning. Further, it is reasoned that when learners are relaxed and focused, they may be more likely to actively engage with peers and instructors. Communicating and collaborating with peers can motivate learning because sharing views promotes interest in content and engagement with fellow learners.

Engaging in learner-learner (peer) interactions enhances higher-level learning that helps learners formulate ideas in a deeper sense (Anderson, 2003).

Group work and collaborative assignments are typical ways to promote learner engagement and learning. Growing evidence over the last three decades attests to the learning benefits related to student groups or teams in face-to-face college courses. Some of the initial research related to student teams came from the University of Oklahoma in the late 1970s. The results found that student teams learned more, took more responsibility for their learning, and had more fun than students not working in teams (Michaelsen, Knight, & Fink, 2004). Some of the outcomes associated with student teams found that members in groups supported each other, held members and their groups accountable, and evaluated their teamwork (Barkley, Cross, & Major, 2014). College students working in small groups had higher academic performance than students taking lecture courses (Spring, Stanne, & Donovan, 1999).

To better understand these benefits associated with student teams, some studies examined personality characteristics of team members. Personality traits like extraversion, emotional stability, and openness to experience were found to be unrelated to student or professional team effectiveness (Peeters, Van Tuijl, Rutte, & Reyman, 2006). Agreeableness and conscientiousness were positively related to professional team performance but were not related to student teams. The authors believed this was due to the fact that student teams work together for a short time and that members are not as dependent on one another when compared to teams of workers. Similarly, Olson, Ringhand, Kalinski, and Ziegler (2015) found that personality was not associated with students’ online team performance for a graduate business course.

### *Challenges for Student Teams*

Other research found that student teams have problems and challenges that include all team members getting the same grade, despite different levels of effort; unequal concern about grades among students; and difficulty scheduling and coordinating meeting times (Michaelsen, Knight, & Fink, 2004). Other issues identified from student surveys include students who: are dominating, engage in “social loafing,” miss meetings and deadlines, and disappear for extended periods of

time (Barkley, Cross, & Major, 2014). Additionally, dysfunctional teams may have members with conflicting personalities (e.g., Molleman, 2005; Trimmer, Domino, & Blanton, 2002) or may develop unstable and ineffective approaches to dealing with conflicts that occur (Behfar, Peterson, Mannix, & Trochim, 2008).

Being conscientious is highly associated with teamwork (Grinnell, Sauers, Appunn, & Mack, 2012, Schippers, 2014). Conscientious students have stated they tend to take on leadership roles, complete all their work on time or early, and focus on quality. They report high levels of frustration with students who indicate that they are only available on limited days, do not appear to share the conscientious students' goal of achieving an A, do not respond, or do not submit their fair share of work for the assignment. A new theme was also identified that related to the organization within the team. It seemed that team leadership is a key success factor for virtual groups (Grinnell, Sauers, Appunn, & Mack, 2012) to help teams manage major obstacles that were responsible for complaints regarding conscientiousness, outcomes, limited time, asynchronous interactions, and belief that virtual teams did not work.

### *Online Teams*

Interestingly, college students report that they enjoy working in teams in a face-to-face class but not in online courses (Goold, Augar, & Farmer, 2006). The benefits of online student teams are less evident. Grinnell, Sauers, Appunn, and Mack (2012) note that while reliable communication can lead to trust in teams, trust building is elusive especially in online teams where the lack of human touch can pose a real challenge. Early studies of online student teams found that team building virtually or online is more constrained compared to face-to-face contact in teams (Shneiderman, Borkowski, Alavi, & Norman, 1998). The limited capability of technology to promote human contact coupled with the complexity of technology options can and do pose barriers for team collaboration and communication.

Despite some drawbacks, past research has also found that as technology advances, students' online communication and interaction can increase (Heffner & Cohen, 2005). In fact, communications were identified as a key success factor for online teams. Further, ways to promote interpersonal

relationships can enhance success of online teams. Some key activities include: identifying roles, having clear goals, promoting candid communications, and building trust. These are key factors to developing effective online teams (Kirkman, Rosen, Gibson, Tesluk, & McPherson, 2002).

There has also been some research to help understand behaviors associated with online group work. Yoon (2006) divided team behaviors into three areas: work, social, and management. At the beginning of team activity, most of the interactions focus on social behaviors. This helps build familiarity and trust. Online teams tend to focus efforts on social presence before focusing on work (Grinnell, Sauers, Appunn, & Mack, 2012). The group's attention to work or tasks tends to increase over time so work becomes dominant by the end of the project. However, the management of the group (i.e., keeping members engaged and participating) remains low from start to finish (Yoon, 2006). This lack of group management behaviors may contribute to online learners' dislike of online group work. Without direct human contact, both group communication and collaboration become more challenging. Given these obstacles, efforts to help students learn and execute group management behaviors thus become increasingly important for successful online group work. Online teams need to have conscientious students who can assume leadership or followership functions, which lead to a strong team process and could result in increased trust and team effectiveness (Grinnell, Sauers, Appunn, & Mack, 2012).

### **APPLYING MINDFULNESS TO ONLINE GROUP LEARNING**

As with most concepts, there are multiple definitions of mindfulness. Jon Kabat-Zinn (2002) describes mindfulness as an awareness developed by paying attention on purpose, in the present moment, and nonjudgmentally. The skill of mindfulness has been reported to be linked to enhanced reflection and learning and has been identified as a positive force in management learning (Jordan, Messner, & Becker, 2009; Langer, 1989). Some studies suggest that mindful meditation can lower stress and anxiety (Chen, 2015; Chu, 2010; Davis & Hayes, 2011), increase focus and improve attention (; Koraza, et al., 2012; Ray, Baker, &

Ashmos Plowman, 2011; Tang et al., 2007; Weick & Sutcliffe, 2006), and strengthen emotional self-regulation (Hölzel et al., 2011; and Zautra et al., 2008). Research conducted by Levy, Wobbrock, Kasniak and Ostergren (2012) indicated that those who meditated stayed on tasks longer, made fewer task switches, and reported less negative emotions after performance, as compared with the other two groups' conditions.

The rationale for having online learners practice mindfulness was twofold: 1) to help learners' focus attention on course content to promote thoughtful learning (Langer, 1989); and 2) to help learners engage with each other to promote collaborative learning. Some have applied meditation in higher education to promote individual learning. Helber, Zook, and Immergut (2012) expected that meditation would help students switch their attention across different topics, monitor their performance, and be able to change when not accomplishing their goal. However, they reported that mindfulness meditation in a course did not increase student performance on cognitive executive functions that include planning, self-monitoring, and adaptation.

In this study we are examining whether the benefits of relaxation and awareness derived from the practice of deep breathing will help online learners engage and collaborate with groups in ways that promote communications and problem solving. We used the practice of deep breathing, a common mindfulness activity, to help learners focus and engage with peers in online courses. It was expected that the regular practice of deep breathing would help online learners become more aware of their own participation as well as become more responsive to the participation of other group members.

## METHOD

### *Sample and Procedures*

One hundred and two graduate students from six sections of an online health systems management course at a public urban university participated in this study. While students were asked to provide demographic information relating to age, gender, and racio-ethnicity, such information was poorly and inconsistently reported from the participants. This prevented us from reporting the demographic characteristics that make up the study sample.

Students in three course sections (n = 54) were

taught meditation in the form of deep-breathing techniques, while those in the other three course sections (n = 48) were not. In all six sections, students were randomly assigned to small groups to work collaboratively on a case analysis assignment. Upon completing the assignment, each student was asked to rate their group members' group process behaviors. We compared these ratings between the students who were taught meditation and those who were not. Students in all six sections were also asked to complete a mindfulness questionnaire at the beginning of the semester. The same questionnaire was administered again to them toward the end of the semester.

## MEASURES

### *Group Process*

We used a ten-item scale adapted from Buchbinder & Shanks (2012) to assess perceptions of group process behaviors (e.g., "work collaboratively to identify and meet goals," "keep an open mind to keep group going," and "work actively to achieve group consensus"). Participants were asked to rate, on a scale of 1–10, the extent to which each of his or her group members demonstrated these behaviors

### *Mindfulness*

The pre- and postmindfulness measures (Bohlmeijer, Klooster, Fledderus, Veehof, & Baer, 2011) were identical and each consisted of 24 items (pre  $\alpha = .78$ ; post  $\alpha = .79$ ). Students rated each of the 24 items on a 5-point Likert scale (1 = never true; 3 = neutral; 5 = always true). The measure comprised five subscales that assess the following dimensions:

- Observe, e.g., "I pay attention to physical experiences, such as the wind in my hair or sun on my face" (pre  $\alpha = .65$ ; post  $\alpha = .81$ );
- Describe, e.g., "I'm good at finding words to describe my feelings" (pre  $\alpha = .68$ ; post  $\alpha = .80$ );
- Acting with awareness, e.g., "I find it difficult to stay focused on what's happening in the present moment" (pre  $\alpha = .93$ ; post  $\alpha = .93$ );
- Nonjudging, e.g., "I tell myself I shouldn't be feeling the way I'm feeling" (pre  $\alpha = .52$ ; post  $\alpha = .74$ ); and
- Nonreacting, e.g., "When I have distressing thoughts or images, I don't let myself be carried away by them" (pre  $\alpha = .78$ ; post  $\alpha = .76$ ).



## RESULTS

### *Main Analysis*

We hypothesized that students who practiced meditation would rate their group members higher on effective group work behaviors than those who did not practice meditation. To test this hypothesis, we used a series of independent t-tests. Contrary to our prediction, the independent t- test results indicated that students who were taught meditation ( $M = 87.52$ ,  $SD = 9.87$ ) rated their group peers significantly lower on overall effective group work behaviors than those who were not taught meditation ( $M = 81.63$ ,  $SD = 14.50$ ),  $t(93.88) = 2.42$ ,  $p < .05$ .

We then conducted subsequent independent t-tests to compare the two groups across each of the group process items measured. Table 1 shows the means, standard deviations, and t-test values for these analyses. Specifically, these findings revealed that students who meditated rated their group peers significantly lower on how well their peers prepared for each session, participated actively, kept an open mind during discussions, presented ideas concisely, fulfilled their responsibilities, and worked actively to achieve group consensus, when compared to ratings of those who did not meditate.

Table 1: Mean Ratings of Peers' Group Work Behaviors Between Students Who Practiced Meditation and Those Who Did Not Practice Meditation (N = 102)

Group process scale item	Meditation		No Meditation		t	df
	M	SD	M	SD		
Attend all group sessions	8.5	2.41	9.39	.94	1.80	36.02
Prepare for each session	8.44	1.61	9.09	1.14	2.34*	95.12
Work collaboratively	8.42	1.72	8.98	1.22	1.93	95.57
Actively participate	8.40	1.60	9.07	1.20	2.39*	97.40
Keep an open mind	8.60	1.45	9.27	1.11	2.63*	97.99
Present ideas	8.29	1.58	9.10	.88	3.25**	84.70
Submit work on time	8.70	1.54	9.26	1.25	1.97	99
Interact respectfully	9.28	1.12	9.56	1.14	1.27	100
Fulfill responsibilities	8.69	1.67	9.42	.97	2.75**	86.83
Work actively to achieve global consensus	8.56	1.57	9.27	1.12	2.63*	95.66

### *Supplementary Analyses*

Given our main hypothesis findings, we decided to conduct additional supplementary analyses to explore whether our findings may, in part, be associated with differences in mindfulness among students who meditated and those who did not. In the meditation condition, 49 students completed the mindfulness measure twice: once before and once after meditation was introduced. Ten students in the nonmeditation condition also completed the same measure twice, at similar times as those in the meditation condition. Since the number of cases was unbalanced across both conditions ( $n = 49$  for meditation and  $n = 10$  for nonmeditation conditions), we then drew a random sample of ten cases from the meditation courses, and compared this sample to all ten cases in the nonmeditation courses.

A series of six mixed between-within subjects' ANOVA tests were conducted to assess the impact of overall meditation and its five dimensions (vs. no meditation) on students' mindfulness scores across two time periods. Table 2 shows the means and standard deviations for mindfulness scores over time between the meditation and nonmeditation conditions.

Table 2: Means and Standard Deviations for Meditation and Time on Overall Mindfulness and the Five Mindfulness Dimensions (N = 20)Meditation and overall mindfulness

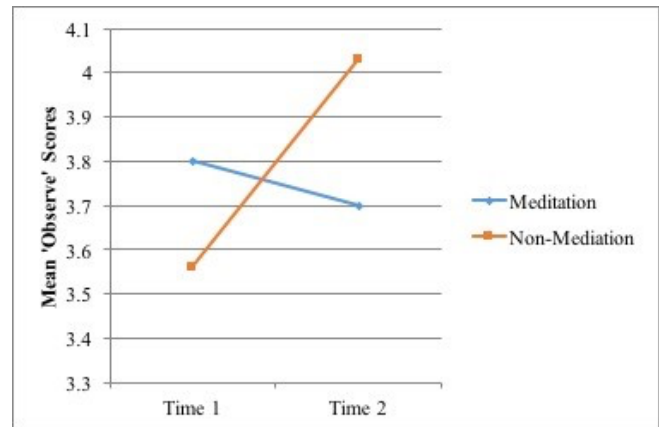
Mindfulness and Time	Meditation		No Meditation	
	M	SD	M	SD
<b>Overall</b>				
Time 1	3.46	.36	3.38	.26
Time 2	3.44	.43	3.56	.25
<b>Observe</b>				
Time 1	3.80	.78	3.56	.76
Time 2	3.70	.81	4.03	.70
<b>Describe</b>				
Time 1	3.72	.52	3.22	.49
Time 2	3.78	.59	3.32	.36
<b>Act with awareness</b>				
Time 1	3.92	.58	3.62	.51
Time 2	3.80	.67	3.78	.56
<b>Non-judging</b>				
Time 1	3.08	.82	3.00	.72
Time 2	3.42	.94	3.44	.52
<b>Non-reactance</b>				
Time 1	3.28	.30	3.54	.47
Time 2	3.28	.69	3.32	.52

The mixed ANOVA test revealed that there was no significant interaction between time and meditation, Wilks' Lambda = .89,  $F(1, 18) = 2.16$ , n.s. In other words, there was no difference in overall levels of mindfulness between students who meditated and those who did not meditate over time.

#### Meditation and "Observe" Dimension

Along this line, the instructor is The second mixed ANOVA test revealed a significant interaction between time and meditation, Wilks' Lambda = .71,  $F(1, 18) = 7.51$ ,  $p < .05$ . Students who meditated reported lower "observe" scores over time, while students who did not meditate reported higher "observe" scores over time (see Figure 1).

Figure 1



The main effect for Time approached significance, Wilks' Lambda = .86,  $F(1, 18) = 3.04$ ,  $p < .10$ , indicating no differences in students' "observe" scores across the two time periods. There was also no significant main effect for meditation,  $F(1, 18) = .02$ , n.s., which suggested that students did not differ in observation levels, regardless of whether they practiced meditation.

#### Meditation and "Describe" Dimension

The third mixed ANOVA test indicated that there was no interaction between time and meditation, Wilks' Lambda = 1.00,  $F(1, 18) = .03$ , n.s. This suggested that meditating and nonmeditating students' scores on the "describe" dimension did not differ over time.

#### Meditation and "Act With Awareness" Dimension

The fourth mixed ANOVA test indicated a nonsignificant interaction between time and meditation, Wilks' Lambda = .95,  $F(1, 18) = .99$ , n.s. Students who meditated did not differ from those who did not meditate on their "act with awareness" scores over time.

#### Meditation and "Nonjudging" Dimension

The fifth mixed ANOVA test also indicated a nonsignificant interaction between time and meditation, Wilks' Lambda = 1.00,  $F(1, 18) = .07$ , n.s. Students who meditated did not differ in their scores on the "nonjudging" dimension over time, compared with those of students who did not meditate.

#### Meditation and "Nonreacting" Dimension

The last and sixth mixed ANOVA test revealed no interaction between time and meditation, Wilks'

Lambda = .98,  $F(1, 18) = .35$ , n.s. Students who meditated did not differ in their nonreactance scores from those who did not meditate over time.

## DISCUSSION

The main objective of this study was to examine whether practicing mindful meditation, in the form of using deep-breathing techniques, would promote more positive group work experiences among online learners working in groups. Specifically, we posited that learners who practiced meditation would perceive their group members as having more effective group work behaviors than those who did not practice meditation. Contrary to our prediction, our results revealed that online learners who meditated report their group members as engaging in less effective group work behaviors, compared to nonmeditating online learners. In particular, online learners who practiced meditation perceive other members in their online groups as being less likely to prepare for group meetings, participate actively, be open-minded during discussions, present ideas concisely, fulfill their responsibilities, and work actively toward group consensus, relative to those who did not meditate.

Further, the supplementary analyses we conducted to explore the relationship between meditation and overall and specific facets of mindfulness showed that online meditating learners did not differ significantly from those who did not meditate in terms of their overall levels of mindfulness; however, online learners who meditated did score significantly lower scores on the “observe” facet of mindfulness, compared to nonmeditating learners. In other words, online meditating learners were less likely to notice or pay attention to physical or external experiences, relative to online learners who did not practice meditation.

### *Implications for Research and Practice*

Our findings from this study suggest that the benefits associated with mindful meditation may be contingent on some contextual and relational factors, such as the learning environment and the nature of social interaction that learners must engage in. A recent study that examined the role of mindful meditation in online versus face-to-face learning environments (Molinari, Freshman, & Tan, 2015), for example, seems to support this observation. In their research, Molinari and

colleagues (2015) noted that students enrolled in online courses reported lower levels of mindfulness after practicing mediation, compared to those enrolled in face-to-face courses.

These research findings suggest that practicing mindful meditation may inadvertently amplify the already challenging aspects associated with online learning environments, e.g., the lack of human contact and complex technology options, by redirecting the individual learners’ attention and mental resources inward or toward their internal states. Consequently, mindful meditation may limit rather than enhance learners’ capacity and cognitive effort toward meeting external demands in their online learning experiences, such as the effective processing of large amounts of complex information in a fast-paced online environment or engaging in more accurate interpretations of peers’ communicative gestures and intentions during online group collaboration and task coordination.

Indeed, past research on the benefits associated with mindful learning have generally found positive effects associated with the internal states of the meditating individuals, e.g., lowered stress and anxiety levels (Chu, 2010; Krasner et al., 2009), increased focus and improved attention (Koraza et al., 2012; Tang et al., 2007), and better emotional self-regulation (Hölzel et al., 2011; Zautra et al., 2008). What becomes clearer, then, based on this study’s findings and prior research, is that individual-oriented benefits associated with mindful meditation may not directly or necessarily transfer over to the group level, and in this case, the learners’ group work experiences in online learning environments.

From a practice or pedagogical standpoint, the findings from this study suggest that the practice of mindful meditation may not serve as an appropriate strategy to help online learners enhance focus and direct attention toward their online group work. Rather, when it comes to online group work, it might be better to consider pedagogical approaches that are designed to encourage interpersonal interactions and foster relationships among online group members, such as virtual team-building exercises (e.g., Staggers, Garcia, & Nagelhout, 2008), as ways to mitigate or to overcome challenges associated with online learning in groups.

### *Limitations and Future Research Directions*

As with most research, this study is not without

limitations. Given the relatively small sample sizes, the conclusions drawn from our analyses should be interpreted with caution. With the limited and inconsistent information obtained on participant demographics in our study, we were also unable to ascertain whether the results would be generalizable to various demographic groups. Future studies should extend this area of inquiry by using larger study samples that include online learners in other disciplines or courses of study and by using more reliable methods to retrieve demographic data from study samples.

Since we did not assess the frequency or accuracy of mindful meditation practiced by the learners in this study, it was possible that learners in the meditation condition might not have engaged in the deep-breathing technique often enough or correctly as taught; potential irregularities among online learners' practice of mindful meditation in this study could, therefore, have influenced our findings. As such, researchers should include manipulation checks of the meditation intervention in future studies. For example, investigators could ask online learners to practice deep breathing at specified intervals or by adhering to a consistent schedule. Incorporating such elements in the study design and procedures would help ensure that online learners of meditation are practicing and mastering the deep-breathing technique as intended, thus strengthening the validity of the conclusions drawn.

In this research, we also relied on self-report measures to assess online learners' levels of mindfulness and their group work experiences, which can be subject to social desirability biases and other rater errors; however, prior research has concluded that using self-report measures may not be as problematic as expected (Crampton & Wagner, 1994; Spector, 1992). Nonetheless, we encourage future investigators to use more objective measures or methods, such as recording online group meetings or conference sessions to observe actual group work behaviors, or by using trained coders to conduct textual analyses of online communication messages among members in online work groups.

## **CONCLUSION**

As the growth of online courses and programs continues to accelerate in the higher education

landscape, the need to expand our knowledge and ability to enhance the quality of students' learning experiences in virtual learning environments becomes ever more pressing. The increasing prevalence of collaborative assignments and virtual teams in online learning also points to the importance of identifying and developing appropriate pedagogical strategies and interventions that can promote more effective group work online. To that end, our study represents an early yet small step in the current literature, and we are hopeful that many more will follow in our footsteps to conduct future inquiries on this important and current topic.



## REFERENCES

- Allen, I., & Seaman, J. (2016). Online report card: Tracking online education in the United States. Babson Park, MA: Babson Survey Research Group and Quahog Research Group. Retrieved from <http://onlinelearningsurvey.com/reports/online-report-card.pdf>
- Anderson, T. (2003). Getting the mix right again: An updated and theoretical rationale for interaction. *The International Review of Research in Open and Distance Learning*, 4(2). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/149/230>
- Barkley, E. F., Cross, K. P., & Major, C. H. (2014). *Collaborative learning techniques: A handbook for college faculty*. San Francisco, CA: John Wiley & Sons.
- Beard, A. (2014). Mindfulness in the age of complexity: An interview with Ellen Langer. *Harvard Business Review*, 92, 68–73.
- Behfar, K. J., Peterson, R. S., Mannix, E. A., & Trochim, W. M. K. (2008). The critical role of conflict resolution in teams: A close look at the links between conflict type, conflict management strategies, and team outcomes. *Journal of Applied Psychology*, 93(1), 170–88. doi:10.1037/0021-9010.93.1.170
- Bohlmeijer, E., Klooster, P., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the five facet mindfulness questionnaire in depressed adults and development of a short form. *Assessment*, 18(3), 308–320. doi:10.1177/1073191111408231
- Buchbinder, S. B., & Shanks, N. H. (2012). *Introduction to health care management (2nd ed.)*. Massachusetts, MA: Jones & Bartlett.
- Carr, S. (2000). As distance education comes of age, the challenge is keeping the students. *The Chronicle of Higher Education*, 46(23), A39–A41.
- Chen, A. (2015, March 16). Why companies are promoting mindfulness at the office [Web log post]. *The Wall Street Journal*. Retrieved from <http://blogs.wsj.com/atwork/2015/03/16/why-companies-are-promoting-mindfulness-at-the-office/>
- Chu, L. (2010). The benefits of meditation vis-à-vis emotional intelligence, perceived stress and negative mental health. *Journal of the International Society for the Investigation of Stress*, 26(2), 169–180. doi:10.1002/smi.1289
- Crampton, S. M., & Wagner, J. A., III. (1994). Percept-percept inflation in microorganizational research: An investigation of prevalence and effect. *Journal of Applied Psychology*, 79, 67–76. doi:10.1037//0021-9010.79.1.67
- Davis, D. M., & Hayes, J. A. (2011). What are the benefits of mindfulness? A practice review of psychotherapy-related research. *Psychotherapy*, 48(2), 198–208. doi:10.1037/a0022062
- Freeman S., Eddy S. L., McDonough M., Smith M. K., Okoroafor N., Jordt H., & Wenderoth M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences of the United States of America*, 111, 8410–8415. doi:10.1073/pnas.1319030111
- George, B. (2014). Developing mindful leaders for the C-suite. *Harvard Business Journal*. Retrieved from <https://hbr.org/2014/03/developing-mindful-leaders-for-the-c-suite>
- Gillingham, M., & Molinari, C. (2012). Online courses: Student preferences survey. *Internet Learning*, 1(1), 36–45.
- Goold, A, Augar, N., & Farmer, J. (2006). Learning in virtual teams: Exploring the student experience. *Journal of Information Technology Education*, 5, 477–490.
- Grinnell, L., Sauers, A., Appunn, F., & Mack, L. (2012). Virtual teams in higher education: The light and dark side. *Journal of College Teaching & Learning (Online)*, 9(1), 65–77. doi:10.19030/tlc.v9i1.6716
- Heffner, M., & Cohen, S. H. (2005). Evaluating student use of web-based course material. *Journal of Instructional Psychology*, 32(1), 74–81.
- Helber, C., Zook, N., & Immergut, M. (2012). Meditation in higher education: Does it enhance cognition? *Innovative Higher Education*, 37, 349–358. doi:10.1007/s10755-012-9217-0
- Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, 6(6), 537–559. doi:10.1177/1745691611419671
- Jordan, S., Messner, M., & Becker, A. (2009). Reflection and mindfulness in organizations: Rationales and possibilities for integration. *Management Learning*, 40, 465–473. doi:10.1177/1350507609339687
- Kabat-Zinn, J (2002). Meditation is about paying attention. *Reflections*, 3(3), 68–71. doi:10.1162/152417302317363949
- Kirkman, B. L., Rosen, B., Gibson, C. B., Tesluk, P. E., & McPherson, S. O. (2002). Five challenges to virtual team success: Lessons from Sabre, Inc. *The Academy of Management Executive*, 3, 67–79. doi:10.5465/AME.2002.8540322
- Koraza, E. H., Sato, J. R., Lacerda, S. S., Barreiros, M. A., Radvany, J., Russell, T. A., Sanches, L. G., Mello, L. E., & Amaro, E. (2012). Meditation training increases brain efficiency in an attention task. *NeuroImage*, 59(1), 745–749. doi:10.1016/j.neuroimage.2011.06.088

- Krasner, M., Epstein, R., Beckman, H., Suchman, A., Chapman, B., Mooney, C., & Quill, T. (2009). Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *Journal of the American Medical Association*, 299(12), 1284–1293. doi:10.1001/jama.2009.1384
- Langer, E. (1989). *Mindfulness*. Reading, MA: Addison-Wesley.
- Laux, D., Luse, A., & Mennecke, B. E. (2016). Collaboration, connectedness, and community: An examination of the factors influencing student persistence in virtual communities. *Computers in Human Behavior*, 57452–57464. doi:10.1016/j.chb.2015.12.046
- Levy, D., Wobbrock, J., Kasniak, A., & Ostergren, M. (2012). The effects of mindfulness meditation training on multitasking in a high-stress information environment. *Proceedings of Graphics Interface 2012*. Toronto, ON: Canadian Information Processing Society.
- Michaelsen, L. K., Knight, A. B., & Fink, L. D. (2004). *Team-based learning: A transformative use of small groups in higher education*. Sterling, VA: Stylus.
- Molinari, C., Freshman, B. L., & Tan, R. Y. (2015). Mindful awareness training in online and face-to-face learning environments: A comparative analysis. *Journal of Health Administration Education*, 32(4), 579–604.
- Molleman, E. (2005). Diversity in demographic characteristics, abilities and personality traits: Do faultlines affect team functioning? *Group Decision and Negotiation*, 14(3), 173. doi:10.1007/s10726-005-6490-7
- Moody, J. (2004). Distance education: Why are the attrition rates so high? *The Quarterly Review of Distance Education*, 5(3), 205–210.
- Olson, J. D., Ringhand, D. G., Kalinski, R. C., & Ziegler, J. G. (2015). Forming student online teams for maximum performance. *American Journal of Business Education*, 8(2), 139–160. doi:10.19030/ajbe.v8i2.9136
- Peeters, M. G., Van Tuijl, H. M., Rutte, C. G., & Reymen, I. J. (2006). Personality and team performance: A meta-analysis. *European Journal of Personality*, 20(5), 377–396. doi:10.1002/per.588
- Ray, J., Baker, L., & Ashmos Plowman, D. (2011). Organizational mindfulness in business schools. *Academy of Management Learning & Education*, 10(2), 188–203.
- Roush, K. (2015). Moving from multitasking to mindfulness. *Faculty Focus*. Retrieved from <https://www.facultyfocus.com/articles/teaching-and-learning/moving-multitasking-mindfulness/>
- Rovai, A., & Wighting, M. (2005). Feelings of alienation and community among higher education students in a virtual classroom. *Internet and Higher Education*, 8(2), 97–110. doi:10.1016/j.iheduc.2005.03.001
- Schippers, M. C. (2014). Social loafing tendencies and team performance: The compensating effect of agreeableness and conscientiousness. *Academy of Management Learning and Education*. doi:10.5465/amle.2012.0191
- Shneiderman, B., Borkowski, E. Y., Alavi, M., & Norman, K. (1998). Emergent patterns of teaching/learning in electronic classrooms. *Educational Technology Research and Development*, 46(4), 23–42. doi:10.1007/BF02299671
- Simpson, O. (2004). The impact on retention of interventions to support distance learning students. *Open Learning*, 19(1), 79–95.
- Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures of job conditions. In C. L. Cooper, & I. T. Robertson (Eds.), *International Review of Industrial and Organizational Psychology* (pp. 123–274). Rochester, NY: Wiley.
- Springer, L., Stanne, M. E., & Donovan, S. S. (1999). Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis. *Review of Educational Research*, 1, 21–51. doi:10.3102/00346543069001021
- Staggers, J., Garcia, S., & Nagelhout, E. (2008). Teamwork through team building: Face-to-face to online. *Business Communication Quarterly*, 71(4), 472–487. doi:10.1177/1080569908325862
- Tang, Y., Ma, Y., Wang, J., Fan, Y., Feng, S., Lu, Q., & ... Posner, M. I. (2007). Short-term meditation training improves attention and self-regulation. *Proceedings of the National Academy of Sciences of the United States of America*, 104(43), 17152–17156.
- Trimmer, K. J., Domino, M. A., & Blanton, J. E. (2002). The impact of personality diversity on conflict in ISD teams. *The Journal of Computer Information Systems*, 42(4), 7–14.
- Weick, K., & Sutcliffe, K. (2006). Mindfulness and the quality of organizational attention. *Organization Science*, 17(4), 514–524. doi:10.1287/orsc.1060.0196
- Yoon, S. (2006). Two group development patterns of virtual learning teams: Linear progression and adaptive progression. *The Quarterly Review of Distance Education*, 7(3), 297–312.
- Zautra, A., Davis, M., Reich, J., Nicassio, P., Tennen, H., Finan, P., Kratz, A., Parrish, B., & Irwin, M. (2008). Comparison of cognitive behavioral and mindfulness meditation interventions on adaptation to rheumatoid arthritis for patients with and without history of recurrent depression. *Journal of Consulting and Clinical Psychology*, 76(3), 408–421. doi:10.1037/0022-006X.76.3.408.
- Zhu, C. (2012). Student satisfaction, performance, and knowledge construction in online collaborative learning. *Educational Technology & Society*, 15(1), 127–136.