

Social Justice Reasoning of Education Undergraduates: Effect of Instruction in Moral Development Theory and Dilemma Discussion in the Asynchronous Online Classroom

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This study used a quasi-experimental design to examine whether exposure to moral development theory and dilemma discussion in the asynchronous online learning environment resulted in significant gains in principled moral reasoning (DIT N2-scores) of undergraduate elementary and secondary education students. Participants were undergraduate students ($N = 106$) enrolled in 4 sections of an online education course at a Western Land Grant university. Results show significant increases in mean DIT N2-scores ($p < .01$) between overall subject pre and post test scores. Results provide evidence that education undergraduates show significant gains in moral reasoning when exposed to moral development theory and dilemma discussion in the asynchronous online learning environment.

Keywords: online learning, moral reasoning, asynchronous learning, online discussion, social justice reasoning, teacher training.

INTRODUCTION

The very nature of teaching requires a great deal of moral decision making that directly impacts and influences the children parents entrust educators to teach (Chang, 1994). On a daily basis teachers are expected to make judgments concerning issues such as student discipline, academic performance, allocation of resources, management of educational programs and communication/collaboration with students, parents and other educational professionals (Strike, 1990; Strike & Soltis, 1992). Teaching requires thoughtful reflection when making decisions concerning these issues, as well as making sound moral judgments

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in determining appropriate courses of action for resolving conflicts that arise in every day teaching situations (Rest, Thoma, & Edwards, 1997).

Given this responsibility, it is imperative that teachers demonstrate highly developed insight and awareness on moral issues in order to define and make sound moral decisions that consider the perspectives of the diverse racial, ethnic, social, and cultural backgrounds of each student they teach (Beyer, 1997; Chang, 1994; Cummings et al., 2001).

The present research examined moral reasoning using Kohlberg's theory on moral development and social justice reasoning as it applies to the teaching profession. The study examined the effectiveness of interventions designed to increase moral reasoning among undergraduate students and pre-service teachers in the asynchronous online learning environment. Although research examined in the literature review shows evidence of increased moral reasoning with interventions in the traditional face-to-face learning environment using direct instruction, little research has been conducted examining if similar interventions in the asynchronous online learning environment produce the same result (Cummings et al., 2001, 2003; Cummings, Harlow, & Maddux, 2007; Cummings, Maddux, Cladianos, & Richmond, 2010; Cummings, Maddux, & Richmond, 2006). Given the gap in research, the present study examines the following research question:

Are there differences in mean pretest / posttest moral reasoning scores (DIT N2-scores) in the combined and individual elementary, secondary, and non-education groups before and after instruction in moral development reasoning and moral dilemma discussion?

LITERATURE REVIEW

MORAL REASONING

One of the most widely used theories for examining adult moral reasoning is Kohlberg's theory of moral development (Cummings et al., 2007; Rest et al., 1997). Kohlberg viewed morality as a social construction, evolving over time from societal experiences, institutional arrangements, deliberations, and aspirations that support the tenants of cooperation in an increasingly complex, diverse, interconnected community of human beings (Rest, Thoma, Narvaez, & Bebeau, 2000). Furthermore, Kohlberg's approach to viewing moral decision making is based on social cooperation as a primary tenant of society, which includes ideals that encompass laws, norms and moral standards that are reciprocal, uniformly applied to the larger community and subject to consensual interpretation through open democratic processes (Kohlberg, 1976, 1981, 1984).

Kohlberg's theory encompasses three levels of moral reasoning; the Pre-conventional, the Conventional and Post-conventional (or principled) level. Each level includes six stages that evolve sequentially with advancement depending on the individual's increasing ability to take the perspective of others (Colby & Kohlberg, 1987). While the Pre-Conventional level is common in pre-adolescence, Kohlberg's Conventional level and Post-conventional level are characteristic of adult moral reasoning within society. The primary differences between the Conventional and Post-conventional levels are, with Conventional reasoning, law and authority are imperative to uphold social order of society; whereas Post-conventional reasoning stipulates the absolute authority of law can be challenged if laws or societal beliefs are found to be unjust regardless of majority consensus. While the Conventional level attempts to establish moral consensus by appealing to established practice and existing authority, the Post-Conventional level attempts to gain consensus by appealing to ideals that consider human rights and other moral principles. Given this, the Post-Conventional level is considered developmentally

advanced and is representative of the impetus for societal change, such as the Civil Rights movement, that challenges law or social order to ensure human rights for all to the greater benefit of society (Rest et al., 1999a, 2000; Thoma, 2002, 2006).

NEO-KOHLBERGIAN APPROACH TO MORAL REASONING

Followers of Kohlberg's theory, particularly the moral psychologist James Rest (1979), revised Kohlberg's theory after nearly 30 years of research. Known as the Neo-Kohlbergian approach to moral reasoning Rest adapted Kohlberg's theory into an approach known as Schema Theory (Rest, Narvaez, Bebeau, & Thoma, 1999; Thoma, 2014). The Neo-Kohlbergian approach, like Kohlberg, focuses on a cognitive-developmental approach to moral reasoning where developmental change in moral thinking occurs in sequential stages or schemas. Additionally, like Kohlberg's theory, the Neo-Kohlbergian approach focuses on macromorality (societal justice concepts such as fairness for all concerned and human rights) over micromorality (the interpersonal aspects of relationships such as loyalty in relationships) (Rest et al., 2000; Thoma, 2014).

Schema theory integrates Kohlberg's stages into three distinct moral schemas that are developmentally ordered with an underlying structure of moral judgment consisting of the following: the Personal Interest Schema, Maintaining Norms Schema and the Postconventional Schema (Rest et al., 1999; Thoma, 2014). A description of each schema is as follows.

Personal Interest Schema. The personal interest schema stresses the perspective of an individual when experiencing situations of moral conflict with an emphasis on personal gain or loss, without necessarily considering the impact on greater society as a whole. The focus of this schema is micro-moral in nature and is most closely linked with close relationships and individual interest found within Kohlberg's Pre-conventional level of moral reasoning (Rest et al., 1999a; Thoma, 2014).

Maintaining Norms Schema. The Maintaining Norms schema is representative of a society-wide moral perspective in terms of how cooperation can be organized on a society-wide basis. The Maintaining Norms schema supports the view that without law there would be no order; people would act on their own special interests with the result a chaotic and lawless society. The maintaining norms schema is typical of most adult moral thinking in an ordered society and is most typical of Kohlberg's Conventional level's Law and Order perspective (Rest et al., 1999a; Thoma, 2014).

Post-conventional Schema. The Post-conventional schema holds all moral obligations are based on criteria that emphasize shared ideals, are fully reciprocal, and are open to scrutiny (i.e., subject to tests of logical consistency, experience of the community, and coherence with accepted practice). There is a strong focus on organizing a society via consensus-building processes, insistence on due process, and safeguarding basic rights that are inclusive of all members of society (Bebeau & Thoma, 2003). The post-conventional schema is typical of advanced moral reasoning of educated adults within society and combines Kohlberg's Post-conventional level of social-contract orientation and principles of universal ethics (Rest et al., 1999; Thoma, 2014).

MEASURING MORAL REASONING

Research on moral development has commonly used the Defining Issues Test as a standard for measuring moral reasoning in adults (Rest et al., 1999; Rest & Narvaez, 2014;

Thoma & Dong, 2014). The DIT is a measure of moral judgment developed by James Rest (1979) that measures how individuals structure their understanding of moral dilemmas in terms of social justice reasoning. Rest, Narvaez, Bebeau & Thoma (1999) cite over 400 published articles and research over the past several decades that provide empirical support that validates the DIT as an effective measure of subjects' level of moral reasoning. A well-developed set of validity criteria has been established as part of the development of the DIT which includes seven criteria for defining the construct validity of the DIT. These criteria include: (a) differentiation of age and education groups, (b) longitudinal gains in DIT scores show upward gains over time, (c) correlation with moral comprehension and cognitive capacity measures, (d) sensitivity to moral education interventions, (e) correlation with pro-social behavior and professional decision making, (f) predictive of political attitudes and choices, and (g) well validated internal structure and reliability (Rest et al., 1999; Thoma & Dong, 2014).

Studies using the DIT have provided evidence that higher moral reasoning scores indicate more advancement in Post-conventional moral reasoning and are directly associated with higher comprehension of moral concepts and cognitive capacity measures in the recall and reconstruction of moral arguments (Rest, Thoma, Narvaez, & Bebeau, 1999; Thoma, 2002, 2006; Thoma & Dong, 2014). Additionally, research specifically on moral education interventions have used the DIT as a pretest/posttest analysis to gauge the effectiveness of interventions designed to promote the advancement of moral reasoning among subjects. These educational interventions show significant upward change in moral reasoning scores overtime with higher gains in moral judgment resulting from programs that emphasize moral development and dilemma discussion (Bebau & Thoma, 1999; Naravaez, 1998; Rest et al., 1999; Rest & Narvaez, 2014).

Additionally interventions using DIT as a measure of moral reasoning have shown significant correlations with ethical decision making across multiple professions. These correlations include job performance and professional integrity among teachers, nurses, dentists and accountants where higher moral reasoning scores are indicative of Post-conventional moral thinking and decision making among these professions (Chang, 1994; Duckett & Ryden, 1994). Research using the DIT to gauge the moral reasoning of teachers specifically has shown most teachers function primarily at the Conventional level of moral reasoning and only 30% to 50% of teachers are able to function at the Postconventional or principled level (Chang, 1994; Cummings et al., 2007).

INTERVENTIONS DESIGNED TO INCREASE MORAL REASONING AMONG TEACHERS

Chang (1994) references multiple empirical research findings that indicate undergraduate students majoring in education show little or no increase in moral reasoning as they progress from their freshman to senior year in college. These minimal gains in moral reasoning are common among skill and method-based training programs that not only include teachers, but other vocational disciplines such as accounting, business, engineering, and nursing (Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008).

Given this line of reasoning, traditional teacher training programs have been criticized for the failure to more fully integrate instruction in ethics with a focus on moral reasoning and critical reflection that are necessary to prepare teachers to make moral judgments in the everyday classroom (Chang, 1994; Cummings et al., 2001, 2003, 2007, 2010). As with other vocational disciplines, teacher training programs traditionally focus on technical competence, such as classroom management and student achievement, and do not typically integrate discussion of ethical issues related to moral significance of teachers' actions (Beyer, 1997; Chang, 1994; McNeel, 1994). Thus, it is important to provide teacher

education students with a rich and stimulating curriculum that provokes thinking critically about and reflecting on their role as moral agents (Cummings et al., 2007). Since most teacher education programs focus on skill-based methodologies for classroom instruction, the addition of course work that integrates more abstract content that requires critical thinking skills and self-reflection on moral issues are required to advance educators into the high moral domains critical to the teaching profession (Beyer, 1997; Chang, 1994; Cummings et al., 2007, 2010; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008).

Research specifically on the moral development of teachers has shown that elementary and secondary pre-service teachers can show significant gains in principled moral reasoning through interventions using direct instruction and discussion on moral development theory in the traditional face-to-face instructional environment (Cummings et al., 2007, 2010). This emphasis on moral development and dilemma discussion has been shown to be critical component of educational interventions that result in significant gains in moral reasoning overtime (Rest et al., 1999; Rest, Thoma et al., 1999; Thoma, 2002, 2006). Additionally, given teacher student interaction and classroom discussion are critical components of the learning process, it is important that these aspects of discussion and interaction be present in all methods of instruction (Bailey & Card, 2009; Baglione & Nastanski, 2007; Rabe-Hemp, Woollen, & Humiston, 2009; Schwitzer & Lovell, 1999).

RATIONALE FOR INTERVENTIONS USING ASYNCHRONOUS ONLINE LEARNING

While interventions using direct instruction of moral development theory and dilemma discussion/reflection in the face-to-face classroom have shown significant advancement in moral reasoning of both undergraduate and graduate education students (Cummings et al., 2004, 2006, 2010; McNeel, 1994), the progression of more and more college courses being taught online warrants investigation as to whether these same results can be achieved in the asynchronous online environment. This requires a discussion of the comparative effectiveness of online learning to traditional face-to-face discussion in terms of academic outcomes, methods of instruction, design of instruction and effectiveness of student/instructor interaction and discussion. The following is a discussion of the relevant aspects of the similarities and differences of online verses traditional forms of instruction.

THE ADVENT OF ONLINE LEARNING

The advent of internet technology over the past several decades has significantly influenced the methods of delivering instruction to students across all education levels. The number of students taking at least one online course encompasses 6.7 million nationwide with 86.5% of public institutions offering at least one online course (Allen & Seaman, 2013). Although the goals and outcomes of education have not changed, distance learning represents a fundamental change in the way instruction is delivered to students (Allen, Mabry, Mattery, Bourhis, Titsworth, & Burrell, 2004; Neuhauser, 2002). Given this, the critical question with online education has been: Does the online learning environment change the instructional outcomes when compared to traditional direct instruction?

ACADEMIC OUTCOMES

The history of non-significant differences in learning results between traditional and online instruction is well documented with the general research based consensus being; there are no significant differences in learning outcomes between online and traditional learning. This includes no significant differences in achievement or mastery of course

content between online and face-to-face instruction across a broad spectrum of learning outcomes including test scores, assignments, projects, final grades, and general education skills such as writing and critical thinking (Bernard et al., 2004; Cavanaugh, 2001; Neuhauser, 2002; Tallent-Runnels et al., 2006; Thirunarayanan & Perez-Prado, 2002; Rabe-Hemp, Woollen & Humiston, 2009).

Furthermore no significant differences have been found in academic student performance between synchronous and asynchronous online course designs (Allen et al., 2004) and equivalent learning activities are equally effective for both online and face-to-face learners (Neuhauser, 2002). These findings indicate online instruction is at least as effective as traditional instruction in terms of learning outcomes and achievement /mastery of course content (Bata-Jones & Avery, 2004; Caywood & Duckett, 2003; Christopher, Thomas, & Tallent-Runnels., 2004; Neuhauser, 2002; Peterson & Bond, 2004; Rabe-Hemp et al., 2009; Smith, Smith, & Boone, 2000; Tallent-Runnels et al., 2006).

METHODS OF INSTRUCTION IN ONLINE VS. TRADITIONAL

Although evidence suggests no differences in learning outcomes between traditional and online instruction, there are wide variations of teaching strategies and styles between both traditional and online learning environments, particularly between traditional and asynchronous online courses. In traditional classrooms students learn directly from the lectures and face-to-face interaction with the instructor (Bata-Jones & Avery, 2004). In the online environment the traditional components of face-to-face instruction are changed, particularly in the context of teacher-student relationships from the synchronous physical environment to the more typically asynchronous environment of the online classroom (Allen et al., 2004; Polat, Mancilla, & Mahalingappa, 2013). In the asynchronous online environments many of the effective strategies of the traditional classroom, such as linear and direct instruction, do not transfer well into the asynchronous environment (Bernard et al., 2004). Yet the asynchronous online environment does offer an advantage with non-linear instruction where students access course materials and information independently, thus giving the online learner greater control over the organization of their learning (Tallent-Runnels et al., 2006).

INTERACTION WITH ONLINE LEARNING

One of the major criticisms of online learning argues that the interaction between instructor and student is inferior to the traditional classroom environment, making teacher-student engagement more difficult. This criticism focuses primarily on the asynchronous nature of the online classroom where students often do not directly communicate face-to-face with the instructor. Additional criticisms focus on the delayed or non-synchronous nature of online discussions (Allen et al., 2002, 2004; Allen & Seaman, 2013; Karatas & Simsek, 2009; Rabe-Hemp et al., 2009; Tiene, 2000).

Yet research has shown that interaction in the online asynchronous environment can have some advantages over the traditional face-to-face classroom. Multiple studies comparing online versus traditional learning found asynchronous discussions facilitated in-depth communication that has been shown to produce high quality student reflections equal to or greater than discussions in the traditional classroom (Bailey & Card, 2009; Baglione & Nastanski, 2007; Karatas & Simsek, 2009, Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009; Tiene, 2000). These online discussions, including student post and response and instructor feedback, have also been shown to develop essential analytical and critical thinking skills key to the advancement of student learning (Bailey & Card, 2009; Baglione

& Nastanski, 2007; Bober & Dennen, 2001; Cain & Smith, 2009; Garrison, Anderson, & Archer, 2001; Im & Lee, 2003).

Reasoning behind these findings indicate students in online courses have more time to develop, compose, revise and articulate their thoughts to produce well-reasoned responses (Bailey & Card, 2009; Baglione & Nastanski, 2007; Cain & Smith, 2009; Davidson-Shivers, Muilenburg, & Tanner, 2001; Killian & Willhite, 2003; Tallent-Runnels et al., 2006). Additionally these students are more reflective in their learning, spend more time working independently, and are more involved in class discussions (Rabe-Hemp et al., 2009).

QUALITY ONLINE DISCUSSIONS

Given the fact that a critical component of all classroom instruction is a high degree of interactivity and student participation, it is important for instructors of online courses to establish and develop quality online discussions that promote intentional opportunities for student interaction (Keefe, 2003; Rabe-Hemp et al., 2009). Baglione and Nastanski (2007) found instructors who provided guided questions to help students focus and develop reasoned responses in online discussions resulted in greater student interaction. Effective strategies include specifying the number of posts required by students, number of student to student interactions, and the depth and substance of what students post. The instructor must also have the time to assess student contributions to reflectively evaluate and provide feedback to students (Tallent-Runnels et al., 2006). When these principles are applied, the effective interaction between students and instructors in the online environment produces depth of interaction that often exceeds that of the traditional classroom (Bailey & Card, 2009; Rabe-Hemp et al., 2009).

CRITICAL DESIGN OF ONLINE INSTRUCTION

A key factor of both online and traditional learning environments is learner engagement and interaction as learning outcomes are improved when students are fully engaged and involved in the educational experience (Bernard et. al., 2004; Schwitzer & Lovell, 1999). Given this, it is critical that instructors in online courses provide a quality of instructional design that promotes effective student knowledge construction and interaction. Consequently online instructors need design their courses in accordance with sound educational theories and strive to promote both teacher-student and student-student interaction to help learners construct knowledge (Tallent-Runnels et al., 2006).

Additionally it is important for online instructors to provide guided questions to help students in think critically when communicating in the written formats typical of asynchronous learning as well as develop learning materials and tasks that engage the learner in ways that promote meaningfulness, understanding, and transfer of knowledge (Green & Land, 2000). Clarity in teacher-student communication, expressiveness, and effective feedback are also critical components that ensure learner engagement and interactivity (Bernard et al, 2004). Following these guidelines and techniques, asynchronous environments have been shown to more effectively provide interpersonal interaction as well as increasing students' ability to expand, formalize and refine their reasoning (Bates, 1997; Green & Land, 2000).

DEVELOPMENT OF MORAL REASONING IN THE ONLINE ENVIRONMENT

Given that the critical components of interventions designed to advance moral reasoning include teaching self-reflection, stimulating growth in cognitive processes, and

instruction in moral/ethical issues and moral problem solving (Rest & Narvaez, 2014; Rest, Narvaez, Bebeau, & Thoma, 2000), the asynchronous learning environment has been shown to promote these process through instruction/discussion that promote essential analytical and critical thinking skills as well as facilitating in-depth high quality student reflections equal to or greater than discussions in the traditional classroom (Bailey & Card, 2009; Baglione & Nastanski, 2007; Cain & Smith, 2009; Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009). Furthermore instructor-student interactions in the online environment, as well as student to student interactions, have been shown to increase students' ability to expand, formalize and refine their reasoning, promote in-depth understanding of learning and content among online students (Bailey & Card, 2009; Baglione & Nastanski, 2007; Blignaut & Trollip, 2003; Green & Land, 2000; Tallent-Runnels et al., 2006).

The success of asynchronous online instruction, although different in methodology and learning environment than traditional courses, has been shown to be just as effective in achievement and mastery of course content (Nora & Synder, 2009). The skills sets of online students such as increased autonomy, decreased inhibition, and more self-directed learning have been shown to be equally effective at developing the critical thinking skills of reflection, analysis, and purposeful discussion. These skills are applied primarily through the use of written forms of expression to develop ideas, arguing contrasting view points and refining effective communication skills (Lou, 2004).

This rationale provides a strong argument for examining the effectiveness of interventions using instruction in moral development theory and dilemma discussion in advancing the moral reasoning of pre-service teachers in the online asynchronous environment. While pre-service teachers have demonstrated gains in moral reasoning in the traditional classroom, as exemplified in the Cummings et al., (2010) study, the evidence provided in this literature review provides compelling evidence for the hypothesis that students exposed to moral development theory and dilemma discussion in the asynchronous online learning environment will result in significant gains in principled moral reasoning (DIT N2-scores) of both elementary and secondary pre-service teachers.

METHOD

PARTICIPANTS

Participants in this study were 106 undergraduate students enrolled in four online sections of an educational psychology course. Participation was voluntary and no compensation, extra credit or other academic points were offered. All research procedures were approved by the university's IRB board for protection of human subjects. The undergraduate students included: elementary education majors ($n = 32$), secondary education majors ($n = 44$), and non-education majors ($n = 30$). The population consisted of 16 freshmen, 31 sophomores, 35 juniors and 24 seniors. A total of 69 females and 37 males participated in the study. The median age of the student population was 22 and ranged from 18 – 45 years of age. The educational psychology course is required for all education undergraduates and is offered as an elective for non-education majors. Although the courses have either an elementary or secondary designation, all course materials and instructional methods are identical across all sections.

INSTRUMENTS

The subjects completed an online pretest and posttest using the Defining Issues Test (DIT2). The DIT2, as described in Bebeau and Thoma (2003), is a measure of moral reasoning derived from Kohlberg's model of moral development theory and includes five

hypothetical moral dilemmas, each followed by 12 issues that subjects consider when making an action decision about each dilemma. The five dilemmas that make up the DIT2 include: (1) a father struggles with a decision to steal food to save his starving family; (2) a reporter struggles with a decision to report a potentially damaging story that may ruin the career of a politician; (3) the head of a school board chair struggles with a decision to hold a controversial, potentially combative public meeting; (4) a doctor struggles with a decision to provide a prescription drug to end the life of a terminally ill patient; (5) a college administrator struggles with a decision to allow students to demonstrate on campus against U.S. foreign policy.

Subjects are asked to make a decision with each dilemma and what information they would consider the most important in supporting their decision. These responses are scored to find which moral schema students follow in making moral decisions. Subject levels of moral reasoning fall across the three levels of moral schema listed below.

Personal interests schema: considers what is in the best interest of the individual and like-minded others

Maintaining norms schema: considers what is in the best interest of maintaining social order and the laws of society

Post-conventional schema: considers what is in the best interest of guaranteeing civil and human rights within society

The DIT 2 provides multiple calculated scores that can be used for analysis. For the purpose of this study N2-scores (level of functioning in the post-conventional schema) were used to measure gains in moral reasoning. The N2 score, as described by the Center of for the Study of Ethical Development (2003), represents the degree to which post conventional items are prioritized plus the degree to which personal interest items receive lower ratings than the post-conventional items in relation to the Neo-Kohlbergain schema theory (Bebeau and Thoma, 2003). Additionally the N2 score is sensitive to the effectiveness of educational interventions designed to increase moral reasoning among subjects (Rest, Thoma, Narvaez, & Bebeau, 1997).

PROCEDURES AND DATA ANALYSIS

The study was quasi-experimental and used a pretest/posttest design to examine differences in mean DIT N2-scores over time to measure gains in Post-conventional moral reasoning among subjects. The study was conducted over a 5 week period in which subjects received an intervention as part of the normal course content designed to advance moral reasoning which includes instruction on moral development theory and an online dilemma discussion via post and respond asynchronous discussion board. The intervention included an online written lecture on Kohlberg's theories of moral development which included student written summary/reflections on the lecture content. The lecture included methodology, levels and stages of moral reasoning, perspective taking, moral reasoning vs. moral action, and Kohlberg's use of moral dilemmas. All students received feedback from the instructor on their lecture reflections.

The online dilemma discussion used the "Heinz" dilemma (a man struggles with a decision whether to steal or not to steal a drug that could potentially save the life of his wife) in which students are prompted to answer a series of guided questions via discussion board. The questions encompassed the following:

1. Should Heinz steal the drug? Why or why not?

2. Does Heinz have a duty or obligation to steal the drug? Why or why not?
3. If Heinz doesn't love his wife, should he steal the drug for her? Why or why not?
4. Suppose the person dying is not his wife, but a stranger. Should Heinz steal the drug for a stranger? Why or why not?

The dilemma discussion required student response interactions with the primary purpose being to increase the cognitive disequilibrium necessary to advance moral reasoning growth (McNeel, 1994; Rest et al., 1997, 1999b; Thoma, 2002, 2006). Students posted original responses and responded to at least 3 other student postings in the discussion board. They were encouraged post and respond with students as to whether they "agreed" or "disagreed" with another student's rationale for stealing or not stealing the drug and why. The purpose was to have students think more critically about their initial responses and expand on their reasoning by taking and considering multiple perspectives.

Following the initial discussion and lecture on moral reasoning, students participated in a second discussion as an opportunity to reflect upon their initial discussion responses, self-identify their perceived level of moral reasoning based on Kohlberg's stages, indicate whether they perceived their level of moral reasoning increased (or stayed the same) after the intervention and discussion, and finally how they might approach moral situations in the future. The discussion questions were as follows:

1. Based on your discussion and reflection on the theories of moral reasoning, what level of moral reasoning do you perceive yourself to be at and why?
2. Looking at your original posting on the Heinz Dilemma (part 1 discussion) how would you change or add to your original response?
3. Do you feel you've advanced in moral reasoning after these discussions or stayed the same?
4. Considering your response to question 3, how would you approach moral situations in the future?

The DIT 2 was administered online following the testing protocol provided by the Center for Ethical Development at the University of Alabama. The pre-test administration of the DIT 2 occurred during the 5th week of the semester, two weeks prior to student participation in the lecture on Moral Development theory and the online dilemma discussion. The posttest version of the DIT 2 was administered immediately after students completed the reflection summaries of the Kohlberg lectures and dilemma discussion responses (approximately week 9).

RESULTS

EFFECT OF MORAL INTERVENTION ON DIT N2 SCORES

Table 1 shows the descriptive statistics for DIT pretest and posttest N2 scores. A 2 x 3 mixed ANOVA (time by group) with repeated measures was used to analyze the pretest and posttest differences in DIT N2 scores for each sub-group. All assumptions of the ANOVA were met. The main effect for time was significant: $F_{(1,103)} = 32.24, p < .001$, partial $\eta^2 = .238$. Interaction and main effect for group were not significant; time by group: $F_{(2,101)} = .770, p = .466$, partial $\eta^2 = .015$, group: $F_{(2,101)} = .043, p = .958$, partial $\eta^2 = .001$. Figure 1 shows a graph of interaction.

Table 1. Means and Standard Deviation for Pretest and Posttest DIT N2-scores for Experimental and Control Groups

Group	M (pre)	SD	M (post)	SD
Overall ($N=106$)	29.93	13.86	37.03	16.95
Secondary ($n=44$)	28.94	13.60	37.76	16.33
Elementary ($n=32$)	30.97	15.02	37.17	17.67
Non-education ($n=30$)	29.93	13.33	35.81	17.57

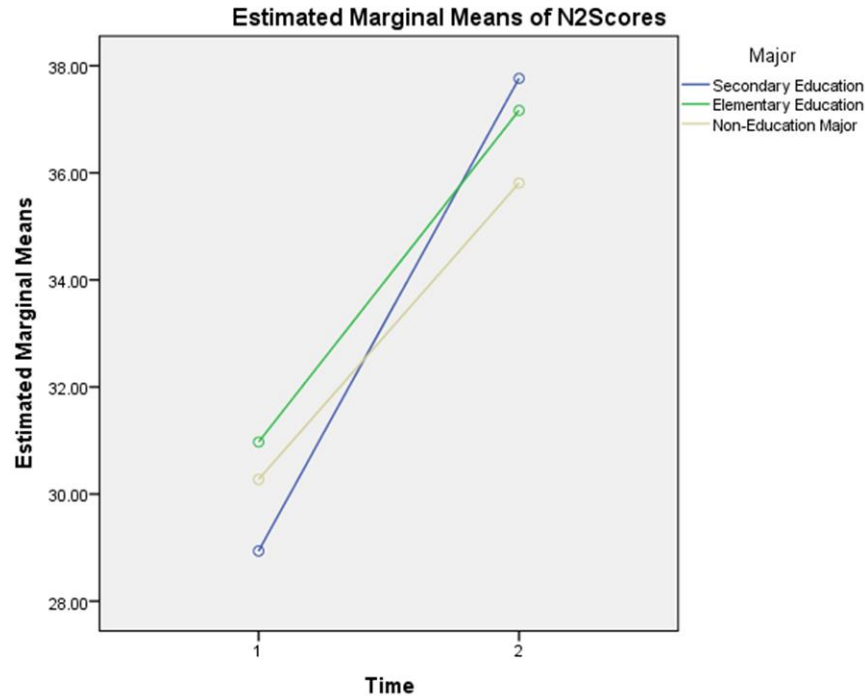


Figure 1. Effect of moral intervention on DIT N2 scores: Interaction time by group.

SIMPLE EFFECTS ANALYSIS

The main effect for time shows significant increases in moral reasoning N2 scores of overall participants regardless of major, indicating the intervention in moral development instruction and dilemma discussion was effective in increasing the post-conventional moral reasoning of elementary, secondary, and non-education majors. No significant differences were found in the mean pretest and posttest N2 scores between groups, indicating all 3 groups showed gains in moral reasoning (as indicated in figure 1) with no group significantly outperforming the others.

Paired samples t-tests with Bonferroni corrections were used for the simple effects analysis for pretest / posttest differences for the secondary, elementary and non-education intervention groups. Significant increases in mean DIT N2 scores for the secondary intervention group, pretest / posttest: $M = 29.94$, $SD = 13.60$; $M = 37.76$, $SD = 16.33$; $t_{(43)} = 4.28$; $p < .01$; $d = 0.52$, the elementary intervention group, pretest / posttest: $M = 30.97$, $SD = 15.02$; $M = 37.17$, $SD = 17.67$; $t_{(32)} = 3.26$; $p < .01$; $d = 0.39$ and for the non-education intervention group, pretest / posttest: $M = 30.27$, $SD = 13.33$; $M = 35.81$, $SD = 17.57$; $t_{(29)} = 2.64$; $p < .05$; $d = 0.36$.

Results indicate the instruction in moral development theory and dilemma discussion in the online asynchronous learning environment was effective at advancing the moral reasoning of undergraduate education and non-education students. Each group showed significant gains in pretest / posttest moral reasoning at the post-conventional level; secondary education students ($p < .01$) with a medium effect size ($d = 0.52$), elementary education students ($p < .01$) with a small to medium effect size ($d = 0.39$), and non-education majors ($p < .05$ with a small to medium effect size ($d = 0.36$).

DISCUSSION

The present study supports research that emphasizes the necessity of undergraduate teacher education programs to be inclusive of well-developed educational interventions that promote critical thinking about issues of social justice and moral reflection (Chang, 1994, Cummings et al. 2001, 2007, 2010). Such interventions are important as research indicates teachers who function at the post-conventional level of moral reasoning are better able to motivate student learning and social development, are more aware of their own moral and ethical responsibilities as educators, and understand more thoroughly the moral dimensions of teaching (Chang, 1994; Cummings et al., 2007, 2010).

Additionally the results support guided questioning and the establishment of intentional opportunities for student interaction as critical components of online moral reasoning discussions that increase the cognitive disequilibrium necessary to advance moral reasoning among subjects (Keefe, 2003; Rabe-Hemp et al., 2009; McNeel, 1994; Rest et al., 1997, 1999b; Thoma, 2002, 2006). This is supported through research on interventions designed to increase moral reasoning which include teaching self-reflection, stimulating growth in cognitive processes, and instruction in moral/ethical issues (Rest & Narvaez, 2014; Rest, Narvaez, Bebeau, & Thoma, 2000).

Furthermore, the results of the present study support following effective principles of instructional design in the development of moral reasoning interventions that assist in the development reasoned responses that produce the depth of interaction similar to instruction in traditional classroom environment (Baglione & Nastanski, 2007, Bailey & Card, 2009; Cain & Smith, 2009; Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009).

The present study also supports findings that the asynchronous learning environment promotes these process through instruction/discussion that promote essential analytical and critical thinking skills as well as facilitating in-depth high quality student reflections equal to or greater than discussions in the traditional classroom (Bailey & Card, 2009; Baglione & Nastanski, 2007; Cain & Smith, 2009; Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009). These online discussions, including student post and response, have also been shown to develop essential analytical and critical thinking skills key to the advancement of moral reasoning among subjects similar to results found in with face-to-face instruction (Cummings et al., 2001, 2003, 2007, 2010; Bailey & Card, 2009; Baglione & Nastanski, 2007; Bober & Dennen, 2001; Cain & Smith, 2009; Garrison, Anderson, & Archer, 2001; Rest et al., 1999; Thoma, 2006).

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