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Comparison of the Effects of Reflection and Contemplation Activities on Service-Learners' Cognitive & Affective Mindfulness
Comparaison des effets d'activités de réflexion et de contemplation sur la conscience cognitive et affective des apprenants par le service communautaire

Trae Stewart and Megan Alrutz

Article abstract

This study investigates the extent to which service-learners' mindfulness is affected by engagement in reflection (e.g., dialogue) and contemplation activities (e.g., labyrinth tracing). The results are compared within and between treatment groups, while covarying for participants' initial levels of mindfulness. While both dialogue and contemplative labyrinth treatment groups reported increases in mindfulness as measured by CAMS-R, neither within or between group overtime-changes were significant. Contemplative labyrinth tracing as a reflection activity does not appear to be better than dialogue at increasing mindfulness in service-learners. However, contemplative reflection performed as well as traditional dialogue reflection.

COMPARISON OF THE EFFECTS OF REFLECTION AND CONTEMPLATION ACTIVITIES ON SERVICE-LEARNERS' COGNITIVE & AFFECTIVE MINDFULNESS

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ABSTRACT. This study investigates the extent to which service-learners' mindfulness is affected by engagement in reflection (e.g., dialogue) and contemplation activities (e.g., labyrinth tracing). The results are compared within and between treatment groups, while covarying for participants' initial levels of mindfulness. While both dialogue and contemplative labyrinth treatment groups reported increases in mindfulness as measured by CAMS-R, neither within or between group overtime-changes were significant. Contemplative labyrinth tracing as a reflection activity does not appear to be better than dialogue at increasing mindfulness in service-learners. However, contemplative reflection performed as well as traditional dialogue reflection.

COMPARAISON DES EFFETS D'ACTIVITÉS DE RÉFLEXION ET DE CONTEMPLATION SUR LA CONSCIENCE COGNITIVE ET AFFECTIVE DES APPRENANTS PAR LE SERVICE COMMUNAUTAIRE

RÉSUMÉ. Ce projet de recherche explore dans quelle mesure s'engager dans un processus de réflexion (c.-à.-d. le dialogue) et dans des activités contemplatives (c.-à.-d. créer des labyrinthes) influence la conscience de ceux qui apprennent par le service communautaire. Les résultats sont comparés à l'intérieur des et entre les groupes expérimentaux, covariant les niveaux initiaux de conscience des participants. Si les participants des groupes expérimentaux de dialogue et de création de labyrinthes ont connu une augmentation de leur niveau de conscience, tel que mesuré par le CAMS-R, aucun des deux groupes n'a connu de changements significatifs à l'intérieur et entre les groupes au fil du temps. Le traçage contemplatif de labyrinthes comme activité de réflexion ne semble pas être plus efficace que le dialogue lorsqu'il s'agit d'augmenter le niveau de conscience des apprenants. Cependant, la réflexion contemplative a eu d'aussi bons résultats que la réflexion effectuée à l'aide du dialogue traditionnel.

John Dewey consistently criticized the segmentation of seemingly opposing themes into dualistic relationships. Dewey particularly loathed the mind/body dualism and advocated for treating the mind-body as an "integral whole" (Dewey,

2008, p. 27). He strongly condemned the established divisions between theory and practice (Shusterman, 2008) and even utilized new compound words in his work, such as "body-mind" and "mind-body," to avoid the trappings of linguistic traditions. Based on this philosophy, Dewey proposed that experience (body) is key to learning (mind). His pragmatism remains a foundational reference in service-learning, and offers encouragement for holistically engaging students.

Bringle & Hatcher (1999) defined service-learning as "a course-based, credit-bearing educational experience" (p.112) that is focused on organized service activities with community partners. These organized activities are designed to meet an identified community need, while offering students experiential learning opportunities that connect directly to their course work. Students work to address a community need, while professional partners share their expertise with students and enhance classroom learning. In addition to real-world and hands-on learning experiences, service-learning relies on reflection as a key tool for deepening students' understanding of course content, developing their appreciation of the discipline, and fostering a sense of civic responsibility (Bringle & Hatcher, 1999, p. 112). Reflection serves as a conduit through which volunteer service and academic coursework are aggregately encoded for learning. This liaison between mind and body, action and reflection, enables one to influence the other and results in a more enhanced understanding of each.

However, several limitation have been levied against the (over)use of reflection in service-learning, including its sole focus on past events ("bend back"), its advocating of more traditional, narrative strategies (e.g., journals, discussions; see Stewart, 2010), and its lack of reference to spirituality, including a discounting of contemplative practices "merely because they do not produce a durable record" (Radecke, 2007, p. 23). Apffel-Marglin and Bush (2005) advocated for new learning strategies that utilize inward inquiry to complement traditional extrospective modes of investigation. Given service-learning's focus on mind-body integration, it seems reasonable that service-learning could embrace methods that allow for the development of interiority through a more complete integration of the self.

In contrast to reflection, contemplative practices attempt to develop a heightened awareness of the present moment by observing the contents of one's consciousness, body, senses, and emotions. In these moments, our consciousness becomes open to flowing, temporal, and non-linear content thereby deepening and expanding awareness and insight. Such individuality makes a single conceptualization of what it means to contemplate, or a single means by which one engages in contemplation, unrealistic.

Using a two-group, randomized quasi-experimental research design, this study investigates the extent to which service-learners' mindfulness is affected by engagement in reflection (e.g., dialogue) and contemplation activities (e.g.,

labyrinth tracing). The results are compared within and between treatment groups, while covarying for participants' initial levels of mindfulness. All study participants took part in an environmental science, service-learning project as part of their fifth-grade science curriculum. Treatment group 1 also participted in group reflection activities, specifically group dialogue and discussion with a facilitator. Treatment group 2 participated in contemplation activities, indviduaally engaging with a hand-held finger labrynth (see Figure 1).

REVIEW OF RELEVANT LITERATURE

Reflection in service-learning

Service-learning literature seems to embrace written and oral forms of reflection (Eyler, Giles & Schmiede, 1996). Morton (1996) observed that journals are a commonly used form of reflection in service-learning. He noted several formats to journals and also mentioned that more formal assessment methods, like papers, are often assigned for reflection as well. Ramsay (1990) also cited journals as more widely recognized tools for making meaning from experiences. Rice and Pollack (2000) supported journals as an effective tool for service-learning reflections, citing the student-teacher dialogue that comes about in the assessment phase of reflection. Moreover, a journal essentially acts as a safe space where students may air controversial opinions in a medium that allows teachers to help them explore and challenge those controversial opinions discretely. In a critique of journals, Anson (1997) argued that while journal writing may offer a concrete record of students' experiences, it often "falls short of encouraging the critical examination of ideas, or the sort of consciousness-raising reflection, that is the mark of highly successful learning" (p. 169).

Service-learning literature also suggests a strong presence of oral forms of reflection within service-learning models. Waterman (1997) found that oral reflection, as part of a full class, smaller unit, or one-on-one, can be a successful tool for further engraining the written reflection in journals and papers. Stanton, Giles, and Cruz (1999) pointed to group discussions as a particularly effective means of engaging in reflection, as peers in groups often help to bring out one another's biases and beliefs, brought about by what he calls a state of structured disequilibrium - something unsettling to them, yet still structured in a way to help the students learn from it. In this way, group discussions promote meaning-making, or learning, in a way that goes beyond individual reflection activities.

Despite widespread support for written and oral reflection in service-learning, Stewart (2010) warned that these traditional product-oriented approaches to learning and assessment place educators in role as "intelligence adjudicators" (p. 41) who interpret and enforce correctness. Pre-determined outcomes and expectations entrap students in ontological mindsets and existing categories,

which can limit possibilities, bind us to the past, and result in mindless approaches to problems or situations (Langer, 1989). In his review of the most often recommended reflection guides in service-learning, Stewart found that only three of the guides reviewed (Fletcher, 2002; Northwest Service Academy, 2006; Reed & Koliba, 2001) included methods that are definitively contemplative in design, meaning that they are designed to focus on the present, are introspective in nature, and are not product- or results-oriented. Practices include guided imagery, visualization, and stream of consciousness, with the first two repeating across more than one of the guides.

Mindful / mindlessness

Discussions on mindful/mindlessness suggest a variety of implications for teaching and learning, and specifically service-learning as a pedagogical approach. Mindlessness is the result of actors engaging in automatic behavior or approaching situations myopically, narrowed by assumptions, or "premature cognitive commitments" (Chanowitz & Langer, 1981, p. 1051). Moreover, mindlessness is associated with "passive information-processing in which the individual rather automatically relies on distinctions previously drawn, instead of engaging in active categorizing and new distinction making" (Langer, Bashner, & Chanowitz, 1985, p. 113). In other words, when mindless, we approach situations as routine, as if the process and end result have been determined prior to our engagement. We surrender our agency and are subsequently transformed into "automatons," operating without conscious self-direction or purpose. Similar to driving a well-known path to work, one might arrive at their destination with little consciousness of details from the journey. Familiar habits and situations in service-learning can similarly allow us to pay minimal attention to the process and focus instead on ends. While repetition can assist in making us more familiar with concepts, saturation may occur and result in our inability to apply the learned concepts in novel contexts.

Mindlessness also means approaching situations context-free or "as though [knowledge] has a single meaning and is available for use in only that way" (Langer & Piper, 1987, p. 280). A domino effect of escalating cognitive inflexibility and narrowed perspective-taking ensues. When faced with information that does not fit within our existing schema, we accept an outcome orientation, discriminating among the information based on its perceived function (Mezirow, 1994). In other words, we fail to consider new possibilities or results that live outside of our expectations and current understandings.

Overuse of particular reflection strategies runs a similar risk. Kellermann (1992) contended, "...most strategies are automated in both their acquisition and enactment...they are learned and used tacitly" (p. 239). Weimann and Daly (1994) echoed this viewpoint by acknowledging that overlearning a particular strategy will cause it to drop from conscious awareness. Individuals' mindless responses (i.e., without conscious control or intention) when accommodat-

ing familiar and frequent requests have been documented through numerous empirical studies (see Langer,1989, for various examples).

Ostensibly aware of these discussions on mindfulness, proponents of reflection have warned against repetitive and routine acts of reflection. Schön (1983) argued that a practitioner may miss opportunities to think about what s/he is doing when a practice becomes more repetitive and routine. If the individual "learns, as often happens, to be selectively inattentive to phenomena that do not fit the categories of his knowing-in-action, then he may suffer from boredom or 'burn-out' and afflict [the people around him] with the consequences of his narrowness and rigidity" (p. 61). Specific to this latter point, Mezirow (1991) warned that overuse of certain forms of reflection, particularly those that are already broadly used in commonly accepted pedagogies, can run the risk of becoming further entrenched in, or an indirect proponent of, the broken system that it initially aimed to change.

In contrast to mindlessness is mindfulness, or the non-judgmental, non-reactive, conscious awareness of, and attention to, experiences in a present, contextualized reality (Brown & Ryan, 2003; Kabat-Zinn, 2005). The concept of mindfulness originates from Buddhism and involves the practice of meditation to develop the skill of mindfulness, which has been described as an awareness of being aware (Hirst, 2003), as well as "moment-by-moment awareness" (Germer, Siegel & Fulton, 2005, p. 6). The Buddhist definition of mindfulness states that it "requires both attention and concentration to be present in the current moment" (Hirst, 2003, p. 360). Moreover, it results in a more objective view of the process of experience (Germer, Siegel & Fulton, 2005).

Mindfulness practice differs from mindless approaches in that it does not attempt to make meaning from external stimuli and past experiences by cognizing them into pre-conceived categories (Brown & Ryan, 2003). Acknowledgement and acceptance of stimuli, rather than meaning-making, remains the aim. The focus of attention is unrestricted; rather, individuals are left to explore and thus gain insight into thoughts, feelings, or sensations as they consciously arise (Bishop et al., 2004). Gunaratana (1990) argued that mindfulness requires a less goal-oriented approach to endeavors and stated:

> In mindfulness, one does not strain for results. One does not try to accomplish anything. When one is mindful, one experiences reality in the present moment in whatever form it takes. There is nothing to be achieved. There is only observation. (p. 84)

Such mindful practices could train learners to be present in the moment, open to all stimuli, observing and acknowledging them without intent to understand or change. For service-learners, traditional reflection activities are not a viable path toward mindfulness since, by definition, they are goal oriented (e.g., assignment for a grade, making meaning) and ask students to attend to something that has already transpired.

Contemplation, mindfulness & outcomes

Contemplative practices attempt to develop a heightened awareness of the present moment by observing the contents of one's consciousness, body, senses, and emotions. Contemporary examples of contemplative practice include sitting in silence, guided imagery, visualization, labyrinth walking, recitation, Tai Chi, meditation, and yoga. These endeavors do not attempt to change or control the content according to externally-defined categories. Rather, contemplation cultivates an epistemology of interiority (Hart, 2007). By quieting external stimuli, the mind looks inward and detaches from "patterns of conditioned thinking, sensation, and behavior" (Varela, Thompson, & Rosch, 1993, p. 122). In this instance, our consciousness becomes open to flowing, temporal, and non-linear content thereby deepening and expanding awareness and insight. All things are seen as interconnected. Contemplative practice therefore advocates non-attachment so that we do not become absorbed by content: "This opening *within us* in turn enables a corresponding opening toward the world *before us*" (Hart, 2007, p. 2). When properly practiced and not encased by external parameters, contemplation leads to mindfulness through an attitude of equanimity and de-automatization (Deikman, 1966).

Table 1 highlights empirical findings from engagement in contemplative practices. These outcomes, namely those highlighting cognitive / academic performance and whole person development, parallel documented outcomes from engagement in service-learning. Most clearly, service-learners have demonstrated / reported increased social, cognitive, and interpersonal skills (Klute & Billig, 2002), improved moral reasoning and problem solving (Eyler, Root, & Giles, 1998), more respectful attitudes and caring toward diverse groups (Yates & Youniss, 1996), growth in personal development (Giles & Eyler, 1998; Yates & Youniss 1996), reduced risk behaviors (Billig, 2000; Meyer & Sandel, 2001), and, increased general self-efficacy (Billig, 2000; Furco, 2003).

RESEARCH QUESTIONS

1. To what extent are service-learners' mindfulness affected overtime by engagement in reflection and contemplation activities?

2. How does the mindfulness of service-learners who are engaged in reflection and contemplation activities compare within and between treatment groups, namely those participating in reflection activities and those participating in contemplation activities?

3. How does the mindfulness of service-learners in the two treatment groups, namely those participating in reflection activities and those participating in contemplation activities, compare when covarying for their initial level of mindfulness?

TABLE 1. Select outcomes from engagement in contemplative practices

Cognitive and academic performance	Increased ability to reduce distractive thoughts and behaviors, capacity to focus attention, and greater self-awareness (Woolacott, 2007; Zylowska et al., 2008)
	Increased attention levels (Jha, Krompinger, & Baime, 2007; Miller, 1994; Slagter et al., 2007)
	Thickened brain regions associated with attention and sensory perception correlated to amount of meditation (Lazar et al., 2005; Narr et al., 2007)
	Increased academic achievement as measured through GPA scores (Hall, 1999)
Anxiety / stress management	Reduced stress and anxiety, and enhanced psychological well-being (Baer, 2003; Broderick, 2005; Brown, Ryan, & Creswell, 2007; Jain et al. , 2007; Shapiro, Brown, & Biegel, 2007)
	Lowered anxiety, depression, anger, fatigue and stress-related cortisol (Tang et al., 2007)
	Lessened reactivity to stimuli perceived as threatening, better emotional regulation, lowered anxiety/stress (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003; Creswell, Way, Eisenberger, & Lieberman, 2007)
Whole person development	Fostered psychological, social, and spiritual growth (Davidson et al., 2003; Shapiro, Schwartz, & Santerre, 2002)
	Enhanced emotional awareness, management, and sensitivity (Goleman, 1995)
	Enhanced empathic tendencies (Shapiro & Brown, 2007; Shapiro & Walsh, 2003)
	Increased compassion for self and others (Shapiro, Astin, Bishop, & Cordova, 2005; Shapiro, et al., 2007; Walsh & Shapiro, 2006)
	Strengthened meta-cognition (Segal, Williams, & Teasdale, 2002)
	Increased feelings of benevolence, common humanity, lessened feelings of difference/discrimination, enhanced self-concept/self-esteem, handle stress, impulse control (Emavardhana & Tori, 1997)

METHODS

Design

A two-group, pre-test / post-test, randomized quasi-experimental research design was conducted to determine the extent of changes in mindfulness within and between treatment groups overtime.

Sample

The 90 participants in this study were fifth graders at a public school in the southeast of the United States. The ethnicity of the sample was composed of 56% Caucasian, 6% African-American, 13% Hispanic, 1% Asian, 1% Native

American, 10% bi-racial, 11% other, and 2% of participants did not know their ethnicity. There were 50 (56%) female and 40 (44%) male students in the sample. All students were under 18 years of age, so both parental consent and informed assent were collected per Institutional Review Board guidelines.

Procedures & treatment groups

The participants were fifth grade students enrolled in a suburban public school in the southeast of the United States in 2009. Each fifth grade class was engaging in a service-learning project as part of their environmental science unit. Eligible participants in each class were randomly assigned to one of two treatment groups, although attention was made to have gender parity between treatment groups.

Participants completed a paper form of the pre-survey (Appendix A) during the first meeting with the research team. They completed an identical post-survey after all visits and treatments were complete. Pre- and post-responses on the surveys were matched by a student identification number assigned by the teachers in order to ensure anonymity.

The research team visited the school seven times over a three month period. The first and last visits were dedicated to pre- and post-test administration. The other five hour long bi-weekly visits were explicitly for treatment sessions. Students assigned to Group 1 (dialogue reflection) met in the same small groups during each visit with the same member of the research team. In these meetings, the researcher guided students through a set of five reflection questions using group discussion / dialogue. Dialogue groups progressed through the reflection questions, with the researcher asking follow-up, probing questions. These sessions were held in the students' original classrooms. Sample questions follow.

1. Think about some times when you felt connected to the environment.

2. Think about the last time you sat outside on a lovely sunny day. How does the sun make you feel? How does the sun affect things that happen in nature? What are some specific changes that the sun affects?

3. Think about how different populations interact in a community. Now think about what populations make up your own community. What happens when one part of your community is "sick" or in danger of extinction? What can you do to help?

4. Define symbiosis (mutualism, commensalism, and parasitism). Now, think about how humans interact with our environment. How are these relationships examples of symbiosis?

Students in Group 2 (labyrinth contemplation) were gathered in a separate classroom space by one member of the research team. These participants were provided with an individual laminated, 9 x 12" paper finger labyrinth laid out the shape of Reims labyrinth in France (see Figure 1). This labyrinth model has five stops which were linked to the same five questions used by the dialogue group. During the first gathering, the research representative explained to participants the process of using the handheld labyrinth. These directions included using their non-dominant hand to trace a pathway through the two-dimentional labyrinth, pausing at each stop to read the matching question, taking three deep breaths before and after reading each question, and continuing at their own pace to move through the labyrinth. The lights were dimmed at the beginning of each of the contemplative sessions. Soothing music and deep breathing exercises led by the researcher representative preceded the individual finger tracing. Students were asked not to talk or make noise. They were invited to place their labyrinths on the floor face-down when they were finished. Participants were told that they were welcome to retrace the labyrinth at their own pace and revisit the questions as many times as they wished before exiting the labyrinth.

(Source: http://www.labyreims.com/e-reims.html)
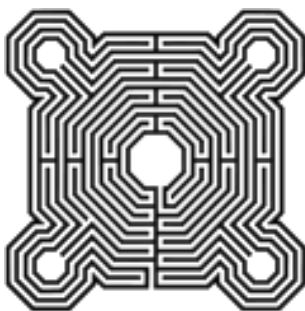
FIGURE 1. Reims labyrinth.

Measure

The Cognitive and Affective Mindfulness Scale - Revised (CAMS-R) (Feldman, Hayes, Kumar, & Greeson, 2003) is a 12-item measure of four areas of mindfulness: attention, orientation to present experience, awareness of experience, and acceptance / non-judgment towards experience. The CAMS-R offers fewer measurement questions than the original CAMS measure, while maintaining accessible language, as well as a comprehensive and broadly applicable approach to mindfulness (Feldman et al., 2003). Items are rated on a 4-point Likert scale from 1 (rarely / not at all) to 4 (almost always). Ratings on the items are summed. Higher scores reflect greater mindfulness. Typical items include, "I am able to pay close attention to one thing for a long period of time," "I am able to accept the thoughts and feelings that I have," and "I

am preoccupied by the past" (reverse scored). Scores on the CAMS-R range from 12 to 48. Authors of the scale report internal consistency alphas ranging from 0.74 to 0.77.

Data Analysis

Descriptive analyses, including measures of central tendency and dispersion, were conducted to determine general information about the pre-test and post-test scores of the measured variables for both treatment groups. A 2 (Time) x 2 (Treatment Group) mixed-model ANOVA was calculated to determine relationships between dependent variable scores and the fixed independent variable of intervention.

Limitations

1. Given that students in the labyrinth contemplation treatment group were asked not to speak to one another during the treatment session, and were not allowed to ask questions of the researcher, it is assumed that students understood each question to a sufficient degree. Although students were asked not to share with one another, the degree to which students might have actually discussed the questions with one another after they were reunited in their respective classrooms remains unknown.

2. Students in the labyrinth contemplation group were gathered from different fifth grade classes. Unlike their dialogue group peers, who stayed in their original classroom settings, Group 2 students were in an unfamiliar environment. However, the treatment setting was another similar classroom at the host school.

3. Each dialogue reflection group had a different researcher leading the reflection discussion. As a result, their participation and understanding might be linked to their comfort with the dialogue leader.

4. While the CAMS-R has been tested with student, community, and clinical groups, the measure has not been validated specifically for a fifth-grade population (Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). Our research team slightly adjusted the CAMS-R to account for reading level; adjustments were made in consultation with the authors of the tool. Further research needs to be conducted to fully understand the relationship between results on the CAMS-R and potential participants' age, context, and education level.

5. Non-Hispanic, White students were over-represented in this study. The generalizability of the study's findings across more diverse populations and other non-White sub-groups are limited for this reason.

6. Additionally, limited demographic information was collected from participants in this study. Further information on participants' socio-economic status, learning abilities, and other identity markers could potentially impact generalizability of the study results as well and requires additional attention.

RESULTS

Descriptives

Each treatment group's mindfulness score increased from the pre- to post-measure (see Table 2). The mean mindfulness of students from the dialogue group increased from 29.87 (SD = 4.39) to 30.11 (SD = 4.34) for an overtime change of 0.24 (SD = 4.82). Labyrinth group students' scores also increased from 29.27 (SD = 4.33) to 29.59 (SD = 4.81) for an overtime change of 0.32 (SD = 3.71). Dialogue group students reported higher mindfulness scores on both the pre- and post-test scores by 0.60 and 0.62 points, respectively.

TABLE 2. Paired samples mindfulness scores by treatment group

Scale	N	%	Pre-Survey		Post-Survey		Paired Differences	
			Mean	SD	Mean	SD	Diff. Mean	SD
Mindfulness	90	100	29.58	4.35	29.86	4.56	0.28	4.29
Dialogue	46	51.1	29.87	4.39	30.11	4.34	0.24	4.82
Labyrinth	44	48.9	29.27	4.33	29.59	4.81	0.32	3.71

Mixed-model ANOVA

A 2 (Time) x 2 (Treatment Group) mixed-model ANOVA revealed a non-significant main effect for Time, $F(1, 88) = .376$, $p = .541$, $\eta_p^2 = .004$. A significant effect of Time x Treatment Group was not obtained, $F(1, 88) = .008$, $p = .931$, $\eta_p^2 = .001$. Main effect between dialogue and labyrinth Treatment Groups was also not significant $F(1, 88) = .456$, $p = .501$, $\eta_p^2 = .005$.

To control for initial group differences on the mindfulness pre-test score, ANCOVA were conducted. Analyses found that the covariate significantly predicts the post-test dependent variable (see Table 3). Therefore, the participants' mindfulness after the intervention is influenced by their mindfulness before starting, $F(1, 87) = 34.92$, $p = .005$, $\eta_p^2 = .29$. The treatment group was not found to influence the participants' mindfulness significantly when controlling for the pre-test scores, $F(1, 87) = .05$, $p = .824$, $\eta_p^2 = .001$. Because the value of the fixed factor treatment group is not significant at the critical alpha .05 level, no further analyses (e.g., parameter estimates) were conducted. In summary, by taking into account the pre-test, we can conclude that the treatment group did not have a significant effect on changes in mindfulness. The effect of a student's level of mindfulness prior to service-learning engagement did have a small effect.

TABLE 3. Multivariate tests results on time and treatment group

Effect	Wilks' Lambda	F	Hypothesis df	Error df	p	η²
Time	.996	.376	1	88	.541	.004
Time * Group	1.00	.008	1	88	.931	.000

Note. *p < .05

TABLE 4. Mixed-model ANOVA on treatment group variable

	Sum of Squares	df	Mean Square	F
Pre-Test				
Between Groups	8.011	1	8.011	.421
Within Groups	1673.945	88	19.022	
Total	1681.956	89		
Post-Test				
Between Groups	6.029	1	60.29	.288
Within Groups	1841.093	88	20.922	
Total	1847.122	89		

Note. *p < .05

TABLE 5. Analysis of covariance summary

Source	Sum of Squares	df	Mean Square	F	η²
Group	.748	1	.748	.050	.001
Pre-Test	527.362	1	527.362	*34.924	.286
Error	1313.731	87	15.100		

Note. *p < .005

DISCUSSION & IMPLICATIONS

This study examined how service-learners' mindfulness was affected overtime after engaging in either reflection or contemplation activities. While both dialogue and contemplative labyrinth treatment groups reported increases in mindfulness as measured by CAMS-R, neither within or between group overtime changes were significant. Contemplative labyrinth tracing does not appear to be better than dialogue reflection at increasing mindfulness in fifth grade service-learners. However, contemplative labyrinth tracing performed as well as traditional dialogue reflection.

At first consideration, readers may dismiss contemplative activities based on this study, at least their potential utility in service-learning. However, a non-significant overtime change may not be unlikely given that participants were not

practiced in these contemplative practices. Education as an institution continues to ignore contemplative practices as viable pedagogical tools because they have been historically connected to all of the world's major contemplative spiritual and philosophical traditions; yet, many of these practices may be introduced in secular form (Duerr, 2004; Kabat-Zinn, 1996). Others have advocated for a more balanced education that includes a simultaneous cultivation of the tangible and intangible aspects of human existence – mind, body, and soul, thereby addressing both the intuitive and analytic side to learning (Slattery, 2006). Proponents explain that the aim is not to replace the rational with the spiritual, but rather to allow each to inform the other. This point carries additional weight when we consider that the contemplative group fared no worse statistically than those learners who engaged in one of the most familiar and practiced reflection techniques.

An additional point to consider is that the infusion of contemplative strategies may add value beyond the parameters of the immediate investigation. Given that contemplation has been linked to a reduction of stress and anxiety, such methods may help to balance and act as a coping tool for young learners burdened by a product-oriented school culture, exemplified by standardized tests and the No Child Left Behind policy. Contemplative practices have successfully been employed in schools to reduce sadness, anger, inertia, stress and anxiety (Brooks, 2007; Khalsa et al., 2012; Mendelson et al., 2010; Napoli, Krech, & Holley, 2005; White, 2012). This point partially rests on the assumption that researchers, practitioners, and policymakers are concerned with the development of young learners' mindfulness. We are cogently aware that in the current culture of accountability that pervades our schools, this assumption may be obtuse. However, research findings across various fields and disciplines of study warrant our consideration if we are, in fact, interested in supporting the holistic, whole-person development of today's students beyond content knowledge and test-taking aptitude. Further, Dewey affirms that "the integration of mind-body in action" is a pressing and practical concern for civilization (Dewey, 2008, pp. 29-30), one that demands social reconstruction as well as individual efforts to achieve better unity in practice.

Regardless of stakeholder buy-in, we cannot discount the developmental stage of the fifth-graders, who may be considered either elementary or middle schoolers depending on their county / district. As pre-adolescents, social interaction for this age group is paramount. Peers become a powerful influence on social behavior which may play a role in the excitement about, level of engagement in, and meaning acquired from group vs. individual pedagogical strategies. In contrast, sensitivity to emotions increases at this period, which may give credence to embracing more introspective methods. Gender roles may play a mediating role as well. Boys tend to become more proactive in whole-group settings, like class discussions. Girls, in contrast, have shown greater aptitude in more individually-directed tasks such as reading. Intellectually, fifth-graders

are increasingly curious. While they want to be independent, supporting contemplative strategies, they continue to seek emotional support from adults. These learners straddle Piaget's concrete and formal operational stages. Those in the latter stage may be better attuned to abstract learning modalities that require significant processing "in their heads" (e.g., labyrinth tracing).

Developing a process-orientation and a keen sense of self and one's thoughts, feelings, and physiology may be dependent on duration and personal development. It may be argued, then, that contemplation deserves further exploration and study as a viable tool in the service-learning classroom. After all, "every method has its limitations, so given the diversity of human needs, problems, aims, contexts, and temperaments, it would be foolish to advocate one method as always superior or always helpful" (Shusterman, 2008, p. 213). Tucker (1999) acknowledged service-learning's eclectic epistemology, which could allow for new approaches and position it to contribute to other ways of knowing (Yankelovich, 2005) – a trend conjectured to radically transform education in the next decade.

RECOMMENDATIONS FOR FUTURE RESEARCH

Given the relative homogeneity of the sample, replication would provide additional sets of data on which to draw more definitive conclusions. While somewhat antithetical to the use of contemplative methods, future research may also consider conducting focus groups with labyrinth group participants. This would provide clarity on how learners are approaching, interacting, and making meaning from the novel contemplative activities.

Future research should compare the use of labyrinth tracing with other individual reflection activities (e.g., journal) that may present a less immediate and more internalized process of reflection. These investigations should also extend across age levels, with purposeful consideration to the development of intellectual and emotional maturity of the participants.

Lastly, other measures associated with service-learning should be included. For example, civic responsibility and content knowledge are central to the service and learning goals respectively. In addition, self-efficacy and other psychological constructs have been linked to effective service-learning and thus may warrant direct attention on how reflection or contemplation activities mediate these outcomes.

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APPENDIX 1. Cognitive and affective mindfulness scale - Revised (CAMS-R) (Feldman, Hayes, Kumar, & Greeson, 2003)

Directions: People have a variety of ways of relating to their thoughts and feelings. For each of the items below, circle ONE answer that best describes that statement for you. There are no correct answers. Please answer honestly.

1. It is easy for me to concentrate on what I am doing.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

2. I often worry about the future.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

3. I can deal with painful feelings.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

4. If something cannot be changed, I tell myself it is OK just the way it is.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

5. I can usually describe how I feel at the moment in a lot of detail.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

6. I am easily distracted.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

7. I think about things in the past over and over again.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

8. It's easy for me to keep track of my thoughts and feelings.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

9. I try to notice my thoughts without judging them as bad or wrong.
   Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

10. I am comfortable with the thoughts and feelings I have.
    Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

11. I am able to focus on the present moment.
    Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

12. I am able to pay close attention to one thing for a long period of time.
    Rarely/Not at all   *Sometimes*   *Often*   *Almost Always*

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