Meditation As An Intervention For Smartphone Distractions

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Abstract

As we turn to smartphones for managing our lives, we must ask how our dependence on these devices is affecting our ability to think and function in the world off-screen. The mere presence of these devices occupies our limited attentional resources, thus leaving fewer resources available for the task at hand and ultimately undercutting cognitive performance. As technology diminishes our cognitive capabilities, yoga has proven to be effective for cognitive enhancement. In this paper, I explore the extent of whether meditating for fifteen minutes immediately before a domain-general test increases ninth grade students' ability to maintain their attention on the test while their smartphones are on their desks. The independent variable in this study was simply engaging in the meditation before the test or receiving nothing. The dependent variable was the ability to maintain focus on the working memory task, which was measured using the Automated Operation Span Task (Ospan) which is the most widely used working memory test. Two classes were chosen; one as the experimental and one as the control. On the first day, both classes took the Ospan Task. On the second day, the experimental group engaged in meditation immediately before taking a different version of the Ospan Task. The control group took the Ospan Task without any intervention. After gathering the scores and running a Two Mean T-Test, the low p-value result proved meditations effectiveness as a way to manage smartphone distractions. For students to succeed academically, it is pressing that students use all of their cognitive resources to pay attention and to stay engaged in class. This conclusion has implication for the education sector, as it sheds light on how students can be taught how to cope with smartphone distractions, especially in the classroom.

Keywords: Yoga, Meditation, Attention, Working Memory, Mindfulness, Smartphones

Introduction

A student is sitting in class taking a test. The student has studied very hard and knows the test material. However, the student is distracted and is having a hard time staying focused.

Attention is a very important cognitive process (Kahneman). We constantly have stimuli attacking our brain and begging for our attention (Turkle). However, our attention is a limited capacity cognitive resource (Ward). This means that we only have a finite amount of it. We can think of it like a bucket of water, if we have 1000 ml of water and we use 300 ml to water the flowers, 300 ml to shower and 300ml to wash the car, then we only have 100 ml left to cook food. The same way the bucket is filled with water which we can then allocate to different tasks, our attention is composed of attentional resources (Aagard). Ideally, if we want to perform the best on any task, we have to give 100% of our attention to that task (Aagard). In short, our attention is composed of attentional resources, which we only have a limited amount of to use at any given moment in time.

One stimulus that is always trying to steal our attention is our smartphone (Ward).

Today, smartphones provide us with unlimited connectivity (Perlow). We use them for tasks such as posting on social media, checking the weather, browsing online shops, watching live-streams, and much more (Andrews). Smartphone owners use their phones around 85 times a day, including immediately upon waking up, just before going to bed, and sometimes even in the middle of the night (Deutsche Telekom). As we turn to smartphone screens for managing and enhancing our daily lives, we must ask how our dependence on these devices is affecting our ability to think and function in the world off-screen (Ward).

There is a problem with the usage of smartphones by high school students (Wilmer). Despite its impact on our cognitive performance, the prevalence and usage of smartphones continue to exponentially grow (Lehart). Currently, nearly three-quarters of teenagers, from the ages of 13 to 19, have smartphones (Pew Research Centre). Smartphones put the world at our fingertips, however, not without a cognitive cost (Ward). With the growing prevalence of smartphones in our lives, it is important to understand their effect on us (Pew Research Centre).

The mere presence of one's smartphone can occupy limited-capacity cognitive resources, our attention, thus leaving fewer resources available for other tasks and ultimately undercutting cognitive performance (Ward). Essentially, smartphones act as a distraction from the task at hand because they occupy our limited attentional resources which could have been used to pay attention to the task at hand (Ward). This is especially detrimental to students in school as it is pressing that students use all of their cognitive resources to pay attention and to stay engaged in class (Aagaard).

As technology diminishes our attention span, memory, fluid intelligence, and more, yoga has proven to be effective for cognitive enhancement (Devon).

As an individual and avid smartphone user, this concerns me. However, as a yoga practitioner, instructor and therapist I can see how yoga can aid this situation.

Yoga is an umbrella term which includes breathing exercises, meditation, and physical postures (Ranghan). Most of all, yoga is about maintaining cognitive control and not letting the mind wander, even in the presence of smartphones (Manjunath). Meditation is a type of yoga practice which focuses on pointedness of mind. It is commonly defined to be a state of "single-minded concentration" (Neki). It is often used loosely to describe activities such as relaxation techniques, concentration exercises, contemplation, reflection and guided imagery. Meditation, however, is more than just physical relaxation for it engages the mind as well as relaxing the body. It is often regarded as a heightened state of conscious awareness (Neki). Meditation practices invite practitioners to focus one thing, this could be a thought, a feeling, the breath, even a light (Manocha R). For these reasons, meditation is known to help individuals

increase their ability to pay and maintain attention of certain tasks (Hassed). Although yoga, specifically meditation, can stand as an intervention for managing distractions, little studies have incorporated it as a tool.

Literature Review

As it was mentioned above, research looking at yoga as an intervention for distraction has been fairly limited. However, yoga, in particular, meditation as an intervention for attention, working memory, and other cognitive functions have been present though quite limited.

Yoga For Cognition

Considering the purpose of yoga is to pay attention and sustain focus on what may be your thoughts, breath or body, yoga has been thought to greatly impact one's cognitive abilities (Coney). Many even consider yoga to be an exercise for the brain, and that over time and with consistent practice, your brain can be trained to become more aware, sustain focus for longer periods for time and pay more attention (King). Many have taken these ideas further and put them to test.

A. Malathi and A. Damodaran from the Department of Physiology in Municipal Medical College in Mumbai tested the effects yoga would have on medical students' ability to pay attention during exams. They hypothesised that yoga would reduce stress and anxiety and in turn improve students' ability to pay attention during exams. The study found that feelings of relaxation, improved concentration, self-confidence, improved efficiency, increased attentiveness, and an optimistic outlook in life were some of the beneficial effects of yoga. Anxiety reduced significantly before and after introducing yoga while test scores significantly improved (Malathi). Similarly, three well-known researchers from the University of Illinois at Urbana Champaign, Chicago, Neha P. Gothe, Rahul K. Keswani and Edward McAuley published a study in the peer-reviewed *Biological Psychology*. They studied the effects of yoga on executive function - cognitive abilities of the brain. Gothe and her team reasoned that since yoga has shown to improve stress levels, perhaps it could result in improved executive function of the brain. The yoga participants showed improved accuracy on executive function measures and decreased stress levels compared to their stretching counterparts who showed increased stress levels and poor cognitive performance at follow up. Gothe and her team were able to conclude that eight weeks of regular yoga practice resulted in improved working memory performance and reduced stress levels (Gothe). Further, a study conducted by Brunner Devon, Abramovitch Amitai, and Etherton Joseph concluded that yoga is effective in enhancing cognition. The aim their study was to assess the impact of a brief 6-week yoga program on Working Memory (WM) maintenance, WM manipulation, and attentive mindfulness. Measures of WM were administered prior to and following 6 sessions of yoga. Analyses revealed significant improvement from pre- to post-training assessment on both maintenance WM and manipulation WM. However, no correlation was observed between mindfulness and WM measures. Once again, concluding that yoga can, in fact, enhance cognition (Devon). Another study by Gothe Neha, Kramer Arthur, and McAuley Edward would agree with this. The purpose of this study was to evaluate the effects of an 8-week Hatha yoga intervention on attention and processing speed among older adults. These results suggested that yoga practice that includes postures, breathing, and meditative exercises lead to improved attentional and information processing abilities. Neha Gothe, Matthew B. Pontifex, Charles Hillman and Edward McAuley further conclude that yoga improves executive function. 30 female college-aged participants took part in a yoga exercise session, an aerobic exercise session, and a baseline assessment. Results showed that cognitive performance after the yoga exercise bout was significantly superior (ie, shorter reaction times, increased accuracy) as compared with the aerobic

and baseline conditions for both inhibition and working memory tasks (Gothe).

From all of the above studies, we can see very clearly that long-term yoga is effective for cognitive enhancement, especially attention. However, yoga is also effective given in the short-term and even immediately before a task. A study conducted by Jaspal Kaur Sethi, H. R. Nagendra, and Tikhe Sham Ganpat was also able to conclude that yoga improves self-esteem and attention in teenage girls. The study suggests that practicing yoga can result in improvement of attention and self-esteem among students and thereby enhancing their mental health and can help them in their academics (Sethi). All of this can be further supported by Panicker, Sharma and, Aldwain where they tested the immediate effect of yogic breathing (pranayama) on attention. Using EEG scans before after yoga, they were able to conclude that yoga is effective for increases student's abilities to focus and pay attention. The score of the experimental group was significantly larger after the breathing exercise thus concluding that not just long-term by even short-term yoga can be beneficial for increasing attention (Panicker).

Short-Term or Immediate Meditation For Cognition

Gillian G.King and Coney Jeffrey investigated the immediate effects of meditation on cognitive performance. Twenty-seven experienced meditators and twenty-seven non-meditators were tested and compared for differences in cognitive performance immediately following either a short meditation session (meditators) or a relaxation session (non-meditators). Meditators performed significantly better than non-meditators on seven tests of cognitive function (King and Jeffrey). Further, Singh, Yogesh, Sharma Ratna, and Talwar Anjana were able to examine the effects of short-term versus long-term meditation on cognition. The research team intended to study the effects of meditation on stress-induced changes in physiological parameters, cognitive functions, intelligence, and emotional quotients. The research team studied the immediate effects of meditation on stress levels, participants meditated for 15 minutes after playing a computer game to induce stress. The practice of meditation reduced psychological stress responses and improved cognitive functions, and the effects were pronounced with the practice of meditation for a longer duration (1 month) (Singh). Even though this study concluded that a long-term meditation was more effective, another study concludes otherwise. Zeidan Fadel, Johnson Susan, Diamond Bruce, David Zhanna and Goolkasian Paula concluded that meditation improves attention - even just short-term meditation practice. They examined whether brief meditation training affects cognition and mood when compared to an active control group. After four sessions of either meditation training or listening to a recorded book, participants with no prior meditation experience were assessed with measures of mood, verbal fluency, visual coding, and working memory. Both interventions were effective at improving mood but only brief meditation training reduced fatigue, anxiety, and increased mindfulness. Moreover, brief mindfulness training significantly improved visuospatial processing, working memory, and executive functioning. Yi-Yuan Tang and a group of 10 researchers would agree as they conducted a similar study with very similar results. Compared with the control group, the experimental group showed greater improvement in conflict scores on the Attention Network Test, lower anxiety, depression, anger, and fatigue, and higher vigor on the Profile of Mood States scale, a significant decrease in stress-related cortisol, and an increase in immunoreactivity. 5 days of meditation practice with the integrative body-mind training method shows significantly better attention and control of stress than a similarly chosen control group given relaxation training (Tang).

A significant lack of research has looked at meditation for distractions let alone for smartphone distractions. Most studies use physical yoga or meditation to look at its

benefits, for cognitive abilities such as processing speed, working memory and more. My research is specifically investigating whether meditation increases people's ability to maintain their attention on a working memory task which will require an individual's full attention.

To my knowledge, little to no research has studied whether the meditation, increases individual's ability to maintain their attentional resources on the task at hand. Perhaps a study which investigates this by an experimental research method could remedy this situation.

Based on the assumption that meditation provides many cognitive benefits and that the presence of smartphones occupy attentional resources, my research is essentially trying to find out if practicing meditation will help individuals maintain their attentional resources on a task and not get distracted by smartphones. And with this, I hypothesise that meditation will be a successful intervention for managing smartphone distractions.

Thus my research question: Through an experimental research method, to what extent does meditating for fifteen minutes immediately before a working memory test increase ninth grade students' ability to maintain their attentional resources on the test while their smartphones are on their desks?

The independent variable will be either receiving the meditation before the test or receiving nothing. The dependent variable is the ability to maintain focus on the working memory task, will be measured using the Automated Operation Span Task which is a working memory test.

Rationale

For my research, I am essentially studying whether or not meditation will help students stay focused on the task at hand even with the presence of their smartphones on their desks. Before I go ahead with the method, there are a few things I should explain and address.

Professor Adrian F. Ward, an assistant professor in the McComb School Of Business at the University of Texas at Austin, was able to conclude that the mere presence of one's smartphone may induce "Brain Drain" by occupying our attentional resources. Because the same finite pool of attentional resources supports both attentional control and other cognitive processes, resources recruited to inhibit automatic attention to one's phone are made unavailable for other tasks, and performance on these tasks will suffer (Ward). He was also able to further conclude that the closer the phone is to the individual, the more the phone will affect the individual's ability to focus on the task. He tested this using three conditions, one had the phone on the desk in front of the student, one had the phone in the bag or pocket and one had the phone in a different room. The bag/pocket and desk condition were pretty close in terms of their results. Keeping the phone in a different room was the only condition which was able to escape the smartphone's distractibility. Because of these findings, in my experiment, I will be using only the 'desk' condition. During his study, the phones were switched on but kept face down with vibrations and sounds switched off and I will be replicating that in my study.

There are many cognitive processes that demand a certain amount of our attention and will only work if given that amount (Aagard). Like a flower will only grow if given enough water, certain cognitive processes will only work if allocated enough attentional resources. Working memory is one example of those cognitive processes (Aagard). Working memory (WM) refers to the cognitive system that supports complex cognition by actively selecting, maintaining, and processing information relevant to current tasks and/or goals (Ward). This cognitive system's capabilities and restraints are largely determined by the availability attentional resources (Wilmer). Working memory is a very important system and we need to use it for almost any task, from cooking to talking to your friends (Ward). The WM system needs enough attentional resources allocated to it or else it will not work. Our minds are constantly being

bombarded by stimuli begging for our attention and when we give our attention to those things, we then cannot give enough to our working memory system thereby undercutting the ability for the working memory system to function (Ward). This characteristic of the WM system makes it the ideal system for me to use to test my hypothesise. If the smartphone is actually occupying student's attentional resources, then not enough will be allocated to the working memory and this will be reflected in a low score on a working memory test.

Working memory can be measured using the Automated Operation Span Test (Ospan). The Ospan task, a prominent measure of working memory capacity (WMC), assesses the ability to keep track of task-relevant information while engaging in complex cognitive tasks (Clayton). It is the most widely working memory test.

In each trial set, participants complete a series of math problems while simultaneously updating and remembering a randomly generated digit sequence (Mani). Performance on the Ospan assesses the domain-general attentional resources "available to the individual on a moment-to-moment basis" (Mani).

Working memory is also a very relevant cognitive function in an individual's life (McPherson). Working memory is also domain-general, which means that it doesn't pertain to any particular subject like math or english which would allow me to generalize the results of this study to all other domain-general cognitive systems, such as fluid intelligence, as well.

This study will focus on ninth grade students at the Singapore American School (SAS). Ninth grade is a time of change (Hons). "More and more of us are realizing that it is the make or break year for many 14- and 15-year-olds," says Jon Zaff, director of the Center for Promise at Tufts University. "It's a time when the cognitive, emotional, and physical are all coming together. Students have more autonomy and more homework" (Coney). Not only are youths entering the intimidating institution that is high school, they are experiencing the usual adolescent angst and depending on poor decision-making skills (Udapa). "Students entering high school—just at the time brains are in flux—still have the propensity to be impulsive and are prone to making mistakes," says Washington D.C. psychoanalyst Dr. Linda Stern. "They are therefore experimental and trying to separate and might try substances that interfere with the normal developmental process. Put all that together with raging hormones, the normal academic pressures, and meeting a whole new group to be judged by." (Oken). "We are ending up with something now called the ninth-grade bulge," explains Zaff, "which means a glut of students who have to repeat the grade. So they are stigmatized socially as well as academically, which can also lead to their finding it easier to just give up." A lengthy, detailed guide from the National High School Center states that "more students fail ninth grade than any other grade in high school, and a disproportionate number of students who are held back in ninth grade subsequently drop out." (Oken). Ninth grade is arguably the most important year in high school thus studying these students and providing them with this intervention would be most beneficial.

The main focus of this study is whether or not meditation increases student's ability to maintain their attentional resources on the task at hand. The significance of this stems from the fact that in school and in classes, being able to concentrate and pay attention is essential to student's learning (Schwartz). If students are not devoting their attentional resources to the teacher and instead to their smartphones, this poses a barrier for student learning and will have detrimental effects on their grades and test scores (Nangia). Moreover, for tests, whether these are standardized tests like the ACT or SAT, or even subject-specific tests like for math or biology, being able to focus, concentration and pay attention is essential (Nangia). Students cannot expect to score well and receive good grades if they are not paying attention (Schwartz).

If the yoga does increase student's ability to maintain their attentional resources on the task at hand, the implications of that result could mean that students can use meditation immediately before a test. Meditation is much more feasible to do right before a test compared to a breathing exercise or physical yoga postures. For that reason, I have chosen to test meditation and not a breathing exercise or yoga postures. Furthermore, meditation is not something that one would much need assistance or guidance for.

Method

To start off, for my study I will randomly choose a World Studies Class. World Studies is a class taught at the Singapore American School (SAS) and is only for ninth grade students. The class is a combination of English 9 and World History. It is not a higher level class. This class meets everyday which is different to other classes offered at SAS which meet every second day. In World Studies classes, at the beginning of class, teachers will offer students an activity unrelated to the class or content they are studying, this is a prime time for me to administer a test or teach meditation. Students are randomly assigned to classes at SAS, this means that one world studies class will not have 'smarter' children or 'less smart' children. There is also no higher or advanced version of World Studies. It is a requirement to either take English 9 and World History separately or together in the combined course of World Studies. For my study, I used 2 World Studies classes with 22 students each and taught by the same teacher. I used 22 students for my experimental and 22 for my control group.

After getting approval from the teacher to use their class. I told the teacher to administer the working memory test as a 'professional development' assessment. Professional Development assessments are done often at SAS and students usually take these seriously because they contribute to research conducted at SAS. This is so that the students have an incentive to take the test seriously and not just answer the questions randomly. The teacher was given a packet of very detailed instructions and all they had to do was read the instructions off the paper.

The Ospan test which I coded had multiple 'trials'. Trials consist of 'sets'. Sets consist of two things, one, flashing numbers and then a math equation to which you have to answer true or false (2x4=8 would be true and 3x2=8 would be false). The number could be 78 and the equation could be 3x4=14, for example. At the end of one trial, it will ask what number was flashed. In the Ospan, the smallest number of trials you can have is 2 and the largest is 9. In the trial test, there was one trial of 2 sets and 1 trials of 3 sets. In my modified version, I had 7 seven trials which had 1 trial of 2 sets, 1 trial of 3 sets, 3 trials of 4 sets, 1 trial of 5 sets and 1 trial of 6 sets. This was randomised which means that the trials will not appear in that order (you might have a trial of 2 sets first and the of 4 sets and then 2 sets and the 5 and then 3, for example). Both of the tests I created followed this. I needed two different tests because I was testing the students twice, once as a baseline and then after the intervention, if they were part of the experimental group. The two different versions asked different math equations and flashed different numbers and showed the trials in different orders.

This study spanned two days. The reason it will take two days is that the tests are not easy (Kahneman). They require a lot of focus and concentration (Kahneman). If we do the tests on the same day, not only will that take the whole class period (90 minutes) but the second time the students take the test, they will be mentally fatigued from the first time (Kahneman). There is no need for it to be longer which is why one day is enough.

On the first day, two classes completed a version of the Ospan test on their computers. They had no tabs open and since this test only works on a separate window in full screen, it removes possible distractions. They will have however long to complete the Ospan test. This should not take more than 15 minutes, according to a pilot study I ran with other students. Although the phone will be 'on', it will be

on silent and there will be no ringing or vibrating and will be placed upside down in front of them. The smartphone will not be turned off. The students walked into class and sat on desks which were in rows so nobody sat next to anybody. On their desks they had two packets, one packet had instructions and one had a disclaimer. Then they were told to switch off their vibration and ringers and place their phones upside down on their desks in front of them. There was one student who did not have their phone and so their score was not used in my results. They then followed the instructions provided and downloaded and installed the Ospan test and software onto their laptops. They then closed and quit any applications or tabs and once everybody was ready, they started the Ospan test. First, they took a trial test so they know what how to take the test as it was a little complicated to understand and I did not want their confusion of how to take the test to be a factor of a low score. The entire process took them around 45 minutes. The actual test only took them about 15 minutes. This was the same for both groups, experimental and control.

The next day, the randomly selected experimental group practiced 15 minutes of mindfulness meditation immediately before they take a different version of the Ospan test. A professional meditation instructor will be conducting the meditation and will say "I have been called to relax everybody and help you focus, I understand you have some tests coming up. I would like for you to use what you learn in this meditation about focusing and not letting the mind wander while you take your tests". This is so they use the skills they learn from meditation - focusing on one thing - on the test. During the meditation, the phones were collected and kept in another classroom in a box (from the Ward Study we know that the only way to escape the distraction of the smartphone is to place it in another room). The meditation was also read from a set of very detailed instructions. After the meditation, they took another version of the Ospan test and then completed a short questionnaire. The questionnaire was given to find out if any students have attentional disorders that their lack of attention can be attributed to. The control group, on the other hand, started the test immediately, with no meditation and also completed a questionnaire. The experimental group had one child with dyslexia and the control group had two children with Attention Deficit Hyperactivity Disorder. Their scores were not used in my results.

The teacher will get detailed instructions which they can simply read off of. The students got two packets, one with instructions on how to install and use the Ospan software and one with a disclaimer.

To reiterate, the study will go as follows: on the first day, two separate world studies classes will take the Automated Operation Span Task (Ospan) which they will take on their own computer. The next day, one of the classes will be guided through a meditation by a professional instructor. The other class will start the task immediately without a meditation or any other intervention.

Method Simplified

Class A - Control
Day 1
Phone on desk (silent, face down, no vibration or ringing)
Ospan Test
Day 2
Phone on desk (silent, face down, no vibration or ringing)
Ospan Test
Questionnaire

Class B - Experimental
Day 1
Phone on desk (silent, face down, no vibration or ringing)
Ospan Test
Day 2
Meditation (no phone, all phones in another room)
Phone on desk (silent, face down, no vibration or ringing)
Ospan Test
Questionnaire

Limitations

Some limitations of my study include the fact that this was done during the last block on Friday, one day before what is known as "Interim Semester". Interim

Semester is a programme at SAS where high school students sign up for trips which go all the from Croatia to Australia. For 9th graders, it was their first interim, their first school trip abroad. So they were all probably very anxious and excited and that could have been one factor of their inattention. Also, the students may not have "tried" on this test because it does not affect their grade or them in any way. Although they didn't know that it was for a students research project, they still may not have tried their actual best on this. During the meditation, I hope that they paid attention. As an instructor myself, I have experienced many students giggling and laughing and not able to do a meditation. I was not in the room but I hope that they actually did participate in the meditation. There are many factors that their inattention could have been attributed to, for example, if they were having a bad day or if they were stressed about something. Although I had a large number of participants, these factors could still have affected my results.

Results and Analysis

Raw Data Table

Control Group

Day 1	Day 2	Difference (Day 2 - Day 1)
22	18	-4
11	13	2
9	9	0
10	11	1
9	9	0
11	10	-1
15	13	-2
13	13	0
9	9	0
9	6	-3
6	9	3

Experimental Group

Day 1	Day 2	Difference (Day 2 - Day 1)
2	2	0
9	13	4
9	9	0
5	6	1
9	10	1
6	9	3
15	15	0
14	14	0
9	10	1
6	9	3
9	9	0
9	10	1
10	9	-1
9	9	0
9	9	0
6	6	0
3	6	3
2	0	-2

The scores were calculated as follows: A trial of two sets will flash a number, a math equation, a number, a math equation and at the end of the trial will ask for the 2 numbers which were flashed. The Ospan score uses the absolute scoring method.This is the sum of all perfectly recalled sets. For example, if an individual correctly recalled 3 numbers in a trial size of 3, 4 numbers in a trial size of 4, and 3 numbers in a trial size of 5, his or her Ospan score would be 7 (3 + 4 + 0). In my modified version, the max score you could get was 28.

After putting this data in a calculator, I ran a two-sample T-test which is a test to

determine significance between two groups. The two-sample t-test is one of the most commonly used hypothesis tests in statistics. It is applied to compare whether the average difference between two groups is really significant or if it is due instead to random chance. I ran the two-sample T-test with the null hypothesis being that there is no difference between the means of the two group differences. The *p*-value is .047903. The result is significant at $p < .05$. This means that there is a less than 5% chance that these results happened by chance, which means that there is a significance. We reject the null hypothesis because meditation is most probably a successful intervention for smartphone distractions.

Conclusion and Discussion

The results show that meditation is a successful intervention for smartphone distractions in ninth grade classrooms. But this research goes beyond just that. In today's rushed world, it is hard to stay focused on a single task. Back in our hunter-gatherer days, life was simple, there were pretty much four things to think about: food, water, shelter and not dying. There weren't too many things to get distracted by. Today everybody has so many things to think about, our social media, school, work, family, food, shopping, etcetera. There are so many stimuli trying to steal our attention, it is easy to get distracted. These days, how often do we actually pay 100% of our attention on a task? These days, students listen to music while doing math homework and eating dinner. There is no way that that student will learn as much as they probably could if they were devoting 100% of their attentional resources to that one task. With all of the stimuli around us, we should learn how to stay focused on one thing and be able to give all of our attention to that one thing. Our smartphones are extremely distraction, not just in the classroom. There is so much to see and learn from the world around us, but we're just too busy staring into our screens.

Our smartphones constantly occupy some portion of our headspace and because of this, there is no way we can give our full attention to anything. Every day we walk through the world with our back hunched looking down at our screens, how much are we missing, how much are we not seeing in this beautiful world around us. In the classroom, students should be paying 100% of their attention on the teacher and the subject being taught. If they are busy dreaming about a text from a boy or how many likes their Instagram post got, they are not going to be able to retain a lot of the information. I hope that students and teachers can implement this strategy in the classroom and take a few minutes maybe before a test or exam to just breathe and focus on your breath and to practice some cognitive control.

Glossary

Term	Definition
Attention	Attention is the behavioral and cognitive process of selectively concentrating on a discrete aspect of information, whether deemed subjective or objective while ignoring other perceivable information. Attention is also referred to as the allocation of limited capacity cognitive resources (Mancas).
Attentional Resources	The concept of human perception as a limited resource that may be deployed in particular ways for particular effects (Blanchet).
Automated Operation Span Task (Ospan)	A prominent and reliable measure of working memory capacity assesses the ability to keep track of task-relevant information while engaging in complex cognitive tasks (Engle).

Limited Capacity Cognitive Resources	The Capacity Theory - positing attention is limited in overall capacity, that a person's ability to perform simultaneous tasks depends on how much "capacity" the jobs require. Essentially stating that Attention is a limited resource (Kahneman).
Meditation	Meditation is the practice of turning your attention to a single point of reference. It can involve focusing on the breath, on bodily sensations, or on a word or phrase known as a mantra. In other words, meditation means turning your attention away from distracting thoughts and focusing on the present moment (Lazar).
Working Memory (WM)	The ability we have to hold in mind and mentally manipulate information over short periods of time. Working memory is often thought of as a mental workspace that we can use to store important information in the course of our mental activities (Baddeley).

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