Introducing Contemplative Pedagogy to the Classroom: Implementation, Experience and Effects on Concentration

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Abstract

While there is no single theory or praxis of contemplative pedagogy (Coburn, 2011), there is a wide spectrum of Mindfulness Meditation Practices (MMPs) being used in the classroom at a growing number of institutions. Many of these are aimed outcomes such as reducing stress, reflection (including self-reflection), expressing empathy, appreciating diversity and reducing absenteeism. Some of these practices also hold promise to possibly improve cognition, concentration and memory capabilities.

This paper explores the experience of implementing a one-pointedness MMP in the classroom at an Irish higher education institution. The focus is on simplicity of implementation, minimal disruption, student engagement with the practice and any positive effects this may bring to the concentration/attention abilities of students. Specifically, a one-pointedness meditation is practiced by students at the outset of each lecture in a specified module. At the end of the lecture period, students are given a form of Wilkins' counting test, a measure of sustained focused concentration. Results are then compared to the performance of the same cohort in another module with no one-pointedness exercise, serving as control. Results show a small and borderline statistically-significant increase in the concentration abilities of students in the module that includes the one-pointedness meditation.

Students also participated in a questionnaire and a discussion group, reflecting on their experience with the practice, and their opinions on introducing MMPs into their learning. Overall the student experience was much more positive than the authors had envisioned, even hoped for. At a minimum the results of this paper can inform educators looking to introduce simple contemplative pedagogy practices in the classroom, hopefully making their first attempts more fruitful.

Keywords

Contemplative Pedagogy, Mindfulness, Meditation, One-Pointedness, Concentration, Attention

1. Introduction and Existing Work

Contemplative pedagogy can be viewed as an inclusive outgrowth of earlier philosophies which put greater values on process over content and depth over coverage, such as social-emotional learning, writing across the curriculum, and critical thinking (Repetti, 2010). Historically, meditative practices in education stem from Asian philosophies, and as such, the Asian academy has a vast history of contemplative studies and pedagogies which are still seen in the present. Contemplative pedagogy remained largely outside mainstream western higher education prior to about the year 2000, when a shift occurred, mainly influenced by scientific and medical research, leading to the introduction of contemplative pedagogies to the classroom (Repetti, 2010). This shift is being advanced by thousands of educators and academic administrators, many of whom are part of the Association for Contemplative Mind in Higher Education (www.acmhe.edu), which itself is part of the Center for Contemplative Mind in Society (www.contemplativemind.org). Contemplative pedagogy serves several educational goals, and current research shows that contemplative practice, even if performed for short periods, improves attention (Jha 2007; Tang et al. 2007), cognition (Zeidan 2010), and cognitive flexibility (Moore, 2009).

It may be useful at this point to discuss some working definitions. Mindfulness meditation practices (MMPs) are a subgroup of meditation practices which is receiving growing attention (Chiesa & Serretti, 2010; Ivanovski & Malhi, 2007). Mindfulness can be defined as the meditative act of paying close, non-judgmental attention, to the features of present-moment experience such as breath, bodily sensation, and thought (Repetti, 2010). Other practices include gazing at an object, studying a single sound, contemplating a word and beholding an image. Mindfulness is a well-researched practice within scientific and medical research and the results highlight its importance (Shapiro et al., 2009). Mindfulness-based meditation considers mind-wandering and the process of distraction to be other events to observe in the context of the meditation. Preliminary research suggests that meditation differentially affects attention as a function of whether meditation is concentration-based or mindfulness-based (Lutz et al., 2009, Valentine & Harrlett, 1999). The purpose of concentration-based meditation is to redirect one's attention back to the

object of focus when the mind wanders without attending to the nature of the distraction.

We have selected *one-pointedness* as the MMP to introduce in the classroom. One-pointedness is a technique of concentration based meditation and involves focusing attention on one single point to avoid distraction. Goleman (1988) argues that some element of one-pointedness is found in almost all forms of meditation. The technique involves gazing softly at the centre of an object and focusing visual attention there and to gently re-focus attention when the mind wanders. The practice of repeatedly reorienting a wandering mind train's attention, aids concentration, and increasingly strengthens the ability to concentrate (Rose, 2009). While almost every meditation exercise involves some element of focusing attention, one-pointedness consists of precisely this endeavour. One-pointedness involves controlling the target scope of attention on one point so that one can be mindful of all that is going on at that point. As a result, one is better able to hold attention leading to a more focused and thoughtful examination of the target in question. (Repetti, 2010). Zajonc's study (2010) focused on the use of a paperclip. Attention is placed on the paperclip with much more focus and intent that is characteristic of mindfulness. One carefully examines, for example, the paperclip's form, colour and texture. All of one's powers of observation and thought are directed to the paperclip. This is more disciplined and directed practice than mindfulness whereby typically in mindfulness practices respect and consideration is given to the surrounding activities, feature and distractions. Practicing either one-pointedness or mindfulness therefore contributes some skill development to the other.

Wilkins' counting test (Wilkins et al., 1987) is a tool used to measure sustained focused attention. It is a form of attention test consisting of series of pre-recorded binaural auditory bleeps at different rates. The task is to count the bleeps and report the number presented at the end of each series when instructed to do so. Similar to this test are continuous performance tasks. In these, participants are required to press a space bar of a keyboard immediately following presentation of any letter except a specified one, and inhibit responding on presentation of the specified one. In this study we combine these ideas into a modified Wilkins' counting test.

Elizabeth et al. (1999) selected Wilkins' counting test in their study on a group of 19 meditators, familiar with the practice of mindfulness and concentration, and with a control group consisting of 24 participants. The meditators were further classified as either concentrative mediators (single-pointedness) or mindfulness meditators (ability to expand attention/awareness to as many possible events as possible). The participants were given a short instruction in which they were asked to count a series of tones. Each series began with a 'Ready' signal and concluded with a 'Stop' signal. The results indicated that meditators showed superior performance in Wilkins' counting test when compared with the control group. Also, participants experienced in mindfulness-based meditation performed significantly better than those trained in concentration-based meditation in the detection of unexpected stimuli (i.e., counting beeps in series in which the beeps were unpredictable and sporadic), suggesting that mindfulness and concentration-based meditations may differentially affect subsystems of attention. The results of that study show some consistency with the results and conclusions of a variety of previous studies which go some way to highlight that the practice of meditation leads to improved concentration (Kubose, 1976; Linden, 1973; Rani & Rao, 1996; Valentine, 1998). Elizabeth et al. (1999) also observed that many of the control group commented on 'how boring' the task was. Elizabeth et al. suggest this might be expected given the duration and repetitive nature of the task. In contrast, no one in the meditation group made such a comment. This could be reflective of their conditioned ability and attitude to concentration. While the study does offer further evidence to support contemplative practices it still is worth considering the construct and limitations of the study.

From an education standpoint, mindfulness is generally associated with adults, but it is now being taught in Irish secondary schools. According to O'Callaghan (2014) teachers are being trained in contemplative pedagogies for two reasons, to enable their pupils be aware of themselves and to problem solve. A County Mayo-based business, Mindfulness Matters, has worked with a several thousand teachers nationwide since its establishment in 2011. This year, Mindfulness Matters has 1,500 teachers signed up for its online course. The UK-based Mindfulness in Schools Project has also trained teachers in Ireland and will run another course here shortly. Children's first introduction to learning mindfulness involves training their attention not to wander off

– to stay in the present moment, and further training provides children with a toolkit of practices they can use whenever they need, in and out of school. The Mindfulness Matters organisation also presents some case studies which suggest that teachers can see the benefits of mindfulness practices in their classrooms and various other activities in the school setting.

Although findings reviewed here provide some preliminary evidence suggesting that MMPs could enhance cognitive functions, available evidence should be considered with caution and further high quality studies investigating mindfulness meditation programmes are needed. Nonetheless the growth in interest and activity in this space is undebatable.

2. Methodology

The objective of this study is to implement a MMP in the classroom with ease and minimal disruption while exploring the impacts of this practice in terms of student concentration, opinion and experience. The practice itself is a two minute one-pointedness session, referred to in class as 'meditation', introduced into the beginning of one module attended by a cohort[1] of approximately 60 students. This involved the lecturer introducing the training, dimming the lighting, and leading a two minute period of silence and concentration on a single image presented on a number of projector screens in the classroom. Students were given brief instructions to clear their minds, and to relax, to encourage better individual concentration. After the two minutes, without discussion or evaluation, the lecture commenced normally. This module served as the treatment module. The control module was populated by the same cohort, but taught by another lecturer, on a different day and included no one-pointedness practice. Both lecturers know the style and content of the other and although no concerted effort was made to 'teach similarly', they believe that other than module content their lecturing styles are quite similar. Both lecturers maintained close contact and updated each other on their progress throughout the course of the experiment.

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The measured impact of this practice is student engagement and sustained student concentration. Engagement is assessed by a questionnaire and focus group, and sustained student concentration is assessed via a form of Wilkins' counting test, designed specifically for this study. This test consists of a series of 200 random numbers which appeared on the computer screen in sequence, each number being displayed for 500 milliseconds, resulting in a total test time of 100 seconds. At the start of the test students were informed as to which number was the 'target' value. This value was displayed a total of 20 random times during each test. Students were instructed to press any keyboard key upon seeing the target value. This would result in what we call a *correct* press, provided the key was pressed while the target value was still on the screen (within 500ms). The time between displaying a target value and the key press was logged by the software, and a *total correct time* was calculated (the sum of all *correct* key press times for that test instance). The test software also recorded the number of *missed* key presses (no key pressed between displaying of a target value and the next value in the sequence) and the number of *false* key presses (key pressed while a non-target value was being displayed). A *perfect test* is considered to be a test instance with 20 correct key presses with no missed and no false presses. Results are discussed in Section 5.

3. Lecturer Experience

3.1 Treatment

Both the treatment and control lecturers were surprised with the enthusiasm that students demonstrated during the research period. The treatment lecturer experienced no resistance in introducing the meditation session, despite this being completely unanticipated by the students and not the normal practice at the institution. Further, this lecturer described an intriguing, eerie (or at least surprising) calm over the class after the meditation. It was as if the students needed a few minutes to 'come out of it' before returning to their natural state. This was continually observed, and interestingly, there was no requirement by the lecturer to seek the attention of the students to commence the lecture, they seemed more ready and willing than would normally be expected. This positive reaction has led to the continuing use of this meditation session beyond the research period, as students now anticipate this as part of their class experience, and seem to look forward to it.

3.2 Control

The control lecturer was surprised with the readiness and enthusiasm with which students took to the counting test despite not having the meditation practice in the control module. Perhaps some of this was down to clear instructions and explanation from the outset. The control lecturer recalled several instances of students enquiring as to if there would be 'another counting test today', asked with anticipation. The control lecturer witnessed disappointment in the occasional student who could not participate in the counting test due to software connection problems. A decision was made from the outset that students would be provided their individual reaction time, or score, on the conclusion of each test. This served as a clear buy-in for student participation as some students were competing against themselves while others were clearly competing and comparing scores with their peers.

4. Student Experience

4.1 Questionnaire

Students completed a questionnaire after the first four weeks of meditation practice and counting tests, to ascertain their opinions, levels of engagement and opinions on introducing mindfulness into their learning. The results were extremely encouraging, particularly surrounding attitudes towards combining mindfulness and learning. All questions other than one direct-answer question were 7-point Likert-scale. The number of respondents was 42, a response rate of 66% based on the maximum module attendance during the four week research period.

Figure 1 shows responses from the first three questions, addressing focus, concentration and the concentration (Wilkins') test. Question 1 reveals that 52% of respondents answered favourably - they felt that doing the one-pointedness meditation helped them focus better in class. The largest response was 'agree' at 26%. Only 29% answered unfavourably. Question 2 asked if students felt that doing the meditation improved their ability to concentrate. Results were similar to Question 1 with slightly more students answering favourably (55%) and the same number answering unfavourably (29%). Again the largest response was 'agree' at a slightly higher 29%. Question 3 asked if students enjoyed the counting test, with the largest number

answering ‘agree’ at 45%, with 81% answering favourably, and only 12% responding unfavourably.

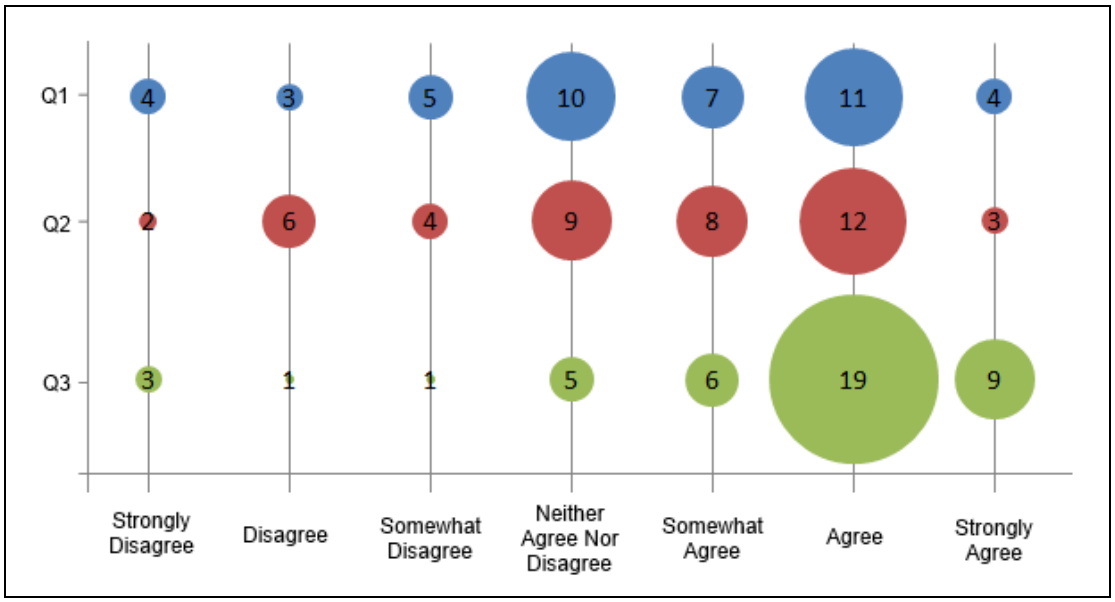

Figure 1 - Q1: I felt that doing the one-pointedness meditation helped me focus better in class. Q2: I felt that doing the meditation helped my ability to concentrate. Q3: I enjoyed doing the 'counting test'.

Figure 2 shows the results of the three questions addressing integrating meditation into learning. Question 4 reveals that 64% of respondents answered favourably - they enjoyed doing the one-pointedness meditation in class. The most popular response was ‘agree’ at 31%. Only 19% answered unfavourably. Question 5 asked if students would like to do more meditation/relaxation activities as part of their learning. 60% answered favourably compared to 14% unfavourably, with the most popular response ‘agree’ at 33%. Question 6 asked if students enjoyed the counting test, with the largest number answering ‘agree’ at 31%, with 64% answering favourably, and only 17% responding unfavourably.

The questionnaire has demonstrated that for this group of students, the following conclusions can be made:

1. The majority of students feel that one-pointedness meditation improves their focus in class;
2. The majority of students feel that the one-pointedness meditation helps their ability to concentrate;
3. The majority of students enjoyed doing the Wilkins’ counting test;
4. The majority of students enjoyed doing one-pointedness meditation in class;

5. The majority of students would like to do more meditation/relaxation activities as part of their learning;
6. The majority of students are planning on doing more meditation as part of their studies or in other areas of their lives.

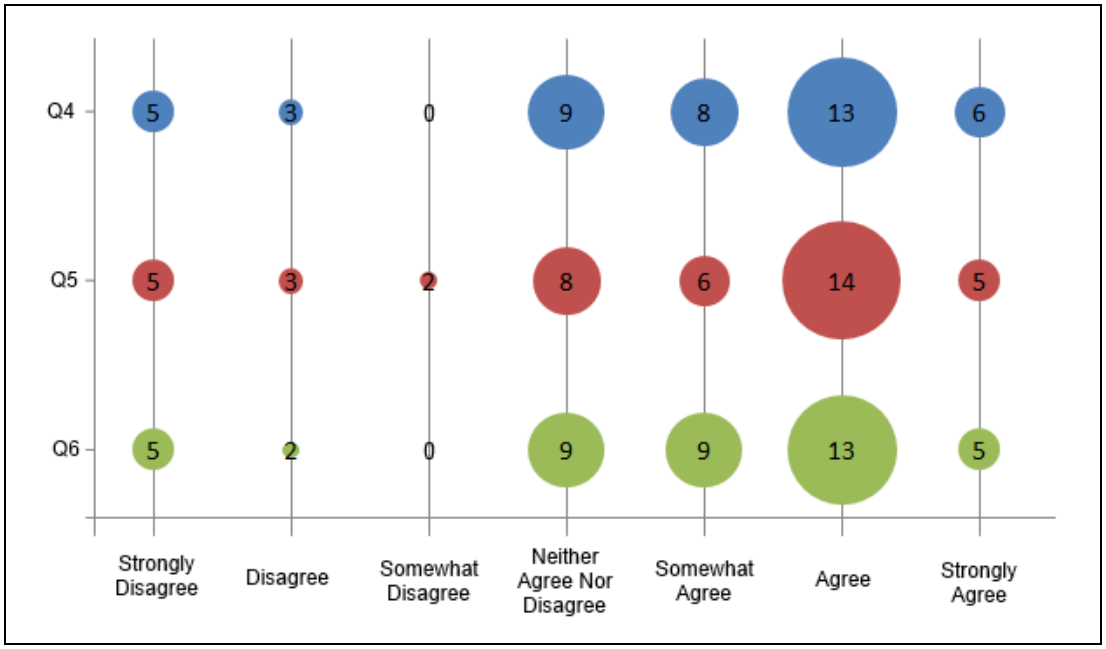

Figure 2 - Q4: I enjoyed the one-pointedness meditation in class.
Q5: I would like to do more meditation/relaxation activities as part of my learning.
Q6: I am planning on doing more meditation as part of my studies or in other areas of my life.

4.2 Discussion Group

The discussion group used an unstructured interview approach for exploratory and investigative purposes. No coding was carried out and as such is interpretive. The focus group was conducted mid-semester with a small group of volunteer students who were loosely representative of the research participants in terms of gender, age and nationality. The primary purpose of conducting the discussion group was to further discuss the results of the student questionnaire and whether continuing the mindfulness methods used, or similar methods, would be desirable to the students. The discussion group was 40 minutes in duration and captured some useful findings which will now be discussed with reference to quotes from the research participants. The discussion group comprised of the two principle lecturers and six students (four male, two female) who volunteered their participation and who also participated in the experiment and control groups. The students will now be referred to as Student 1 to 6.

Lecturer B (control) commenced the discussion and posed a question to the students to find out if they felt the contemplative practices used within their classes were disruptive to the subject of class. None of the students responded in a negative way, in fact the students indicated that the contemplative practices were complimentary to their normal classroom activities. Student 2 was very positive about the use of the practices in general within class and complimented the lectures on choosing to engage in such practices with the students. Student 4 suggested that the methods used in class were kept to the current time duration and going over this may not be practical.

Lecturer A (treatment) followed this question by asking if the students engaged with the meditation piece at the commencement of the lecture, and if he removed this reflective piece from his lecture would the students react positively or negatively to this. The reaction was mixed but generally interpreted positively. Some of the students said they wished to continue with the meditation piece at the start of class while others were not as convinced as they struggled to understand why they were asked to engage in the meditation. Student 2 said 'I would be disappointed if the meditation stopped' and felt he had experienced positive benefits from the meditation. Student 3 said the meditation piece 'breaks the ice of the class' in which he further describes how the meditation piece breaks the informal conversation in class to bringing the class to a state of focus, generally as one group. Nobody suggested removing the reflective pieces from class which further strengthens the results of the questionnaire in which a similar question was asked.

The discussion group, because of its free-flowing nature, generally discussed mediation as a concept and approach. The students mentioned the typical perceptions of meditation as a tool for Buddhist use only, but they showed knowledge of how it can be used in many environments and forms which was enlightening to the lecturers. Student 5 stated that she wanted to continue with meditation, not only for her focus in class but for her life outside class. Student 1 said 'anything that has any chance to improve our learning is more than welcome' and was positive about further use of mindfulness and meditation within the classroom. Lecturer A suggested that workshops may be held in the research environment in the future for students who want deeper engagement as opposed to what is currently offered in class. There was a general positive reaction to this and is therefore worth consideration.

Lecturer B raised a question about the concentration test and if students derived any benefit from this. Participant 6 said he was competing with himself on a weekly basis to improve his reaction time, but again, similar to the meditation piece, students generally struggled to understand why they were doing this test and what its ultimate purpose was. Student 4, in a positive manner, also suggested having a series of lectures and sessions on meditation so the class understood more clearly what they were participating in and how to react to these types of tests in the future.

4.3 Conclusions & Recommendations

The informal results from the discussion group show a clear relationship with the formal results of the questionnaire. The positive reaction from the discussion group in support of contemplative practices suggests the use of such approaches is worth considering. A key learning from the discussion group is that nobody suggested removing the meditation from class, there is, however, no clear evidence of what benefits the students perceived and this is worth consideration. It is also clear that students expressed a generally positive appetite for further workshops and/or class sessions on Mindfulness Meditation.

5. Effects on Concentration

Students were administered a modified version of the Wilkins' counting test at the end of each lecture session (treatment and control), as described in section 2. Table 1 shows for each group, the percentage of *perfect tests*[2], average *total correct time*[3], average number of *missed*[4] key presses per test, and the average number of *false*[5] key presses per test. The total number of test instances was 327 (treatment 159, control 168). It is seen that the percentage of perfect tests was greater for the treatment group, and that the mean number of missed and false key presses per test were lower for the treatment group. The treatment group also had lower (better) total correct times (M = 6756, SD = 1510) than the control group (M = 7051, SD = 1193). A Student's t-test (two-tailed, heteroscedastic) yielded borderline statistical significance $t(302) = 1.95$, $p = .05$. A one-tailed test could have been performed yielding a p-value of .025, but the

[2] A test instance with 20 correct key presses and no missed or false key presses
[3] Sum of all correct key presses for a particular test instance
[4] Not pressing a key within 500ms of the target value appearing on screen
[5] Pressing a key while a value other than the target is on screen

original hypothesis statement did not indicate a direction of change, and we stuck with that as these results were always going to be indicative at best, and being conservative was important. Figure 3 shows a box-and-whisker plot of the total correct times. Interestingly this small difference is reflected in the questionnaire results, which indicated that 15 students thought they did better in the treatment test compared to 14 in the control test, while 15 thought there was no difference. This shows that the students' perceptions are closely matched to their actual performance.

The authors are aware that confounding factors such as day of the week, time of day, difference in lecture style, etc. could also have an effect on these results, and that no solid conclusions can be drawn regarding effects on concentration without significant further study. These results are simply interpreted as a positive starting point towards future study – indeed should a significant difference in measured concentration have been recorded it would be difficult to pin down in terms of cause without further study. What has been determined (at least for the students in this study) is consistency between actual performance and perceived performance.

Table 1. Treatment vs. Control statistics for Wilkins' Concentration Test

	Treatment	Control	
Percentage perfect tests	10.5%	7.1%	
Mean total correct time (ms)	6756, *SD* = 1510	7051, *SD* = 1193	$t(302) = 1.95$, $p = .05$
Mean missed key presses per test	3.08	3.79	
Mean false key presses per test	3.82	4.26	

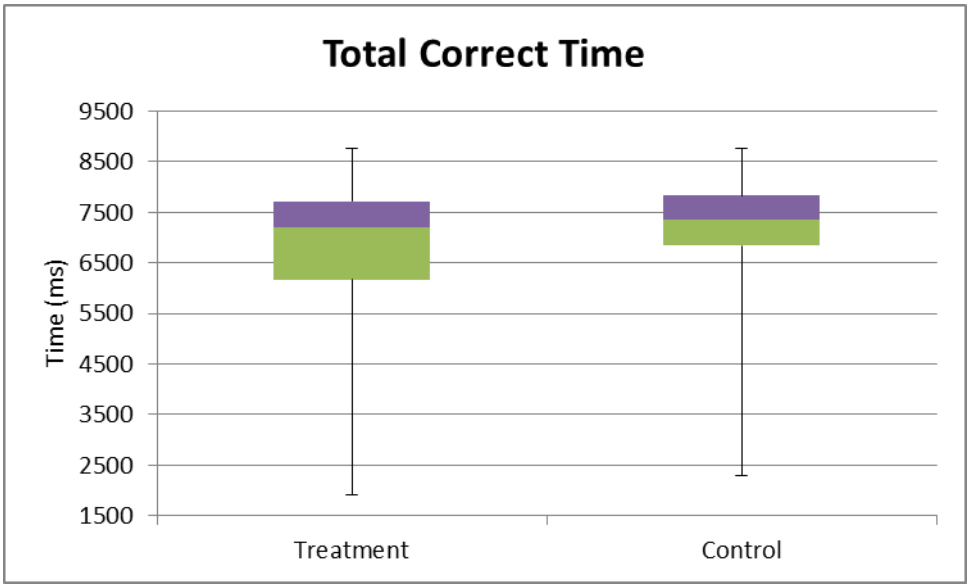

Figure 3 – Box-and-whisker plot for total correct time of treatment and control groups. A lower total correct time represents improved concentration.

6. Conclusions and Future Work

The literature creates a strong argument in support of the use of MMPs in educational contexts, however the approaches used require consideration as also expressed in the literature. Consideration of methods, tools and approaches yield different results from recent studies but most yield positive outcomes. While there is sufficient evidence pointing to improved concentration and engagement with MMPs there is still more research required as to which approach and tools serve students best.

Recent Irish studies, and media attention, show an increased interest for such practices in primary and secondary schools, and there is a clear active buy-in from teachers who embrace this methodology. Buy-in from relevant stakeholders is critical to its success, development and growth and this research piece goes some way to helping ensure such practices are considered beneficial in our higher education context, and possibly beyond.

The MMP experimented with in this study provided some very positive, and surprising, results for the researchers. Indeed these results provide sufficient evidence to continue with such practices, specifically because the students positively engaged with the processes. It is difficult to draw significant quantitative conclusions from this

work – further investigation is warranted. Caution is required when interpreting the results of this study due to research time limitations and methodological constraints. While the results are encouraging, the quantitative comparison between treatment and control groups is not sufficient to declare a demonstrated and significant outcome. Although the participants have expressed their interest in continuing with MMPs it would be misguided to present a list of benefits they have received. This will require further informed research and empirical studies.

Nonetheless, in light of such positive qualitative results, a lack of significant quantitative results does not warrant disregarding the introduction of MMPs into student learning environment in our context. The positive qualitative reaction from the participants is clearly a positive recorded outcome, and as such, is the key outcome from this research study, coupled with the ease of introduction (and lack of disruption encountered) in introducing a mindfulness meditation practice in a third-level classroom.

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