Moral Reasoning of Pre-Service Teachers: The Effects of Instruction in Moral Development Theory and Instructor Moderated Dilemma Discussion in the Asynchronous Online Classroom.

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Abstract

This study used a quasi-experimental design to examine the effectiveness of interventions designed to increase moral reasoning among pre-service teachers in the asynchronous online learning environment. The study specifically examined whether exposure to moral development theory and dilemma discussion in the asynchronous online learning environment resulted in significant gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers. Additionally this study examined if instructor to student moderated dilemma discussion resulted in higher gains in principled moral reasoning (DIT P-scores) over student to student discussion alone.

Participants were undergraduate elementary and secondary education students (N = 76) enrolled in 4 sections of an online education course at a Western Land Grant university. Results of a 2 x 2 mixed ANOVA (time by group) with repeated measures show significant increases in mean DIT P-scores (p < .05) between overall subject pre and post test scores, while no significant differences were found for subjects participating in instructor moderated dilemma discussion or those who participated in student-student dilemma discussion alone. Results provide evidence that education undergraduates show significant gains in moral reasoning (DIT P-scores) when exposed to moral development theory and dilemma discussion (regardless of teacher participation or student-student discussion alone) in the asynchronous online learning environment.
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Dedication

To all who struggle to overcome abject poverty to rise above their circumstances through hard work and dedication to reach their life long goals through the pursuit of knowledge.
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Chapter I 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 academic performance and assessment, decisions regarding student discipline and application of consequences, allocation of resources (primarily time spent teaching and providing student support), management of educational programs such as planning and curriculum development as well as communication/collaboration with parents and educational professionals on student performance and other educational issues (Strike, 1990; Strike & Soltis, 1992). Thus, moral reasoning from the perspective of social justice among educators is an important aspect of the teaching profession and it is essential that teachers take responsibility for their roles as moral agents and reason about social issues with a strong respect for student rights as part of a democratic classroom environment. Additionally, it is imperative that teachers demonstrate highly developed insight and awareness on social justice issues in order to define and make sound moral judgments that consider the perspectives of the diverse racial, ethnic, social, and cultural backgrounds of each student they teach (Cummings, Dyasm, Maddux, & Kochman, 2001; Cummings, Wiest, Lamitina, & Maddux, 2003; Beyer, 1997; Chang, 1994).

The present research examined moral reasoning using Kohlberg’s theory on moral development and perspective of social justice as it applies to the teaching profession. The importance of advanced moral reasoning among teachers was also examined as well as issues with teacher training programs and current research on effective interventions designed to improve moral reasoning. This study examined the effectiveness of
interventions designed to increase moral reasoning among 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).

The following is a brief overview of the research topics relevant to this study. A more in depth discussion of these topics can be found in the literature review of this document.

**Moral Reasoning**

Moral reasoning is defined as the development of a system of fundamental conventions about standards and principles that govern moral decisions as viewed from both micromoral and macromoral perspectives (Kurtines & Jacobs, 1995). Micromorality focuses on interpersonal aspects of face-to-face, day-to-day relationships where the primary influencing factors are family, friends, and a community of like-minded peers. Individuals functioning within the micromoral perspective analyze moral situations typically from a personal gain/loss viewpoint and justify a decision as morally right by appealing to the personal stake the individual has as a consequences of action. Although these relationships are dynamic, they typically do not include a socio-centric perspective and thinking from a societal cooperation standpoint, thus do not function from organizing cooperation stance on a society-wide basis (Rest & Narvaez, 2014; Rest, Narvaez,
Macromorality, on the other hand, focuses on moral thinking as it applies to society-wide social structures in terms of understanding the moral basis of laws, governing structures and general practices of society as a whole in terms of social justice and how to organize cooperation on a society wide basis. At the macromoral level, impartiality is favored over partisanship and viewing moral issues from multiple perspectives is preferred over more limited individual viewpoints typical of the micromoral level. Although moral reasoning functions at both the micromoral and macromoral levels, both of which are concerned with establishing interdependence among participants for cooperation and enriching relationships, most scientific research on adult moral reasoning focuses on macromorality rather than individual moral action at the micromoral level (Rest & Narvaez, 2014; Rest, Narvaez, Bebeau, & Thoma, 1999a; Rest, Narvaez, Bebeau, & Thoma, 1999b; Thoma, 2002, 2006).

**Kohlberg’s Theory of Moral Development**

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 et al., 2000). Furthermore, Kohlberg’s approach to viewing moral decision making is at the macromoral level and 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, 1981a; 1981b, 1984; Kohlberg & Hersh, 1997).

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, 1984). A breakdown of each of Kohlberg’s levels and corresponding stages is below:

Figure 1

*Kohlberg’s Levels and Stages of Moral Development*

Kohlberg’s Pre-Conventional level is most common among children where moral reasoning focuses largely on external consequences, typically through parents or other significant authority figures in the child’s life (rewards/punishment Stages 1 and 2). Children at the Pre-Conventional level of morality are typically egocentric and have not

Kohlberg’s Conventional level (seeking approval/conformity Stages 3 and 4) and Post-conventional level (justice reasoning/human rights Stages 5 and 6) 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 and attempts to establish moral consensus by appealing to established practice and existing authority. 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. Additionally 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 changes that challenges law or social order to ensure human rights for all to the greater benefit of society (Colby & Kohlberg, 1984; Kohlberg, 1976, 1977, 1981b, 1987).

**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 et al., 1999a; Thoma, 2014; Walker, 2002). 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 (Rest et al., 2000; Thoma, 2014). 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., 1999a; Thoma, 2014).

**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 micromoral in nature and is most closely linked with close relationships and individual interest found within Kohlberg’s 2nd and 3rd stages 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 stage 4 *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 5th and 6th stages of social-contract orientation and principles of universal ethics (Rest et al., 1999a; Thoma, 2014).

Measuring Moral Reasoning

Research on moral development has commonly used the Defining Issues Test as a measure of moral reasoning (Rest et al., 1999a; Rest & Narvaez, 1994, 2014). The DIT is a measure of moral judgment developed by James Rest (1979) as a condensed version of Kohlberg’s original Moral Judgment Interview (MJI). For Kohlberg, the process of determining a person’s moral reasoning was derived through a lengthy process in which participants are asked a series of systematic open-ended questions about fictional moral dilemmas to determine their stage of moral reasoning after careful analysis of interview transcripts. Each dilemma includes a set of contradictory opinions, and individuals are prompted to select one of these opinions for the basis of their argument (Colby & Kohlberg, 1987; Minnameier, 2011; Nisan & Kohlberg, 1982).

As the framework for moral reasoning shifted from developmental stages to the moral schemas of the Neo-Kohlbergian model, the method of measuring moral reasoning
also changed in significant ways due to several perceived limitations of Kohlberg’s original interview method (Rest et al., 1999b). Kohlberg’s Moral Judgment Interview has been criticized as being overly complicated and subjective for the following reasons: (a) the nearly 1000 page scoring guide for scoring interviewees is difficult and cumbersome to use (b) concerns over confounding variables when subjects verbally articulate their moral judgments (self-reported explanations of one’s own cognitive processes have the limitation that, although individuals can report on the products of cognition, they cannot report on the mental operations they used to arrive at the product) (Rest et al., 2000) (c) inconsistency and variability of scorer interpretations (tendency toward subjectivity based on one’s own moral/philosophical foundation) (Rest et al., 1999a) and (d) lack of convenience for administration (lengthy recording, transcription, and time for interviews) (Rest, Cooper, Coder, Masanz, & Anderson, 1974; Schlaefli et al., 1985).

In response to these concerns, James Rest and colleagues developed the Defining Issues Test which uses a multiple choice format that greatly reduces the amount of training and time necessary to administer the test as compared the traditional interview format of the MJI (Rest et al., 1999b). As an instrument, the Defining Issues Test measures how individuals structure their understanding of moral dilemmas in terms of justice reasoning and has become the standard for measuring moral reasoning in adults (Rest et al., 1999a; Rest & Narvaez, 1994). Test retest correlations and internal reliabilities of the DIT average in the .80s (Rest, 1994; Rest & Narvaez, 2014).

Similar to Kohlberg’s Moral Judgment Interview, the DIT presents subjects with several different moral dilemmas in which they are required to make decisions on
preferred outcomes of each dilemma, then rate and rank items that convey the rationale behind their choice of moral action. When considering the moral dilemmas, moral schemas are activated from memory which bring forth existing knowledge or ideas related to the dilemma discussion which contribute to the subjects’ decision making process. An individual’s primary level of moral reasoning is identified by a measure called a P-score (or principled score) which is determined by a participant’s ranking of the Post-conventional items of the DIT. The P-score represents the percentage (0-95) or degree at which an individual functions at the Post-conventional or principled level of moral reasoning; where the higher the P-score, the higher the level of principled moral reasoning (Bebeau & Thoma, 1999; Rest et al., 1999a; Rest & Narvaez, 2014; Rest, Thoma, & Edwards, 1997; Rest, Thoma, Narvaez, & Bebeau, 1997, 2000; Thoma, 2002, 2006).

Construct validity of the DIT has been assessed in terms of seven criteria through the examination of over 400 published articles that fully document DIT validity claims (Rest et al. 1997, 1999a, 1999b). A summary of the seven validity criteria are listed below. For a more detailed description are discussed in the literature review of this study.

1. Differentiation of various age and education groups. Studies have shown that 30% to 50% of the variance of DIT scores is attributable to the level of education in heterogeneous samples.

2. Longitudinal gains. A 10-year longitudinal study showed significant gains of men and women and of both college and non-college subjects from diverse
backgrounds. A review of a dozen studies of freshman to senior college students showed large gains in DIT scores with effect sizes of .80.

3. DIT scores are significantly related to cognitive capacity measures of moral comprehension (r = .60s), recall and reconstruction of postconventional moral arguments.

4. DIT scores are sensitive to moral education interventions. Over 50 intervention studies reported an effect size for dilemma discussion interventions to be .41 (moderate gains), whereas the effect size for comparison groups was only .09 (small gains).

5. DIT scores are significantly linked to many prosocial behaviors and to desired professional decision making. One review reported that 32 of 47 measures were statistically significant.

6. DIT scores are significantly predictive of controversial public policy issues such as abortion, religion in the public school, women’s roles, rights of the accused, rights of homosexuals, and free-speech issues (r’s in the .80s). Given such issues are among the most hotly debated issues of our time, DIT scores are a major predictor of real-life issues of macromorality.

7. Reliability (Cronbach’s alpha is in the upper .70s/low.80s).

Ultimately, as an instrument, the DIT measures how individuals structure their understanding of moral dilemmas in terms of justice reasoning primarily at the Conventional (Maintaining Norms) and Post-conventional levels (Cummings et al., 2007; Rest et al., 1999b; Rest & Narvaez, 1994). The DIT was designed to assess only moral
judgment, which is only one aspect of morality. For example, the ability to make moral decisions does not necessarily predict one will act according to such decisions (Bebeau, Rest & Narvaez, 1999). Given this, it is important to note that, like Kohlberg’s MJI, the DIT’s focus is not to indicate an individual’s personal morality at the micro-moral level, but to measure a subject’s level of moral reasoning from social justice perspective at the macro-moral level (Rest, 1986).

**Research Using the DIT**

Studies using the DIT have provided evidence that higher P-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 et al., 1999; Thoma, 2002, 2006). 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 P-scores overtime with higher gains in moral judgment resulting from programs that emphasize moral development and dilemma discussion (Bebau & Thoma, 1999; Narvaez, 1998; Rest & Narvaez, 2014; Rest, Narvaez, Bebeau, et al., 1999; Rest, Narvaez, Thoma, et al., 1999; Schlaefli et al, 1985).

Additionally interventions using DIT P-scores 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 P-scores are indicative of Post-conventional moral reasoning and decision making among these professions (Chang, 1994; Duckett & Ryden, 1994; Rest &
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).

**Why is Post-conventional Reasoning Important for Teachers?**

Teachers at the Conventional level of moral reasoning tend to focus on conformity/authoritative practices within the classroom and see themselves more as facilitators/interpreters of established rules/policies and guidelines of curriculum (Chang, 1994; Cummings et al., 2007, 2010; Johnston, 1989). Contrastingly teachers at the Post-conventional level see their roles as more interactive and facilitative, hold more humanistic/democratic perspectives and are better able to provide a more student centered environment where they can more objectively deal with both education and discipline issues in a manner that facilitates student growth (Chang, 1994; Cummings et al., 2007, 2010; Johnston, 1989). Teachers at the Post-conventional level are also better at motivating 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 (Thoma, 2006; Thoma & Dong, 2014). Finally, they are better able to accommodate for student differences, tolerant of diverse viewpoints, apply individual support, include student perspectives in curriculum decisions and are more flexible in their teaching approaches (Chang, 1994; Cummings et al., 2001, 2003, 2007, 2010; Johnston, 1989; O’Keefe & Johnston, 1989).
Issues with Teacher Training Programs

Although functioning at higher levels of moral reasoning is important for educators, 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. Additionally studies that have investigated moral reasoning in education students found these students to be less advanced than college students with non-education majors (Cummings et al., 2001, 2010; McNeel, 1994), where advancement in education from freshman to senior year typically results in higher moral reasoning scores among college students (Rest et al., 1999b; Rest & Narvaez, 2014; Thoma, 1986).

These minimal gains in moral reasoning are also common to the skill and method-based nature of training programs that not only include teachers, but other vocational disciplines such as accounting, business, engineering, and nursing. The rationale as to the failure of these programs to promote advancement in moral reasoning are attributed to the lack of focused critical thinking on abstract and theoretical content that promotes the cognitive dissonance necessary for moral growth (Lapsley, Holter, & Narvaez, 2013; McNeel, 1994; Narvaez & Lapsley, 2008; Rest & Narvaez, 2014; Rest, Narvaez, & Bebeau et al., 1999; Rest, Narvaez, & Thoma et al., 1999; Rest, Thoma, & Edwards, 1997; Thoma, 1986, 2006; Thoma & Dong, 2014).

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,
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. This view that teaching is a profession requiring technical competence rather than moral reasoning is one of the major problems preparing teachers for the moral dimensions of teaching. Thus graduates from education programs may have difficulty reasoning and making sound decisions concerning the moral and ethical issues that arise daily within school environment (Beyer, 1997; Chang, 1994; Cummings et al., 2001, 2003, 2007, 2010; McNeel, 1994; Sirotnik, 1990).

**Recommendations to Improve Teacher Moral Reasoning**

Given the lack of advancement in moral reasoning among pre-service teachers, 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, 1991, 1997; Chang, 1994; Cummings et al., 2007, 2010 Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008). Recommendations for improving the moral development of teachers include focused and systematic methods of teaching moral reasoning skills (Cummings et al., 2001; Pritchard, 1999; Strike, 1990; Strike & Soltis, 1992).
The most successful programs at advancing moral reasoning include teaching self-reflection, stimulating growth in cognitive processes, instruction in moral/ethical issues, and moral problem solving (Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008; Rest, 1994; Rest et al., 2000; Rest & Narvaez, 2014; Rest & Narvaez, 1994). Additionally, direct approaches with moral interventions are most successful when cognitive skills of logic, role-taking, and justice operations are integrated as part of the curriculum (Penn, 1990). Consequently, teacher training programs must be inclusive of abstract ethical/moral and critical thinking processes to ensure teachers are fully prepared to make the daily moral decisions that influence and impact the children they are charged with teaching (Cummings et al., 2001; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008; Strike, 1990; Strike & Soltis, 1992).

Interventions Designed to Increase Moral Reasoning among Teachers

Multiple studies provide evidence that direct educational interventions designed to stimulate moral reasoning show significant increases in DIT P-scores (Rest & Narvaez, 2014; Rest, Narvaez, Bebeau et al., 1999). The most successful intervention programs include teaching self-reflection, stimulating growth in cognitive processes, instruction in moral/ethical issues, and moral problem solving (Rest & Narvaez, 1994, 2014; Rest, Narvaez, Bebeau, & Thoma, 2000). Yet, despite the evidence in gains in moral reasoning through interventions and the need to integrate aspects of moral theory and discussion into the curriculum of teacher training, very little empirical research has gone into studying the moral development of teachers in education programs (Cummings et al., 2007). Of the limited research conducted, studies that do show interventions that include theories of moral development (particularly Kohlberg) and peer discussion of
controversial moral dilemmas to be effective in increasing moral development of both in-service and pre-service teachers. These interventions using direct instruction of moral development theory and dilemma discussion/reflection have shown significant advancement in moral reasoning of both undergraduate and graduate education students (Cummings et al., 2004, 2006, 2010; McNeel, 1994).

**Statement of the Problem**

Research 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., 1999a; Rest, Thoma et al., 1999; Schlaefli, Rest, & Thoma, 1985; Thoma, 2002, 2006; Yeazell & Johnson, 1988). 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; Dede, 1990; Rabe-Hemp, Woollen, & Humiston, 2009; Schwitzer & Lovell, 1999; Strauss, 1996).

Yet, with the advent of online learning, the components of interaction and discussion common in the traditional classroom environment have been altered to the more typically asynchronous or indirect nature of the online classroom. Consequently, this increase in online learning has significantly influenced the methods of delivering
instruction to students across all education levels (Allen, Bourhis, Burrell, & Mabry, 2002; Allen et al., 2004; Jaffee, 1997; Paloff & Pratt, 1999). Given this, one of the critical concerns with online education has been whether the online environment offers the same level of effective interaction and discussion essential to the learning process as the traditional face-to-face classroom (Allen & Seaman, 2013; Karatas & Simsek, 2009; Kuen, 1994; Larson, 2003; Smith, Ferguson, & Carris, 2002).

Cummings et al. (2010) suggest the possibility of factors such as the face-to-face classroom dynamics and the effectiveness of delivering direct instruction as possible influencing factors that may contribute to the gains in moral reasoning among pre-service teachers. This argument provides a rational 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 critical question with interventions designed to increase the moral reasoning of pre-service teachers is: Does the asynchronous nature of online learning and discussion impact interventions designed to increase the moral reasoning of pre-service teachers?

**Purpose of the Study**

The purpose of the present study was to determine if exposure to moral development theory and dilemma discussion in the asynchronous online learning environment resulted in significant gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers. Additionally this study examined if instructor to student moderated dilemma discussion resulted in higher gains in principled
moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers over student to student discussion alone.

Exposure to moral development theory in this study was delivered in the format of an online written lectures that discussed both Piaget’s and Kohlberg’s theories of moral development (Piaget theories were foundational to Kohlberg’s stage theory). The lectures on Kohlberg included methodology, levels and stages, perspective taking, moral reasoning vs. moral action, and Kohlberg’s use of moral dilemmas. The 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 were prompted to answer a series of questions via discussion board such as: Should Heinz steal the drug? Why or why not? Although students received written electronic feedback from the instructor on lecture reflections there was no direct face-to-face interaction between the instructor and students or student to student. All interaction, including feedback, teacher-student communication, and student-student communication was conducted asynchronously via email, discussion board etc. Traditionally, as part of the course, students are only required to post answers to discussion questions for the Heinz dilemma and do not participate in student to student or instructor to student discussion on the dilemma. Thus, this study also specifically examine whether directed student-to-student dilemma discussion and instructor moderated student-to-student discussion resulted in significant differences in pre and post moral reasoning levels using DIT P-scores.

**Research Questions**

The following research questions were examined in this study:
Research Question 1

Research question 1 specifically includes the following sub questions, in which the experimental group received teacher moderated dilemma discussion and the control group participated in student-student dilemma discussion.

1a. Are there differences in mean DIT P-scores in the combined experimental and control groups before and after the intervention? (Main effect by time)

1b. Are there differences in the DIT P-score pre/post marginal means for the experimental and control groups? (Main effect by group)

1c. Is the effect of time different for the experimental group than for the control group (pretest/posttest) before and after the intervention? (Interaction Time by Group).

Research Question 2

Question 2 specifically includes the following sub questions:

2a. Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in teacher moderated asynchronous dilemma discussions by time (pretest/posttest)?

2b. Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in student-to-student discussion asynchronous dilemma discussions by time (pretest/posttest)?

Limitations of the Study

The participants in this study were not randomly selected but were drawn from students enrolled in online courses in the Essentials of Educational Psychology at the University of Nevada, Reno. With the limitation of studying one University, a more
system wide study of multiple universities with teacher education programs using a random selection of pre-service teachers is recommended.
Chapter II Literature Review

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 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, 1991, 1997; Chang, 1994; Cummings et al., 2001; Cohen, 1999; Goodlad, Soder & Sirotnik, 1990).

Advanced moral development among educators allows teachers to reason about teaching issues more thoroughly and fundamentally, to be more empathetic to student needs, respect for student rights and be more objective when dealing with student problems (Chang, 1994). They are also better at motivating 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 (Thoma, 2002, 2006). Additionally, they are better able to accommodate for student differences, apply
individual support, and include student perspectives in curriculum decisions (Chang, 1994; Cummings et al., 2001, 2003, 2007, 2010; Johnston, 1989). Given this teachers need to take responsibility for their roles as moral agents and reason about moral issues and dilemmas at the principled level (Cummings et al, 2001).

**Moral Reasoning (Kohlberg)**

One of the most widely used theories for examining moral reasoning among professional disciplines, including teaching, is Kohlberg’s theory of moral development (Cummings et al., 2007; Rest et al., 1997). Kohlberg and other modern moral theorists including Rawls (1971), Walzer (1983), and Toulmin (1981) 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 & Narvaez, 2014; Rest et al., 2000). Similarly, Kohlberg’s approach to viewing moral decision making is based on social cooperation as a primary tenant of society and 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, 1981a; 1981b, 1984; Kohlberg & Hersh, 1997).

Kohlberg’s theory models Piaget’s theory of cognitive development and proposes that moral development is a universal cognitive-continual process where constructs of moral reasoning flow through sequential stages that advance with age and individual experience. The rationale being; as people begin to reason about solutions to moral dilemmas they experience cognitive disequilibrium which ultimately leads to accommodation and assimilation into new or existing moral schemas (Colby & Kohlberg,
According to Kohlberg, this process of cognitive disequilibrium is the catalyst for the ongoing development and advancement of moral reasoning among adults (Kohlberg, 1976, 1981a; 1981b, 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 hierarchal stages that evolve sequentially with advancement depending on the individual’s increasing ability to take the perspective of others. The following is a brief description of Kohlberg’s levels and sub stages which is inclusive of the general age ranges of sequential development order (Kohlberg, 1976, 1977, 1981b, 1987):

**Level One: Pre-conventional** (Seen most commonly in preschool children, most elementary school students, some junior high school students, and a few high school students).

Stage 1: *Punishment and obedience orientation.* Individuals make decisions based on personal interest, while not necessarily considering the perspective of others. Children in this stage typically obey rules only if established by more powerful individuals (parents or other adult authority) and may disobey only if there is a chance of not being caught. “Wrong” behaviors are those that will be punished.

Stage 2: *Trade off and deals orientation.* Individuals begin to recognize that others also have needs and will try to please others as long as their own needs are also met. Yet they will continue to define right and wrong primarily in terms of consequences to themselves.
**Level Two: Conventional** (Generally seen in adolescents and most adults; stage 4 typically does not appear until the high school years)

Stage 3: *Good boy/girl orientation.* Individuals begin to make decisions based on what actions will please others, especially authority figures and other individuals with high status (e.g., teachers, popular peers). They are concerned about maintaining relationships through sharing, trust, and loyalty, and they take other people’s perspectives and intentions into account when making decisions.

Stage 4: *Law and order.* Individuals begin to take the perspective of society as a whole for ideals of right and wrong. They understand rules are a necessary component of societal cooperation and follow a sense of duty to obey these rules as productive members of society. Rules of law are often seen as inflexible and hold the idea that all must obey societal laws regardless of circumstance.

**Level Three: Post-conventional** (Rarely seen before college, more common with adults with increasing levels of college education, with Stage 6 being idealized or theoretical and extremely rare or non-existent in adults)

Stage 5: *Social-contract orientation.* Individuals recognize that rules are agreed upon by members of society in terms of what represents acceptable behavior and the general maintenance of social order. Yet they also recognize that protections must be put in place that recognize individual rights and that laws should be changed when they no longer serve the best interest, or are non-inclusive of the rights of all members of society.
Stage 6: *Universal ethical principle*. Stage 6 is a hypothetical, idealized stage that is rarely realized by members within a society. People in this stage adhere to a few abstract, universal principles (e.g., equality of all people, respect for human dignity, commitment to justice) that transcend specific norms and rules. They tend to be social activist and are willing to break laws (via civil disobedience) that are unjust and violate the civil rights of marginalized members of society. Examples include Martin Luther King, Mother Teresa, and Gandhi (Colby et al., 1983; Kohlberg, 1976, 1984; Minnameier, 2011; McDevitt & Ormrod, 2002; Reimer, Paolitto, & Hersh, 1983; Snarey, 1995).

As discussed above, Kohlberg’s Pre-Conventional level is most common among children where moral choices are directly influenced by direct authority (usually parental) in terms of consequences of actions. Children at the Pre-Conventional level of morality are typically egocentric and have not yet internalized society’s conventions concerning right and wrong. Instead their moral thinking focuses largely on external consequences, typical through parents or other significant authority figures in the child’s life (Kohlberg, 1976, 1977, 1981a, 1987; Colby & Kohlberg, 1984).

Individuals functioning at Kohlberg’s Conventional level attempt to gain moral consensus by appealing to established practices and existing authority. The Conventional level involves individual moral reasoning that incorporates the traditional conventions of one’s culture that is characterized by adherence to the laws and norms of one’s family, community, and greater society. Stage three of the Conventional level focuses on conformity and is exemplified by the perspective taking of one’s interpersonal
relationships. An individual’s moral expectations are in line with what is considered appropriate behavior as defined by one’s relationship with others in the same group and does not necessarily take the perspective of those outside of one’s immediate influence. Stage four of the Conventional level broadens this perspective to norms and expectations of greater society where moral reasoning moves beyond one’s immediate group and takes on the perspective of the greater community and nation. Laws are created to maintain societal order and adherence these laws is of the upmost priority. Exceptions to the rule of law are frowned upon as such actions may erode the fabric of social order (Kohlberg, 1976, 1977, 1981b, 1987).

Kohlberg’s Post-conventional or principled level attempts to gain consensus by appealing to ideals that consider human rights and social justice. Within this level (stages five and six) an individual is able to consider multiple perspectives and make moral decisions based on whether the laws and standards of society support or encroach upon the basic rights of any member of society (Kohlberg, 1981b, 1987). Stage five of the Post-Conventional level is characterized by accepting altering viewpoints in an arena of mutual respect for others differences. This stage emphasizes contractual, due process relationships based on mutual consensus on what is the greater good for all involved. Stage six of the Post-Conventional level is based on universal principles of ethics, yet is also relative to an individual’s own ethical principles in concordance basic human rights and dignity (Kohlberg, 1976, 1977, 1981b, 1987; Rest et al., 1999a; Thoma, 2002, 2006).

Kohlberg’s Conventional (typical) and Post-conventional (more rarely) levels 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. 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).

**Macro-morality verse Micro-morality**

With its’ primary focus on justice reasoning and emphasis on the rational aspects of moral thinking, Kohlberg’s theory has often been criticized for being too general in its evaluation of individual moral reasoning and not necessarily indicative of individual moral action in everyday situations (Rest et al, 1999b). While it is recognized that Kohlberg’s theory holds a broad-based perspective that in not necessarily inclusive of the multiple psychological processes that influence everyday moral decision making, it is important to note that ethical reasoning is only one part of an individual’s overall capacity to understand and resolve ethical issues (Rest, 1986, 1994). Kohlberg emphasizes moral development moves towards attaining a socio-centric perspective that is inclusive of developmentally ordered ways of looking at how to organize society wide cooperation in recognition that members of a society are interconnected to each other through institutions, established practices, role-systems, which hold broader society wide
implications than typical face-to-face interactions with friends, family or personal acquaintances (Kohlberg, 1984; Rest et al., 2000).

Given this, it is important to understand that moral reasoning functions at both the micro-moral and macro-moral level. Micro-morality focuses day-to-day relationships of cooperation among individuals where traits such as loyalty, impartiality, and mutual care for others are valued. Macro-morality concerns the formal structure of society as a whole in terms of social justice and how to organize cooperation on a society wide basis that goes beyond the face-to-face basis. Although both micro-morality and macro-morality seek mutual cooperation as a primary goal, Kohlberg’s theory is more a measure of macro-morality rather than a gauge of individual moral action at the micro-moral level (Rest et al., 1999b; Thoma, 2002, 2006). This does detract from or not negate Kohlberg’s theory in anyway, yet only emphasizes the point that micro-moral process are extremely difficult to gauge and most modern moral development theories hold a primary focus on macro-morality and applications of decision making that impact others on a society wide basis (Rest et al., 2000).

**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 et al., 1999a; Walker, 2002). 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 (Rest et al., 2000). 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).

Finally, with Schema Theory, Kohlberg’s stages are integrated into three distinct moral schemas that are developmentally ordered with an underlying structure of moral judgment consisting of the following: Personal Interest (Kohlberg’s 2nd and 3rd stages), Maintaining Norms (Kohlberg’s 4th stage), and Postconventional (Kohlberg’s 5th and 6th stages) (Rest et al., 1999a):

**Personal Interest schema (combines Kohlberg’s stages 2 and 3):**

The personal interest schema stresses the perspective of an individual when experiencing situations of moral conflict with an emphasis 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. Although not necessarily amoral, the personal interest schema encompasses the mindset of late childhood / early adolescence where the primary influencing factors are family, friends, and a community of like-minded peers.

**The Maintaining Norms Schema (derived from Kohlberg’s Stage 4):**

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. Indicative of Kohlberg’s stage 4, 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 (Rest et al., 1999a).
More specifically the Maintaining Norms schema has been defined by Rest et al. (2000) as having the following characteristics: (a) a perceived need for generally accepted social norms to govern a collective; (b) the necessity that the norms apply society-wide, to all people in a society; (c) the need for the norms to be clear, uniform, and categorical (i.e., that there is “the rule of law.”); (d) the norms are seen as establishing a reciprocity (each citizen obeys the law, expecting that others will also obey); and (e) the establishment of hierarchical role structures, of chains of command, of authority and duty (e.g., teacher-pupil, parent-child, general-soldier, doctor-patient, etc). The maintaining norms schema is typical of most adult moral thinking in an ordered society and is most typical of Kohlberg’s stage 4 Law and Order perspective (Rest et al., 1999a).

**Post-conventional schema (combines Kohlberg’s Stage 5 and 6):**

The Post-conventional thinking 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 by 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 advance moral reasoning of educated adults within society and combines Kohlberg’s 5th and 6th stages of social-contract orientation and principles of universal ethics (Rest et al., 1999a).

It is important to note that in the Neo-Kohlbergian Schema Theory the Personal Interest schema does not entail a socio-centric perspective and thinking from a societal
cooperation perspective is viewed from the micro-moral level (personal interaction with others). Individuals using the Personal Interest schema analyze moral dilemmas typically from a personal gain/loss viewpoint and not from organizing co-operation stance on a society-wide basis. The Personal Interest schema justifies a decision as morally right by appealing to the personal stake the individual has as a consequence of action. Thus, when looking at adult moral reasoning from a social justice perspective at the macro-moral level the Maintaining Norms and Post-Conventional schemas factor predominantly in measuring adult moral reasoning (Rest et al., 1999, 2000).

**Measuring Moral Reasoning**

Research on moral development over the past three decades has commonly used the Defining Issues Test (DIT) as a measure of professional moral reasoning (Rest et al., 1997; Rest & Narvaez, 1994, 2014). The Defining Issues Test (DIT) is a measure of moral judgment developed by James Rest (1979) as a condensed version of Kohlberg’s original Moral Judgment Interview (MJI). For Kohlberg, the process of determining a person’s moral reasoning was derived through a lengthy process in which participants are asked a series of systematic open-ended questions about fictional moral dilemmas to determine their stage of moral reasoning after careful analysis of interview transcripts. Each dilemma includes a set of contradictory opinions, and an individual is prompted to select one of these opinions for the basis of their argument (Colby & Kohlberg, 1987; Minnameier, 2011; Nisan & Kohlberg, 1982).

As the framework for moral reasoning shifted from developmental stages to the moral schemas of the Neo-Kohlbergian model, the method of measuring moral reasoning also changed in significant ways due to several perceived limitations of Kohlberg’s
original interview method (Rest et al., 1999b). Kohlberg’s Moral Judgment Interview has been criticized as being overly complicated and subjective for the following reasons: (a) the nearly 1000 page scoring guide for scoring interviewees is difficult and cumbersome to use (b) concerns over confounding variables when subjects verbally articulate their moral judgments (self-reported explanations of one’s own cognitive processes have the limitation that, although individuals can report on the products of cognition, they cannot report on the mental operations they used to arrive at the product (Rest et al., 2000) (c) inconsistency and variability of scorer interpretations (tendency toward subjectivity based on one’s own moral/philosophical foundation) (Rest et al., 1999a) and (d) lack of convenience for administration (lengthy recording, transcription, and time for interviews) (Rest, Cooper, Coder, Masanz, & Anderson, 1974; Schlaefli et al., 1985).

In response to these concerns, James Rest and colleagues developed the Defining Issues Test (Rest et al., 1999b). The DIT uses a multiple choice format that greatly reduces the amount of training and time necessary to administer the test as compared the traditional interview format of the MJI. Subjects taking the DIT, similar to the MJI, are presented with several different moral dilemmas and are required to make decisions on preferred outcomes of each dilemma, then rate and rank items that convey the rationale behind the subjects’ choice of moral action. When considering the moral dilemmas, moral schemas are activated from memory which bring forth existing knowledge or ideas related to the dilemma discussion which contribute to subjects’ decision making process (Bebeau & Thoma, 1999; Rest, Thoma, Narvaez, & Bebeau, 1997; Rest, Thoma, Narvaez & Bebeau, 2000; Rest et al., 1999a; Thoma, 2002, 2006). As subjects begin the
process of reasoning about outcomes to moral dilemmas cognitive disequilibrium occurs requiring the critical analysis of others arguments which becomes the catalyst for advancement in moral reasoning. (Colby & Kohlberg, 1984; Kohlberg, 1981; Schlaefli et al., 1985).

Additionally, the items of the DIT balance bottom-up, data-driven processing (stating just enough of a line of argument to activate a schema) with top-down, schema driven processing (stating a line of argument in such a way that the participant has to fill in the meaning from schemas already in his or her head) (Rest, Narvaez, Thoma, & Bebeau, 1999). Paragraph-length hypothetical dilemmas are used, each followed by 12 issues (or questions that someone deliberating on the dilemma might consider) representing different stages or schemas. The participant’s task, a recognition task, is to rate and rank the items in terms of their importance. A sentence fragment strategy is used whereby each item is short and cryptic, presenting only enough verbiage to convey a line of thinking, not to present a full description defining one action choice or another (see Rest et al., 1999; Rest, Thoma, & Edwards, 1997).

Ultimately, as an instrument, the DIT measures how individuals structure their understanding of moral dilemmas in terms of justice reasoning primarily at the Conventional (Maintaining Norms) and Post-conventional levels (Cummings et al., 2007; Rest et al., 1999b; Rest & Narvaez, 1994). The DIT was designed to assess only moral judgment, which was only one aspect of morality. For example, the ability to make moral decisions does not necessarily predict one will act according to such decisions (Bebeau, Rest & Narvaez, 1999). Given this, it is important to note that, like Kohlberg’s MJI, the DIT’s focus is not to indicate an individual’s personal morality at the micro-moral level,
but to measure a subject’s level of moral reasoning from social justice perspective at the macro-moral level (Rest, 1986).

**The DIT as a Valid Instrument to Measure Moral Reasoning**

Rest, Narvaez, Bebeau & Thoma (1999) cite over 400 published articles and research over the past several decades to provide empirical support that validates the DIT as an effective measure of subjects’ level or moral reasoning. One of the strengths of DIT research is its focus on construct validity (Thoma, 2006; Thoma & Dong, 2014) or the degree to which an instrument measures what it claims to be measuring (Sprinthall, 2007). A well-developed set of validity criteria has been established as part of the development of the DIT, primarily in response to criticisms of the validity of the DIT as an instrument of measuring moral reasoning. Rest et al. (1999a) propose seven criteria for defining the construct validity of the Defining Issues Test (DIT). These criteria include:

1. Differentiation of age and education groups show higher levels of moral reasoning with increased age/education.

2. Longitudinal gains in DIT scores show upward gains over time.

3. The DIT shows correlation with moral comprehension and cognitive capacity measures.

4. The DIT is sensitive to moral education interventions.

5. Higher DIT scores are correlated with behavior and professional decision making.

6. DIT scores can predict political attitudes and choices.

7. Internal structure and reliability.
**Differentiation of age/education groups**

One of the properties of the DIT is the ability to differentiate between age and education groups, where higher levels of education correlate with higher levels of moral judgement. Multiple empirical research studies with large composite samples representing heterogeneous populations support this differentiation with 30% to 50% of the variance of DIT scores being attributed to subjects’ level of formal education (Rest et al., 1997, 1999a; Rest & Narvaez, 1994, 2014). Additionally Thoma, Rest, and Barnett (1986) report significant main effects ($r = .69$, $p < .001$) among large composite samples across multiple education levels (junior high, high school, undergraduate, and graduate).

Much of these gains are attributed directly to the educational experience, with DIT P-scores being highly predictive of level of moral reasoning based on subjects’ level of education (McNeel, 1994; Rest et al., 1997a 1999a; Thoma, 2006; Thoma, Narvaez, Rest, & Derryberry, 1999). The use of cross sectional composite studies also show formal education is the highest predictor of gains in moral reasoning regardless of demographic variables such as age, gender, ethnicity, or socioeconomic status (Narvaez, Bebeua, & Thoma, 1999; Rest et al., 1997a; Rest & Narvaez, 1994, 2014).

**Longitudinal gains in DIT scores**

Longitudinal studies are often used to study developmental trends and provide evidence that developmental measures show upward movement over long periods of time. Consequently longitudinal data is an effective gauge of intra-individual differences and change, thus is well suited for DIT research. (Rest et al., 1997b, 1999a; Rest & Narvaez, 2014; Thoma, 2006; Thoma & Dong, 2014). Rest et al. (1999a) reference over 30 published longitudinal studies which show DIT P-scores increase with each
subsequent level of higher education. In a seminal longitudinal study conducted by
McNeel (1994) freshman to senior college students showed consistent upward gains in
level of moral reasoning as they progressed through their programs. When these gains
were compared with effect sizes of other variable measures such as quantitative and
verbal skills, the gains in DIT P-scores were among the largest effect sizes studied among
college students ($d = .80$).

Additionally Rest et al., (1997b) report education to be a far more powerful
predictor of moral judgment than chronological age, concluding as individuals continue
with formal education their DIT scores tend to show gains, when formal education ends
DIT scores tend to plateau. These studies provide further evidence that the college
experience is very effective at promoting moral judgment, particularly when an emphasis
on critical reflection is applied as part of the college academic experience (McNeel, 1994;

**Correlation with moral comprehension and cognitive capacity measures**

According to Rest et al. (1997a) instruments used to gauge moral judgment
should be directly correlated with measures of moral comprehension. Accordingly, the
DIT measures moral comprehension using P-scores by ranking subjects scaled responses
to moral dilemma scenarios. The premise being, as moral comprehension increases,
individuals will prefer higher stages of moral reasoning over lower stages. Additionally,
although able to understand the lower stages, individuals at higher levels will find these
stages to be insufficient in making moral judgments (Rest et al., 1997b, 1999a).
Studies using the DIT have provided evidence that higher P-scores indicate more advancement in post-conventional thinking and are directly associated with higher comprehension of moral concepts (Rest, 1979; Thoma, 2006; Thoma, Narvaez, & Bebeau, 2000). Research by Rest, Cooper, Coder, Masanz, & Anderson (1974) found a high correlation between P-scores and moral comprehension ($r = .67, p < .001$) among multiple education levels (junior high, high school, college, and graduate students). Additionally DIT P-scores have also been found to be significantly correlated ($r = .60s$) with cognitive capacity measures in recalling and reconstructing moral arguments in the DIT narratives (Narvaez, 1998; Rest, 1979; Rest et al., 1997a, 1997b, 1999a; Thoma, 2006; Thoma & Dong, 2014; Thoma et al., 2000). DIT scores have also shown significant correlation with other developmental measures such as reflective judgment ($r = .46 & .58$), ego development ($r = .40$), ethical reasoning ($r = .57$) and aptitude and achievement ($r$ ranges .20 to .50) (Rest, 1979; Rest et al., 1999a).

**Sensitivity to moral education interventions**

Research on moral education interventions have typically used the DIT as a pre-posttest analysis to gauge the effectiveness of intermediation designed to promote the advancement of moral reasoning among subjects. These studies are useful in terms of validity in that they provide evidence of significant upward change in DIT P-scores over time (Rest et al., 1997a, 1999a; Rest & Narvaez, 2014; Thoma, 2006; Thoma & Dong, 2014). Typically these intervention programs, unlike longitudinal studies, are shorter in duration (less than one year) and have better control over outside influences or experiences subjects may encounter over longer periods of time. These studies are also
better at gauging the success of intervention programs specifically designed to promote advancement in moral reasoning (Rest et al., 1999a).

Rest et al. (1999a) cite over 60 intervention studies using the DIT covering multiple populations and professional programs that support the DIT’s sensitivity to educational interventions designed to provide gains in moral development among participants. In a meta-analysis of 55 moral intervention programs Schlaefli, Rest and Thoma (1985) found experimental groups showed significantly higher gains in DIT P-scores than control groups. These studies showed moderate gains in effect size ($r = .41$) with interventions using dilemma discussions, where effect sizes for comparison groups (control/non-experimental) resulted in only small gains ($r = .09$) (Rest, 1986). Rest et al. (1997a) report a similar effect size of .54 and significant upward shifts in P-scores ($p < .001$).

Overall college level and adult groups show greater advances in DIT scores than younger groups (adolescents) (Schlaefli et al., 1985). Additionally individuals in graduate and professional school show higher gains in moral judgment in moral education programs that emphasize moral development and discussion of moral dilemmas than graduate students participating in similar interventions that focused general ethics, with the lowest gains in DIT P-scores found in traditional academic courses such as history, social studies, and literature (Rest et al., 1997a, 1999a; Schlaefli et al., 1985; Thoma, 2006; Thoma & Dong, 2014).

**Correlation with moral behavior and professional decision making**

According to Rest et al. (1999a) DIT research has shown higher P-scores can be directly associated with pro-social behaviors. In a 10 year longitudinal study Rest (1986)
found higher DIT P-scores to be significantly correlated (p < .001) with pro-social behaviors such as community involvement ($r = .31$) and civic responsibility ($r = .44$). Additionally, DIT scores have been linked with moral action where people with higher moral reasoning are more involved in their communities and take higher interest in social issues as evidence of social/cognitive development (Narvaez & Bock, 2002; Rest et al., 1999a; Thoma, 2006; Thoma & Dong, 2014; Thoma et al., 1986).

Furthermore, Rest et al. (1999a) cite over 60 published studies that directly relate DIT scores to various measure of behavior and decision making. DIT P-scores have also been shown to have significant correlations with ethical decision making across multiple professions. These correlations include job performance and profession integrity among teachers, nurses, doctors and accountants showing higher P-scores are indicative of post-conventional moral reasoning and decision making among these professions (Chang, 1994; Duckett & Ryden, 1994; Ponemone & Gabbet, 1994; Rest & Narvaez, 1994; Self & Baldwin, 1994).

**Predicting political choice and attitude**

The DIT has been used to study political attitudes in terms of law and order, political tolerance, and human rights. Political attitudes concern how people relate to each other in society at a macromoral level. Macromorality encompasses social cooperation among citizens of a democratic society through established laws and practices afforded through political processes and every day conventions of acceptable moral behavior. From this perspective the DIT can be seen as a measure of macromorality through the lens of political attitudes and political choices (Thoma et al., 1999).
Narvaez, Getz, Rest, & Thoma, (1999) found DIT scores to be significantly linked to political attitudes and political choices \((r = .40 \text{ to } .65)\). When combined with measures of cultural ideologies and multiple regression analysis, DIT scores can predict up to two-thirds of the variance in attitudes towards controversial public policy issues which include abortion, school prayer, homosexual rights, and free speech to name a few (Crowson, DeBacker, & Thoma, 2005; Thoma, 2006; Thoma & Dong, 2014; Thoma, Narvaez, Rest & Derryberry, 1999). The DIT’s predictability of these issues has been shown to be important as a tool for predicting political choice and attitude (Narvaez et al., 1999; Rest et al., 1999a; Rest & Narvaez, 2014; Thoma, 2006; Thoma & Dong, 2014; Thoma et al, 2000). Given that these issues are among the most hotly debated of our time, the DIT has the potential to contribute to our understanding of individual differences in political preferences and attitudes.

**Internal structure and reliability**

Cronbach’s alpha is a coefficient of internal consistency and is commonly used an estimate of reliability (Sprintall, 2007). Composite samples using thousands of participants show internal consistency of the DIT \((\alpha = .70 \text{ to } .80)\) indicating sufficient reliability of the DIT as an instrument of measuring moral development. DIT scores show discriminate validity from variables such as verbal ability/general intelligence and from conservative/liberal political attitudes. Additionally the DIT is equally valid for males and females and gender accounts for less than one half of a percent of the variance of the DIT, whereas education is 250 times more powerful in predicting DIT variance than any other construct (Rest, 1986; Rest et al, 1997b, 1999a, 2000; Rest & Narvaez, 2014; Thoma, 1986; Thoma et al., 1999).
Summation of Validity

Overall this discussion on the validity of the DIT shows P-scores can be highly predictive of level of moral reasoning based on individuals’ level of education and that P-scores increase longitudinally with each subsequent level of education achieved (McNeel, 1994; Rest et al., 1997, 1999; Rest & Narvaez, 2014; Thoma et al., 1999; Thoma, 2006). Higher P-scores also correlate with higher comprehension of moral concepts and cognitive capacity measures in the recall and reconstruction of moral arguments (Narvaez, 1998; Rest, 1979; Rest et al., 1997a, 1997b, 1999a; Thoma, 2006; Thoma & Dong, 2014; Thoma et al., 2000). Additionally, educational interventions show significant upward change in P-scores overtime with higher gains in moral judgement resulting from programs that emphasize moral development and dilemma discussion (Schlaefli et al., 1985; Rest et al., 1997a, 1999; Thoma, 2006).

The DIT 2

The DIT 2 (Rest et al., 1999) is an updated version of Rest’s (1979) Defining Issues Test. Both the DIT and DIT 2 are considered equally valid, with the DIT 2 being considered an updated version of the DIT particularly to meet concerns that the original moral dilemmas were out dated (one refers to the Vietnam War and another using the outdated ethnic term referring to Asians as “Oriental”). The DIT 2 reduced the number of original dilemmas from 6 to 5 (dropping one dilemma in DIT1 was not significantly contributing to validity as were the other dilemmas) and updated the dilemmas to be more reflective of modern social situations / concerns (famine, media, politics, assisted suicide, freedom of speech). The five dilemmas that make up the DIT 2 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.

The DIT 2 parallels DIT 1 in construction and both assessments correlate extremely well with each other. The DIT 2 also purges fewer participants, and has significantly better validity characteristics in terms of better ways of analyzing data in indexing and in checking participant reliability. Reconfirmed validity criteria include: The developmental, age and education trends are reconfirmed with DIT 2 (i.e., moral judgment scores increase as age and education increases). The DIT is also highly correlated with DIT 2 (r = .79) and the combined dilemmas of both the DIT and DIT 2 show a very high degree of internal consistency. The original version of the DIT has an internal reliability (Chronbach’s alpha of .76, while the DIT 2 increased reliability to .81). Additionally, combing the DIT and DIT 2 increased reliability to .90. These reliability and validity checks of the DIT and DIT 2 were based upon hundreds of thousands of administrations. (Rest, Thoma, et al., 1999).

Furthermore, Both the DIT and DIT 2 include several internal methods for protecting reliability and validity. For example, An M score or Meaningless is determined in which a number of meaningless but complex-sounding items are interspersed throughout the DIT. If too many of these items receive top ranking by a subject, it is inferred that the subject is not attending to meaning, and consequently
invalidate that subject’s questionnaire. There is also an internal consistency check in the DIT to determine if subjects are randomly responding without attending to any item feature (Rest, 1986).

**Educational Interventions**

Research on moral education interventions have typically used the DIT as a pretest - posttest analysis to gauge the effectiveness of intermediation designed to promote the advancement of moral reasoning among subjects. These studies are useful in terms of validity in that they provide evidence of significant upward change in DIT P-scores over time (Rest & Narvaez, 2014; Rest, Narvaez, Bebeau et al., 1999; Rest, Thoma et al., 1999; Thoma, 2002, 2006). These studies are also better at gauging the success of intervention programs specifically designed to promote advancement in moral reasoning (Rest et al., 1999b).

The most successful intervention programs include teaching self-reflection, stimulating growth in cognitive processes, instruction in moral/ethical issues, and moral problem solving (Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008; Rest & Narvaez, 1994, 2014; Rest, Narvaez, Bebeau, & Thoma, 2000). Effective interventions include focused critical thinking on abstract and theoretical content that promotes the cognitive disequilibrium necessary for moral growth (McNeel, 1994; Rest et al., 1997, 1999b; Thoma, 2002, 2006). Additionally, direct approaches with moral interventions are most successful when cognitive skills of logic, role-taking, and justice operations are integrated as part of the curriculum (Penn, 1990).

Rest et al. (1999a) cite over 60 intervention studies using the DIT that support the DIT’s sensitivity to educational interventions designed to provide gains in moral
reasoning. These studies provide evidence that direct educational interventions show significant increases in DIT P-scores among participants. Additionally, in a meta-analysis of 55 moral intervention programs Schlaefli et al. (1985) found experimental groups showed significantly higher gains in DIT P-scores than control groups with moderate gains in effect size \( r = .41 \) with interventions using dilemma discussions, where effect sizes for comparison groups (control/non-experimental) resulted in only small gains \( r = .09 \) (Rest, 1986). Rest, Thoma et al. (1999) report a similar effect size of .54 and significant upward shifts in P-scores \( p < .001 \).

Interventions using DIT P-scores have also shown significant correlations with ethical decision making across multiple professions. These correlations include job performance and profession integrity among teachers, nurses, doctors and accountants showing higher P-scores are indicative of Post-conventional moral reasoning and decision making among these professions (Chang, 1994; Duckett & Ryden, 1994; Rest & Narvaez, 1994, 2014). Furthermore, these studies provide evidence that the college experience itself is very effective at promoting moral judgment, particularly when an emphasis on critical reflection is applied as part of the college academic experience (McNeel, 1994; Rest, 1989, 1994; Rest et al., 1999a, 1999b, 2000; Rest & Narvaez, 2014; Rest & Narvaez, 1994).

**Issues with Teacher Training Programs**

Contrary to studies that the college experience results in consistent upwards gains in moral reasoning, research has shown that among college majors, education students show little gains in moral reasoning through their undergraduate experience from freshman to senior year (Chang, 1994; McNeel, 1994; Rest, 1994). These minimal gains
in moral reasoning have been found to be common to the skill and method based nature of training programs that not only include teachers, but other vocational disciplines such as accounting, business, engineering, and nursing (Cummings et al., 2001, 2010; McNeel, 1994; Rest et al., 1999b; Thoma, 1986). It is theorized that these disciplines, by the nature of primarily methods based instruction, lack essential course work in higher level thinking skills that are typical with students in other college majors, particularly in the liberal arts (Chang, 1994; Lapsley, Holter, & Narvaez, 2013; McNeel, 1994; Narvaez & Lapsley, 2008). The rationale as to the failure of these programs to promote advancement in moral reasoning are attributed to the lack of focused critical thinking on abstract and theoretical content that promotes the cognitive dissonance necessary for moral growth (McNeel, 1994; Rest et al., 1999b; Rest, Thoma & Edwards, 1997; Thoma, 2002, 2006).

Given this line of reasoning, traditional teacher training programs have been criticized for the failure to more fully integrate instruction in ethics which are necessary to prepare teachers to make moral judgments in the everyday classroom (Chang, 1994; Cummings et al., 2007). As with other vocational disciplines, educational programs are often skill based and traditionally focus on technical competence, such as classroom management and student achievement, and do not integrate discussion of ethical issues related to moral significance of teachers’ actions, nor do they emphasize the more abstract, theoretical content critical for promoting moral advancement (Beyer, 1991, 1997; Goodlad et al., 1990; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008; Rest et al., 1999a; Yost, 1997). Thus graduates from education programs may have difficulty reasoning and making sound decisions concerning the moral and ethical issues
that arise daily with in school environment (Beyer, 1991, 1997; Chang, 1994; Cummings et al., 2010; McNeel, 1994; Sirotnik, 1990).

Given the lack of advancement in moral reasoning among pre-service teachers, recommendations for improving the moral development of teachers include focused and systematic methods of teaching moral reasoning skills to students in teacher education programs (Cummings et al., 2001; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008; Pritchard, 1999; Strike, 1990; Strike & Soltis, 1992). 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 that arise within the context if daily teaching are required to advance educators into the high moral domains critical to the teaching profession (Beyer, 1991, 1997; Chang, 1994; Cummings et al., 2007, 2010; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008). The most successful programs include teaching self-reflection, stimulating growth in cognitive processes, instruction in moral/ethical issues, and moral problem solving (Rest, 1994; Rest et al., 2000; Rest & Narvaez, 1994, 2014). Additionally, direct approaches with moral interventions are most successful when cognitive skills of logic, role-taking, and justice operations are integrated as part of the curriculum (Penn, 1990).

**Interventions to Advance Moral Reasoning among Teachers**

Despite the evidence in gains in moral reasoning through interventions and the need to integrate aspects of moral theory and discussion into the curriculum of teacher training very little empirical research has gone into studying the moral development of teachers in education programs (Cummings et al., 2004, 2006, 2007). Of the limited
research conducted, Cummings et al. (2007, 2010) reference several studies that do show interventions that include theories of moral development (particularly Kohlberg) and peer discussion of controversial moral dilemmas to be effective in increasing moral development of both in-service and pre-service teachers. These interventions using direct instruction of moral development theory and dilemma discussion/reflection have shown significant advancement in moral reasoning (DIT P-scores) of both undergraduate and graduate education students (Cummings et al., 2004, 2006, 2010; McNeel, 1994).

Additionally, research on the relationship between teachers’ DIT P-scores and the role expectations of educators show unique differences among in-service teachers based on level of moral reasoning in terms of instruction, classroom management and discipline (Johnston, 1989; Johnston & Lubomudrov, 1987; MacCallum, 1993). The majority of teachers have been shown to function primarily within Kohlberg’s Conventional level of moral reasoning with even fewer teachers being able to reason at Kohlberg’s Post-conventional or principled level (Chang, 1994; Cummings et al., 2004, 2007). Teachers at the Conventional level tend to focus on conformity/authoritative practices within the classroom and see themselves more as facilitators/interpreters of established rules/policies and guidelines of curriculum (Chang, 1994; Cummings et al., 2007, 2010; Johnston, 1989). These teachers view themselves as the primary decision makers on what students should learn and see their roles as more authoritative with student discipline, rather than seeking input from students and using more democratic processes in decision making (Cummings et al., 2010; Johnston, 1989; MacCallum, 1993). Moreover, teachers at lower levels of moral reasoning have been observed to be less facilitative and used
direct instruction as the primary method of instruction, while deemphasizing the value of individual instruction (Johnston, 1989; Johnston & Lubomudrov, 1987; MacCallum, 1993).

Contrastingly teachers at Kohlberg’s Post-Conventional level see their roles as more interactive and facilitative, hold more humanistic perspectives and are better to make moral decisions that are more sensitive to students’ rights as part of the democratic processes of classroom environment (Cummings et al., 2007, 2010; Johnston, 1989; Lapsley, Holter, & Narvaez, 2013; Narvaez & Lapsley, 2008). These teachers are ultimately more advanced in moral reasoning and provide a more student centered environment where they can more objectively deal with both education and discipline issues in a manner that facilitates students’ emotional, social and academic growth (Chang, 1994). Additionally these teachers are more individualized with their instruction and value student participation in rule making and enforcement (Johnston, 1989; Johnston & Lubomudrov, 1987; Lapsley, Holter, & Narvaez, 2013; MacCallum, 1993; Narvaez & Lapsley, 2008).

**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; Rest & Thoma, 1986), 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. With the limitations suggested by Cummings et al. (2010) that factors such as the face-to-
face classroom dynamics and the effectiveness of delivering direct instruction as possible factors contributing to gains in moral reasoning among pre-service teachers, thus the argument for replicating this study in the online asynchronous environment is warranted.

**Online Learning**

Given the effectiveness of moral interventions in the face-to-face classroom in raising moral reasoning scores of college students it is important to examine if similar interventions can also be effective in the online learning 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 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 (Bata-Jones & Avery, 2004; Buckley, 2003; Caywood & Duckett, 2003; Christopher et al., 2004; Neuhauser, 2002; Peterson & Bond, 2004; Rabe-Hemp et al., 2009; Smith et al., 2000; Tallent-Runnels et al., 2006).

Methods of Instruction in Online vs. Traditional

Although evidence suggests no differences in learning 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).
Similarly, synchronous online instruction closely emulates the group dynamics of the traditional classroom where students and the instructor interact at the same time via the use of live streaming video, real time chat discussions and live direct instructor/peer interaction. This constitutes live instruction where students can directly communicate with the instructor in real time (Allen et al., 2004). Consequently synchronous online environments have been shown to be similar if not equal to the learning environment of face-to-face classrooms (Bernard et al., 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; Kuen, 1994; Polat, Mancilla, & Mahalingappa, 2013). Although online learning environments can be both asynchronous (indirect communication such as email, taped or written online lectures, discussion boards etc.) and synchronous (real time communication such as interactive video, voice, or text based discussions), the most common online learning environment is asynchronous in nature (Allen et al., 2004).

While traditional and synchronous online learning environments have been shown to be very similar in instructional methods, asynchronous online classes are uniquely different (Bernard et al., 2004). 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 offers 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. Additionally, unlike the set schedules of instruction typical of traditional instruction, students in online classes can move at their own pace even though this may require a high degree of self-management (Tallent-Runnels et al., 2006). Online students also demonstrate a greater inquisitiveness, expressiveness and decreased inhibition (social pressure) in their communications (Bailey & Card, 2009; Baglione, & Nastanski, 2007; Corston & Coleman, 1996; Polat, Mancilla, & Mahalingappa, 2013; Straus, 1996; Sweeny & Ingram, 2001). Thus, the most successful online learners are highly self-regulated and do not require the more linear lesson design of traditional instruction (McManus, 2000).

Given the independent nature of online learning, students in asynchronous online classrooms are also more autonomous in their learning. Autonomous learners tend to be more motivated, accept responsibility for their learning and are better able engage in reflection, analysis, and discussion (Weimer, 2002). They also work more independently on self-study materials such as written lectures and supplementary resources (Bata-Jones & Avery, 2004) and use written forms of expression to more effectively develop ideas, arguing contrasting view points and refining effective communication skills (Hawke, 2001; Lou, 2004). Subsequently, autonomous learners are more likely to think critically and show higher gains in academic performance and personal development (Rabe-Hemp, Woollen, & Humiston, 2009). Students with autonomous learning ability also fair better in online learning environments than those who require direct instruction from teachers to guide, support and encourage the learning process (Baruch, Lev, & Bezalel, 2008).
Critical Design of Online Instruction

Instructors in online courses play a critical role in developing student knowledge construction and the quality of instructional design is crucial to providing a successful learning experience in the online environment (Graff, 2003). Key components of online course development include guiding student learning, creating a sense of engagement, fostering the sharing of information, providing adequate feedback and encouragement, as well as direct and timely communication (Bernard et. al., 2004; Tallent-Runnels et al., 2006).

A key factor of both online and traditional learning environments is that interaction and learner engagement occur as learning outcomes are improved when students are fully engaged and involved in the educational experience (Bernard et. al., 2004; Schwitzer & Lovell, 1999). In addition, learning materials and tasks must engage the learner in ways that promote meaningfulness, understanding, and transfer. Clarity, expressiveness, and feedback may help to ensure learner engagement and inter-activity; multimedia learning materials may do likewise when they are linked to authentic learning activities (Bernard et al, 2004). Instructors also need to participate in discussions and provide scaffolding to help students in think critically when communicating in the written formats typical of asynchronous learning (Green & Land, 2000).

Given this, it is important for online instructors to establish a community of learners where they provide guided questions to help students focus and develop reasoned responses in online discussions (Tallent-Runnels et al., 2006). Following these guidelines and techniques, asynchronous environments have been shown to more effectively provide interpersonal interaction between instructor and student as well as
increasing students’ ability to expand, formalize and refine their reasoning (Bates, 1997; Green & Land, 2000). 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).

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; Kuen, 1994; Larson, 2003; 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; Dumont, 1996; Karatas & Simsek, 2009, Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009; Tiene, 2000; Weimer, 2002). 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; Weimer, 2002). 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).

Another advantage of the online asynchronous discussion is the opportunity for non-physical presence in discussions. This opportunity can result in more engaging discussion where one can challenge another’s argument without the pitfalls of negative physical and social cues such as facial expressions, self-consciousness and tone and inflection of voice that are more common in face-to-face environments (Cheng, Lehman, & Reynolds, 1991; Hathorn & Ingram, 2002; Im & Lee, 2003). Additionally, the common pressure to conform to the group perspective in face-to-face discussions is reduced in the online discussion setting, thus individuals are more able to freely express their opinions and ideas resulting in more honest and open discussion (Vonderwell, 2003).

Additionally online learning can also result in greater student-to-teacher interaction on an individual basis. These interactions (typically through email, electronic feedback, chat rooms, or discussion boards) allow both students and the instructor to communicate with more reflective and thoughtful processes (Rabe-Hemp et al., 2009).
These back and forth discussions between students and instructors as well as student to student interactions have been shown to increase students’ ability to expand, formalize and refine their reasoning skills (Green & Land, 2000). Consequently students in online courses have been found to have significantly higher levels of class participation and more student-to-professor communication than traditional students (Rabe-Hemp et al., 2009).

**Instructor Mediated Quality 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 intentional opportunities for student interaction (Keefe, 2003; Rabe-Hemp et al., 2009; Young, 2004). Given this, a critical component of successful online interaction are the instructor’s requirements for quality discussions. 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. 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).

Additionally it is important in online classes for students to see effective communication modeled by instructors. This requires instructors have a presence in
online discussions with students in order to provide effective feedback that facilitates communication (Blignaut & Trollip, 2003). Instructor presence during discussions and providing feedback has been shown to be beneficial in promoting in-depth understanding of learning and content among online students (Tallent-Runnels et al., 2006). Consequently, online instructors should strive to promote both teacher-student and student-student interaction as well as provide scaffolding to help learners construct quality responses in discussions that promote knowledge and critical thinking skills (Tallent-Runnels et al., 2006).

**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, 1994, 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; Dumont, 1996; Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009; Weimer, 2002).

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). When these principles are applied, the effective interaction between students and instructors in the online environment produces depth of interaction that again, often exceeds that of the traditional classroom (Rabe-Hemp et al., 2009).

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 (Hawke, 2001; 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 P-scores) of both elementary and secondary pre-service teachers.
Chapter III Methods

Introduction

The purpose of the present study was to determine if exposure to moral development theory and dilemma discussion in the asynchronous online learning environment resulted in significant gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers. Additionally this study examined if instructor to student moderated dilemma discussion resulted in higher gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers over student to student discussion alone.

The following research questions were examined in this study:

**Research Question 1**

Research question 1 specifically includes the following sub questions, in which the experimental group received teacher moderated dilemma discussion and the control group participated in student-student dilemma discussion.

1a. Are there differences in mean DIT P-scores in the combined experimental and control groups before and after the intervention? (Main effect by time)

1b. Are there differences in the DIT P-score pre/post marginal means for the experimental and control groups? (Main effect by group)

1c. Is the effect of time different for the experimental group than for the control group (pretest/posttest) before and after the intervention? (Interaction Time by Group).

**Research Question 2**

Question 2 specifically includes the following sub questions:
2a. Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in teacher moderated asynchronous dilemma discussions by time (pretest/posttest)?

2b. Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in student-to-student discussion asynchronous dilemma discussions by time (pretest/posttest)?

Population and Sample

Participants in this study were undergraduate elementary and secondary education majors (N = 98) enrolled in four online sections of Principles of Educational Psychology at the University of Nevada, Reno in the spring semester of 2015. Of the 98 education undergraduates, 76 subjects participated in the study encompassing approximately 78% of the sample population (see Results section for complete demographics of the research population). Although the courses have either an elementary or secondary designation, all course materials and instructional methods are identical across all sections.

Experimental Design and Procedures

The study was quasi-experimental (non-random subject assignment) and used a pretest/posttest design to examine differences in mean DIT P-scores over time. 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 Piaget’s and 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. 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 questions via discussion board (see Appendix A for complete text of the Heinz dilemma). 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 encompassed two types of 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). The control groups (one elementary, one secondary) consisted of students who posted original responses and responded to at least 3 other student postings in the discussion board constituting a student-to-student discussion. Students 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. Experimental groups (one elementary, one secondary) also responded to at least three other student postings following the same criteria, but additionally received direct instructor feedback on each posting during the discussion period. The purpose of the teacher moderated discussion
was to have students think more critically about their initial responses and expand on their reasoning by taking and considering multiple perspectives. Instructor comments were designed for students to broaden their rational to include the perspective of all involved (the wife, the druggist, greater society etc.).

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 (part 1), 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. No instructor feedback was provided for this second discussion. 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?

Instrument

The subjects completed an online pretest and posttest using the Defining Issues Test (DIT 2) prior to and at the end of the 5 week intervention period. The DIT 2 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 DIT 2 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 decision:

- 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 P-scores (post conventional schema score) were used to measure gains in moral reasoning. The P-score, as described by the Center of for the Study of
Ethical Development (2003), represents the proportion of items selected that represent considerations from the Post-Conventional Schema which includes Kohlberg’s Stage 5 (focus on appealing to majority while maintaining minority rights) and Stage 6 (focus on appealing to intuitive moral principles or ideals).

The DIT 2 is considered a valid measure of moral reasoning. The Center for Ethical Development at the University of Minnesota provides the following information as part of its DIT 2 scoring guide “Chapter 5: Statements on the Reliability and Validity for your written report” (Bebeau & Thoma, 2003, p. 30-31) on the reliability and validity of the DIT for methods sections of journal articles and dissertations. As discussed in the literature review the validity for the DIT has been assessed in terms of 7 criteria as cited in over 400 published articles (Rest, Narvaez, Bebeau & Thoma, 1999). The validity include:

(1) Differentiation of various age/education groups; studies show that 30% to 50% of the variance of DIT scores is attributable to level of education. (2) Longitudinal gains; a 10-year longitudinal study of men and women, of college-attendees and non-college subjects from diverse walks of life show gains; a review of a dozen studies of Freshman to Senior college students (N > 500) show effect sizes of .80, making gains in DIT scores one of the most dramatic effects of college. (3) The DIT is significantly related to cognitive capacity measures of Moral Comprehension (r .60s), recall and reconstruction of Post-conventional moral arguments, Kohlberg’s interview measure, and (to a lesser degree) to other cognitive developmental measures. (4) The DIT is sensitive to moral education interventions. One review of over 50 intervention studies reports an Effect Size
for dilemma discussion interventions to be .41 (moderate gains) whereas the Effect Size for comparison groups was only .09 (little gain). (5) The DIT is significantly linked to many prosocial behaviors and to desired professional decision making. One review reports that 37 out of 47 correlations were statistically significant. (6) The DIT is significantly linked to political attitudes and political choices. In a review of several dozen correlates of political attitude, the DIT typically correlates in the range, = .40 to .65. When coupled with measures of cultural ideology, the combination predicts up to 2/3’s of the variance of controversial public policy issues (such as abortion, religion in the public school, women’s roles, rights of the accused, rights of homosexuals, free speech issues). (7) Reliability is adequate. Cronbach alpha is in the upper .70s / low .80s. Test-retest reliability is about the same. Further, the DIT shows discriminant validity from verbal ability/general intelligence and from Conservative/Liberal Political attitudes; that is; the information in a DIT score predicts to the 7 validity criteria above and beyond that accounted for by verbal ability or political attitude. The DIT is equally valid for males and females. No other variable or other construct predicts the pattern of results on the 7 validity criteria as well as moral judgment. DIT-2 is an updated version of the original DIT devised 25 years ago (Bebeau & Thoma, 2003, p. 30-31).

**Data Collection**

Prior to the lecture on moral reasoning and dilemma discussion students were notified via Web Campus email of the opportunity to participate in the study. All students enrolled in the course(s) were asked to participate, but participation was
Students did not receive compensation for their participation, but were given a total of 150 points for the lecture reflection and the pre and post dilemma discussions as part of the normal course assessment. To generate interest and participation, students were offered and provided with the results of their pre and post DIT P-scores upon completion of the study detailing their level and stage of moral development with description upon completion of the course (see Appendix B for letter of recruitment/informed consent).

The DIT 2 was administered online via Survey Monkey per instructions provided by the Center for Ethical Development at the University of Alabama. The Center uploads the online version of the DIT 2 into the primary researchers Survey Monkey account (required) once service is requested. The researcher is asked not to modify any component of the DIT 2, but may add additional demographic questions to the survey.

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). After the data was collected (test completion) the results were downloaded in Excel numerical format. Any identifying student information was removed from the data and student pretest and posttest scores were labeled with numerical ID numbers to connect the pretest and posttest scores for analysis. The file is then sent as an email attachment to the Ethical Development at the University of Alabama for processing. The results were returned in SPSS format for researcher analysis.
Additionally, to address concern with subjects taking the DIT 2 entirely online, the online protocol included reliability checks that include a start-stop time variables (too long or short and the responses are flagged) as well as distraction index which gathers information on their test-taking environment (e.g., was the TV on, were emails or text messages received or sent during the completion of the measure and so on). To further counteract distraction students were given specific instructions on the testing environment (quiet with minimal distractions) in which they should complete the survey. For a complete discussion of the online testing environment and limitations of such see the Limitations section in the Discussion section of this document.

A condition of taking the DIT for the course is that students received their pretest and posttests results. These results were sent by the primary researcher after the course was completed and final grades had been posted.

**Data Analysis**

Subjects were divided into groups for the research analysis. Groups included: Experimental (instructor moderated) (n = 36), Control (student-student) (n = 36) and overall sample population (combined experimental and control) (N = 76). A power analysis using G*Power was performed to determine the number of valid subjects needed per group with a medium effect size (d = .5) at power at .80 (1-β err prob). It was determined that the minimum number of subjects per should be greater than or equal to 34.

**Analysis Question 1**

A 2 x 2 mixed ANOVA, time by group, with repeated measures was used to compare elementary and secondary education students overall pretest and posttest P-
scores. Results were analyzed to determine whether exposure to moral development theory and dilemma discussion were effective at advancing the moral development reasoning of undergraduate teacher education students. Partial eta squared was used to measure the effect size (magnitude of mean differences) where partial $\eta^2 = 0.01$ indicates small effect, partial $\eta^2 = 0.06$ medium effect and partial $\eta^2 = 0.14$ large effect (Sprinthall, 2007).

**Analysis Question 2**

A condition of the analysis of Question 2 is whether significant differences were found with the group interaction of the mixed ANOVA analysis. To determine the effectiveness of the student-student and instructor moderated dilemma discussion on moral reasoning student pretest and posttest DIT P-scores were analyzed for simple main effects using paired samples t-tests with an alpha level of .05. Results were analyzed to determine whether teacher moderated dilemma discussion in conjunction with exposure to moral development theory resulted in significantly higher DIT P-scores than student-to-student dilemma discussion alone. The analysis looked for overall pretest/posttest difference whether significant differences exist between student-student discussion and instructor moderated discussion. Cohen’s $d$ was used to measure the effect size (magnitude of mean differences) where $d = 0.2$ indicates small effect, $d = 0.5$ medium effect and $d = 0.8$ large effect (Sprinthall, 2007).
Chapter IV Results

Introduction

This chapter presents the results of the overall study beginning with the data processing and methods of disaggregation of survey data for analysis in SPSS. Demographics of the research population are also provided including break down by group population (Experimental and Control) (see Appendix D for complete Demographics Questionnaire). The analysis of specific research questions including the 2 x 2 mixed ANOVA used to gauge whole group pre/post significance, followed by the paired samples t-test used to gauge the simple main effects analysis of pretest/posttest scores for the Experimental and Control groups. Finally a summary of questions related to the overall online testing environment are provided (Center for Ethical Development distraction index survey) with an overview of subject responses by group percentage.

Data Processing

A total of 79 pre and post DIT tests were completed by education undergraduate pre-service teachers for the research purposes of the present study. The 79 subjects selected represent 80% of the total education majors \((N = 98)\) that were enrolled in the 4 sections of Principles of Educational Psychology. Of the 79 surveys, 3 surveys were purged by the Center for Ethical Development for factors relating to inconsistency in subject responses which can include: random responding, meaningless item selection (subject responds to style and syntax of specific items rather than meaning), missing data (excessive >10) and non-differential ranking (subject ranks all items the same or in set ranks without differentiation (i.e. always rating items 1, 2, 3…) (Rest, et al., 1999a, 1999b; Rest & Narvaez, 2014). The purged subjects included one from the experimental
group (teacher moderated discussion) and two from the control group (student-student discussion). A total of 76 valid DIT assessments (Experimental group $n = 38$, Control group $n = 38$) were used for the analysis of the research questions for the present study.

**Demographics of Research Population**

The following tables describe the demographic make of the group population used in the study. Table 1 represents the combined population of elementary and secondary education undergraduates that make up the total 76 survey participants. Table 2 presents the demographics of the experimental group ($n = 38$) and Table 3 represents the control group ($n = 38$). Each table is followed by descriptive discussions of each group.
Table 1

Demographic Characteristics of Whole Group Research Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N =76</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>30.3</td>
</tr>
<tr>
<td>Female</td>
<td>53</td>
<td>69.7</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary Education</td>
<td>44</td>
<td>57.9</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>32</td>
<td>42.1</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>8</td>
<td>10.5</td>
</tr>
<tr>
<td>Sophomore</td>
<td>27</td>
<td>35.5</td>
</tr>
<tr>
<td>Junior</td>
<td>27</td>
<td>35.5</td>
</tr>
<tr>
<td>Senior</td>
<td>14</td>
<td>18.4</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>2</td>
<td>2.6</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>4</td>
<td>5.3</td>
</tr>
<tr>
<td>Caucasian</td>
<td>59</td>
<td>77.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10</td>
<td>13.2</td>
</tr>
<tr>
<td>Native American</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-22</td>
<td>57</td>
<td>75.0</td>
</tr>
<tr>
<td>23-27</td>
<td>9</td>
<td>11.8</td>
</tr>
<tr>
<td>28-32</td>
<td>5</td>
<td>6.6</td>
</tr>
<tr>
<td>&gt;33</td>
<td>4</td>
<td>5.3</td>
</tr>
</tbody>
</table>

The majority of respondents were female 67.7% (n=53) with males representing 30.3% (n=23) of the population. Student majors were 57.9% (n=44) Elementary Education and 42.1% (n=32) Secondary Education. Out of the total population of 76 respondents 10.5% (n=8) identified as freshmen. An equal number of students were sophomore or juniors in their programs 35.5% (n=27) respectively (71% total identifying as sophomores or juniors). Seniors identified as 18.4% (n=14) of the research population. The predominant race/ethnicity identified was Caucasian at 77.6% (n=59) followed by
Hispanic at 13.2% (n=10) of the research population. African American, Asian/Pacific Islander or other made up 9.2% (n=7) of the remaining population. No students identified as Native American. The primary age range of the student population was between 18-22 years of age at 75.0% (n=57). Of the remaining population 11.8% (n=9) fell within the 23-27 age range, 6.6% (n=5) in the 28-32 age range, with 5.3% (n=4) falling at greater than 33 years of age. The mean age of the student population was 22.2 and ranged from 18 – 45 years of age.

Table 2

Demographic Characteristics of Experimental Group (teacher moderated discussion)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n=38</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>39.5</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>60.5</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary Education</td>
<td>12</td>
<td>31.6</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>26</td>
<td>68.4</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>2</td>
<td>5.3</td>
</tr>
<tr>
<td>Sophomore</td>
<td>19</td>
<td>50.0</td>
</tr>
<tr>
<td>Junior</td>
<td>11</td>
<td>28.9</td>
</tr>
<tr>
<td>Senior</td>
<td>6</td>
<td>15.8</td>
</tr>
<tr>
<td>Age (Mean = 22.84)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3

Demographic Characteristics of Control Group (student-student discussion)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n=38</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Female</td>
<td>30</td>
<td>78.9</td>
</tr>
<tr>
<td>Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary Education</td>
<td>20</td>
<td>52.6</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>18</td>
<td>47.4</td>
</tr>
<tr>
<td>Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshmen</td>
<td>6</td>
<td>15.8</td>
</tr>
<tr>
<td>Sophomore</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Junior</td>
<td>16</td>
<td>42.1</td>
</tr>
<tr>
<td>Senior</td>
<td>8</td>
<td>21.1</td>
</tr>
<tr>
<td>Age (Mean = 21.59)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The majority of respondents in both the experimental and control groups were female 60.5% Experimental and 78.9% Control. Having a larger population of females in not an issue as the DIT is equally valid for males and females and gender accounts for less than one half of a percent of the variance of the DIT (Rest, 1979, 1999a, 1999b; Thoma, 1986; Thoma & Dong, 2014;). Secondary education majors were higher for the Experimental group at 68.4% and relatively balanced for the Control group at 47.3% and 52.6% respectively. Previous studies on moral interventions designed to advance moral reasoning in pre-service teachers have found no significant differences in the pre/post in DIT P-score gains between elementary and secondary education students (Cummings et al., 2010). Both Experimental and Control groups were consistent with the total group demographics with a majority of students identifying as sophomores or juniors with Experimental (78.9%) and Control (63.2%).
Results of Research Question 1:

A 2x2 mixed ANOVA, time by group, with repeated measures was used to investigate the effect of the intervention on moral reasoning by analyzing pretest and posttest DIT P-scores for the experimental and control group. All the assumptions of the ANOVA were met. The following tables summarize the statistics provided by SPSS.

Table 4

*Means and Standard Deviation for Pretest and Posttest DIT P-scores for Combined Experimental and Control Groups*

<table>
<thead>
<tr>
<th>Group</th>
<th>M (pre)</th>
<th>SD</th>
<th>M (post)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (n=76)</td>
<td>33.32</td>
<td>14.36</td>
<td>37.61</td>
<td>16.46</td>
</tr>
</tbody>
</table>

Table 5

*ANOVA Source Table Pre/Post Intervention Within Subjects*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>Partial η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>699.184</td>
<td>1</td>
<td>699.184</td>
<td>6.182</td>
<td>.015*</td>
<td>.077</td>
</tr>
<tr>
<td>Time*Group</td>
<td>9.500</td>
<td>1</td>
<td>9.500</td>
<td>.084</td>
<td>.773</td>
<td>.001</td>
</tr>
<tr>
<td>Error</td>
<td>8369.316</td>
<td>74</td>
<td>113.099</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>9078.0</td>
<td>76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05

Table 6

*ANOVA Source Table Pre/Post Intervention Between Subjects*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>Partial η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>191132.237</td>
<td>1</td>
<td>191132.237</td>
<td>524.969</td>
<td>.000</td>
<td>.876</td>
</tr>
<tr>
<td>Group</td>
<td>451.605</td>
<td>1</td>
<td>451.605</td>
<td>1.240</td>
<td>.269</td>
<td>.016</td>
</tr>
<tr>
<td>Error</td>
<td>26942.158</td>
<td>74</td>
<td>364.083</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Research Question 1a:** Are there differences in mean DIT P-scores in the combined experimental and control groups before and after the intervention? (Main effect by time)

The ANOVA main effect (within subjects factor) for Time was significant: \( F(1, 74) = 6.182, p = .015, \eta^2 = .08 \). The results provide evidence that instruction in moral development theory and moral dilemma discussion in the online asynchronous learning environment results in significant overall gains in moral reasoning (DIT P-scores) of elementary and secondary undergraduate education students. Partial eta squared \( \eta^2 = .077 \) indicates medium effect.

**Research Question 1b:** Are there differences in the DIT P-score pre/post marginal means for the experimental and control groups? (Main effect by group)

The ANOVA main effect for group (between subjects factor) was not significant: \( F(1, 74) = .1240, p = .269, \text{partial } \eta^2 = .016 \). The results indicate that, although significant differences were found in the mean DIT P-score in the combined experimental and control groups before and after the intervention (Question 1a analysis), there were no significant differences found with pretest and posttest DIT P-Scores of subjects who participated in the teacher moderated dilemma discussion and of those who participated in the student-student dilemma discussion.

**Research Question 1c:** Is the effect of time different for the experimental group than for the control group (pretest/posttest) before and after the intervention? (Interaction Time by Group).
The ANOVA analysis for interaction (Time by Group) was not significant:

\[ F(1,74) = 0.084, p = .773, \eta^2 = .001. \]

Figure 7 shows the estimated marginal means for pre/post DIT P-scores for both the experimental and control groups. Although each group show growth in moral reasoning from pre to post there is no interaction between groups.

Figure 7

*Pre/Post Experimental verses Control Time by Group*
Results for Research Question 2:

Given the non-significance of interaction ($F(1,74) = 1.240, p = .269$) in the 2 x 2 mixed ANOVA the simple effects analysis using paired samples t-tests was not conducted. The table below shows the means and standard deviations of the experimental and control group.

Table 6

*Means and Standard Deviation for Pretest and Posttest DIT P-scores for Experimental and Control Groups*

<table>
<thead>
<tr>
<th>Group</th>
<th>M (pre)</th>
<th>SD</th>
<th>M (post)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental (n=38)</td>
<td>34.79</td>
<td>13.92</td>
<td>39.58</td>
<td>15.13</td>
</tr>
<tr>
<td>Control (n=38)</td>
<td>31.84</td>
<td>14.82</td>
<td>35.63</td>
<td>17.67</td>
</tr>
</tbody>
</table>

Although the results indicate that no significant differences were found with pretest and posttest DIT P-Scores of subjects who participated in the teacher moderated dilemma discussion and of those who participated in the student-student dilemma discussion, these results are not necessarily indicative of failure either type of discussion to contribute to the gains in DIT P-scores found in the overall results of this study (Question 1a). The results merely suggests that, as part of interventions designed to increase moral reasoning of pre-service teachers, instructor moderated discussions have no greater impact on the increase in moral reasoning scores of pre-service teachers than student-student discussions alone.
Testing Environment

Figure 2

Compared to how I take surveys in the classroom I took this questionnaire:

Overall subjects indicated that compared to surveys taken in the traditional classroom environment the online survey included no difference or only minimal distractions: Pre (81.5%), Post (89.5%). Subjects who indicate distractions made them start and stop the online survey encompassed: Pre (10.5%), Post (7.9%), while subjects who indicated taking the online survey was not the same way at all as traditional classroom surveys (completed survey while doing other things): Pre (5.3%), Post (2.6%). Figure 2 indicates how subjects compared how they took surveys in the classroom to completing the online questionnaire (see Appendix E for complete Testing Environment/Distraction survey).
Chapter V Conclusions and Discussions

Introduction

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; Rest & Thoma, 1986), little research has been conducted to gauge the effectiveness of such interventions in the online asynchronous learning environment where students often do not directly communicate face-to-face with the instructor. The purpose of the present study was to determine if exposure to moral development theory and dilemma discussion in the asynchronous online learning environment resulted in significant gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers. Additionally this study examined if instructor to student moderated dilemma discussion resulted in higher gains in principled moral reasoning (DIT P-scores) of both elementary and secondary pre-service teachers over student to student discussion alone.

Conclusion 1

Research question 1 investigated differences in pre-service teachers’ principled moral reasoning mean DIT P-scores before and after exposure to moral development theory and moral dilemma discussion in the online asynchronous learning environment. The research question was analyzed with a 2x2 Mixed ANOVA for three main factors: (a) Main Effect by Time (Are there differences in mean DIT P-scores in the combined experimental and control groups before and after the intervention?), (b) Main Effect by Group (Are there differences in the DIT P-score pre/post marginal means for the
experimental and control groups?), and (c) Is the effect of time different for the experimental group than for the control group (pretest/posttest) before and after the intervention? (Interaction Time by Group).

Only the Main Effect by Time resulted in significant differences between whole group Mean DIT P-scores \( F(1,74) = 6.182, p = .015, \eta^2 = .08 \). The Main Effect by Group and Interaction Time*Group did not result in significant differences. These results indicate that instruction in moral development theory and moral dilemma discussion in the online asynchronous learning environment (regardless of teacher participation or student-student discussion alone) results in significant overall gains in moral reasoning (DIT P-scores) of elementary and secondary undergraduate education students. Partial eta squared \( \eta^2 = .077 \) indicates medium effect.

The result of the present study are consistent with previous studies that indicate educational interventions that include instruction in moral development theory and dilemma discussion can result in significant gains in DIT P-scores among undergraduate pre-service teachers (Cummings et al., 2006, 2007, 2010). The results also emphasize the importance of the development of intentional interventions that are inclusive of theories of moral development and peer discussion of controversial moral dilemmas as effective methods of increasing moral development of pre-service teachers (Cummings et al., 2004, 2006, 2010; McNeel, 1994).

Additionally, 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; Rest & Thoma,
1986), this study demonstrates similar results can be achieved in the online asynchronous learning environment.

**Conclusion 2**

Research question 2 investigated differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in teacher moderated asynchronous dilemma discussions and those who participate in student-to-student discussion asynchronous dilemma discussions alone. The question was broken into the following factors: (a) Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in teacher moderated asynchronous dilemma discussions by time (pretest/posttest)? and (b) Are there any differences in pre-service teachers’ principled moral reasoning mean DIT P-scores of subjects who participate in student-to-student discussion asynchronous dilemma discussions by time (pretest/posttest)?

There was no significant interaction main effect by group reported in the 2 x 2 mixed ANOVA so the paired samples t-test analysis for simple main effects was not conducted. While the present study did not find significant differences in teacher moderated dilemma discussions or student-student discussions alone, it is important to note that the dilemma discussions, in conjunction with instruction in moral development theory, are a critical component of educational interventions that result in significant gains in moral reasoning (DIT P-scores) overtime (Bebau & Thoma, 1999; Narvaez, 1998; Rest et al., 1999a, 1999b; Rest, Thoma et al., 1999; Rest & Narvaez, 2014; Schlaefli et al, 1985; Thoma, 2002, 2006; Yeazell & Johnson, 1988).
Given this, the quality of the dilemma discussion is an important factor of educational interventions that result in significant gains in moral reasoning (Rest et al., 1999a; Rest, Thoma et al., 1999; Schlaefli, Rest, & Thoma, 1985; Thoma, 2002, 2006; Yeazell & Johnson, 1988). In the present study, subjects posted original responses to guided questions and were instructed to respond to other students’ postings within the discussion. The purpose of this interaction was to have students think more critically about their initial responses and expand on their reasoning by taking and considering perspective of others. This questioning format is supported in the literature review where research indicates that instructors who provide guided questions, specifying the number of posts required by students including the number of student to student interactions, and the depth and substance of what students post in online discussions results in greater student interaction that helps students focus and develop reasoned responses, (Baglione & Nastanski, 2007). Additionally, given the fact that a critical component of all classroom instruction, regardless of delivery method, is a high degree of interactivity and student participation, it is important for instructors of online courses to deliberately establish and develop these intentional opportunities for student interaction as a requirement for quality discussions (Keefe, 2003; Rabe-Hemp et al., 2009; Young, 2004).

Finally, the present study does not necessarily differentiate between the quality of the instruction in Moral Development theory and that of the dilemma discussion, as both can be considered essential contributing factors in gains in moral reasoning. Consequently, 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, 1994, 2014; Rest, Narvaez, Bebeau, & Thoma, 2000), the asynchronous learning environment has been shown to promote these processes through instruction/discussion that promote essential analytical and critical thinking skills as well as facilitating in-depth high quality student reflections (Bailey & Card, 2009; Baglione & Nastanski, 2007; Cain & Smith, 2009; Dumont, 1996; Tallent-Runnels et al., 2006; Rabe-Hemp et al., 2009; Weimer, 2002). As a result, the present study demonstrates that these interventions can be effectively implemented in the online asynchronous learning environment when instruction in moral development theory and dilemma discussion are inclusive of teacher-student interaction that promote critical thinking skills and create the cognitive dissonance necessary for the advancement of moral reasoning (McNeel, 1994; Rest et al., 1999b; Rest, Thoma & Edwards, 1997; Thoma, 2002, 2006).

Implications

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; Johnston, 1989).
Additionally teachers with advanced moral reasoning skills are better able to effectively accommodate student differences, tolerate diverse viewpoints, and are more inclusive of student perspectives in curriculum decisions (Chang, 1994; Cummings et al., 2001, 2003, 2007, 2010; Johnston, 1989; O’Keefe & Johnston, 1989). These skill sets ultimately promote a more student centered environment where teachers can more objectively deal with both education and discipline issues in a manner that facilitates students’ emotional, social and academic growth (Chang, 1994, Johnston, 1989; Johnston & Lubomudrov, 1987; Lapsley, Holter, & Narvaez, 2013; MacCallum, 1993; Narvaez & Lapsley, 2008).

The results of the present study also corroborate well documented, historical research of non-significant differences in learning outcomes between traditional and online instruction. 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).

Limitations

Quasi experimental design

The participants in this study were not randomly selected but were drawn from students enrolled in online courses in the Essentials of Educational Psychology at the University of Nevada, Reno. With the limitation of studying one University, a more
system wide study of multiple universities with teacher education programs using a random selection of pre-service teachers is recommended.

**Longitudinal analysis**

Recommendations from previous research (Cummings et al. 2001, 2010; Rest et al., 1999a, 1999b) support conducting longitudinal pre/post DIT test analysis to verify gains in moral reasoning (P-scores) are maintained over time as evidence of the effectiveness of moral reasoning interventions over time. Additionally, rationale for extended DIT posttest studies argue the necessity to counteract the possibility that gains in moral reasoning with short interventions designed to increase moral reasoning are not attributed pure memorization of instructional content or an instructors attempt to theoretically “teach to the test.”

One limitation for the present study is the failure to conduct an additional posttest to determine if gains in moral reasoning were maintained over time. In a similar study, conducted by Cummings et al. (2010), a pre post/post analysis showed gains in DIT P-scores were maintained directly after a moral reasoning intervention and dilemma discussion intervention and additionally 5 weeks after within the same semester.

One consideration for not conducting an additional posttest in the present study was the order in which course materials were presented in the course in which the intervention occurred. The course follows a 10 week design (traditional courses follow a 12 week design) where the lecture topics follow the order in which information is present in the course textbook chapters sequentially. The chapter on moral and pro-social development, lecture on moral reasoning and dilemma discussion occurred in the 7th week of the course. The DIT pre-test was administered two weeks prior to the
intervention (Week 5) followed by the posttest at end of Week 8 (two weeks after the intervention). Given the short period of time that remained until the end of the 10 week course, the administration of a second posttest DIT 2 may not have been enough time to effectively gauge relevant longitudinal gains (or maintenance) of moral reasoning levels within the present study.

Given this, one possibility for replicating this study would be to give a second post-test weeks or months after course completion. Yet, Rest et al. (1999a) note that typically intervention programs designed to gauge the effectiveness of specific strategies for increasing moral reasoning, unlike longitudinal studies, are shorter in duration and have better control over outside influences or experiences subjects may encounter over longer periods of time. Additionally, these shorter studies are also better at gauging the success of specific factors within intervention programs designed to promote advancement in moral reasoning (Rest et al., 1999a).

This is not to imply there is no value in conducting additional posttest analysis for the current study, but argues the value of conducting further testing would be to measure if subjects maintained gains in moral reasoning over time after completing in coursework designed to promote moral reasoning advancement as part of an undergraduate education program. Which, of course, would add to the overall effectiveness of such programs at promoting post-conventional reasoning skills shown to be a valuable component of the teaching practice.

To address the issue of the possibility of memorizing content or potentially “teaching to the test”, it is important to note that the Defining Issues Test is not an assessment of content knowledge, but a measure of moral reasoning through the
activation of pre-existing moral schema within the individual (Rest et al. 1999a, 1999b; Rest & Narvaez, 2014). While subjects could purposely attempt to choose items higher than their current level of moral reasoning, they can only comprehend moral arguments up to and including the current developmental level they have achieved, thus they could not intentionally mimic higher levels of moral reasoning because they would not understand the rational for higher-level thought that are above and beyond their current level (Narvaez and Bock, 2002; Rest et al, 1999a, 1999b; Thoma, 2006). This is consistent with Kohlberg’s theory of moral reasoning, on which the DIT is based, that the stages of moral reasoning follow an invariant sequence, and like Piaget’s stages of cognitive development, individuals would not be able to comprehend or understand applications of moral (or cognitive) reasoning higher than the highest stage they have achieved (Colby & Kohlberg, 1984; Kohlberg 1976, 1981b).

The design of the DIT also does offer specific choices on level of moral reasoning within its 12 item analysis subjects can choose from when considering solutions to moral dilemmas, but intentionally uses a sentence fragment strategy that balances bottom-up processing (stating just enough of a line of argument to activate a schema) with top-down processing (leaving the argument incomplete so that the participant has to fill in the meaning from schemas already in long-term memory. This strategy is particularly good at evoking preferred schema because individuals will prefer the arguments that represent the highest level of development they have attained, but they will not comprehend arguments based on levels of moral reasoning that they not yet have achieved (Narvaez and Bock, 2002; Rest et al, 1999a, 1999b; Thoma, 2006). Based on this rationale, it would be seemingly difficult for individuals to score higher than their current level of moral reason
based on intent or pure memorization of instructional content or possible “teaching to the test” concerns.

**Testing Environment**

According to the Center for Ethical Development (University of Alabama, n.d.), the test taking environment is an important component when taking a cognitively complex measure like the DIT. While it is recognized that the recommended testing environment is proctored group testing, there is an increasing demand for the necessity of on-line testing options. Given this, the Center for Ethical Development is currently developing a distraction index that adds an additional reliability check for the online version of the DIT 2 that includes start-stop time variables (too long or too short responses are flagged), as well as survey information from subjects related to their test-taking environment which includes whether subjects listened to music, watched television, received/responded to phone/email/texts, talked with others etc. while completing the online DIT assessment. Taken together, these checks are considered helpful in minimizing distractions for online independent online testing situations.

These results, while not necessarily indicative of distractions influencing outcomes on DIT pre/post P-scores, do suggest a possibility of greater control on the part of the researcher to control the prevalence of possible distracting factors that may influence the necessity for a controlled test taking environment. While the design of the DIT 2 provided by the Center for Ethical Development encourages subjects to complete the assessment in one sitting, more detailed instructions are recommended for future studies using the online testing format that include instructions on taking the assessment alone in a quiet environment with not television, music, or access to phone or electronic
devices that may increase distraction (noise or communication) while completing the assessment. Including the distraction survey provided can also be used to gauge the effectiveness of including these requirements for reducing environmental distractions.

**Recommendations for further research**

The Defining Issues Test offers a variety of indexes and measures (see Appendix F for complete set of indexes) that can be used to expand or supplement research studies on the moral reasoning of both pre-service and in-service teachers. Although the most frequently used index used in the DIT index is the P-score other DIT indexes can be used to further exam the characteristics of moral reasoning among subjects.

**N2 scores**

One such index is the N2 score. On the same lines as the P-score, the N2 is a measure of post-conventional reasoning, yet also reflects the extent to which individuals reject ideas because they are simplistic or biased. More specifically the N2 score represents the degree to which post conventional items are prioritized plus the degree to which Personal interest items receive lower ratings than the Postconventional items (Beebeau and Thoma, 2003). Additionally, the N2 score is more sensitive to educational interventions and produces greater longitudinal gains than the P% score (Rest, Thoma, Narvaez, & Beebeau, 1997a). Future studies examining interventions designed to increase the moral reasoning of pre-service teachers, or an extension of the present study, may examine the N2 scores in conjunction (or in place off) DIT P-scores to further examine the effectiveness of such interventions as well as gauge the maintenance of moral reasoning thinking over time.
**U-scores**

Another useful index of the DIT is the U-score (utilizer score). According to Rest et al. (1999a, 1999b), the U-score represents the degree of match between which items subjects rate as most important and the decision subject indicate they would make in the moral dilemma. The U-score can be considered an intermediary between moral reasoning assessment and the assessment of actual moral behavior. Essentially, the U-score may be generally indicative of the prediction of moral action based on one’s level of moral reasoning (Thoma, 1994). Thus, in future studies, the U-score could potentially be used to investigate relationships between teachers’ level of moral reasoning (as determined by P-scores or N2 scores) and actual moral decision making in the classroom environment.

**In-depth Analysis of Dilemma Discussions**

In the present study, subjects participated in two online discussions related the intervention on moral reasoning. The primary discussion was the Heinz dilemma which was designed to challenge students’ assumptions through perspective taking in order to promote the critical analysis and cognitive dissonance that serves as the necessary catalyst for advancement in moral reasoning. Following the initial discussion and lecture on moral reasoning, students participated in a second discussion as an opportunity to 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 how they might approach moral situations in the future. No instructor feedback was provided for this second discussion for either the experimental or control group, but afforded students an opportunity to reflect upon their perceived growth in moral reasoning at the end of the intervention period.
The combined Heinz dilemma and self-reflection discussions resulted in approximately 750 pre/post discussion postings which may serve as a valuable tool for analyzing student responses in relation to their pre and post intervention levels of moral reasoning. While beyond the scope of discussion of the current study, an extension of this study (with IRB approval) might be to conduct a valid mixed methods approach that examines the qualitative aspects of the discussion postings in conjunction with quantitative measures provided by the Center of Ethical Development as part of the DIT analysis. Such an analysis may add insight into the depth of critical analysis subjects used when making decisions while participating in the moral dilemma discussions.
References


Young, S. S. (2004). In search of online pedagogical models: Investigating a paradigm change in teaching through the school for all community. *Journal of Computer Assisted Learning, 20*, 133-150.
Appendix A

Heinz Dilemma

In Europe, a woman was near death from a rare kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $400 for the radium and charged $4,000 for a small dose of the drug. The sick woman’s husband, Heinz, went to everyone he knew to borrow the money and tried every legal means, but he could only get together about $2,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, “No, I discovered the drug, and I’m going to make money from it.” So, having tried all legal means, Heinz gets desperate and considers breaking into the man’s store to steal the drug for his wife.

Questions

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?
Appendix B

Letter of Recruitment / Informed Consent

1. Informed Consent

Informed Consent Form:

Purpose of the Study:
This is a study in educational psychology being conducted by Patrick Bell, Ph.D. candidate in Counseling and Educational Psychology at the University of Nevada, Reno. The purpose of this study is to examine the moral reasoning of pre-service teachers before and after instruction and dilemma discussion on moral development theory.

What will be done:
You will complete both a pre and post-test survey (one at the beginning of this course and later towards the end of the course), which will take 20-30 minutes to complete. You should find these dilemma scenarios very interesting and thought provoking to complete. We also will ask for some demographic information (e.g. age, educational level, gender, etc.) so that we can accurately describe the general traits of the group of students who participate in the study.

Benefits of this Study:
You will be contributing to knowledge about teacher training programs and how the role instruction in moral development contributes to ethical decision making among teachers. After we have finished data collection, we will provide you your individual results (level of moral reasoning) based on the survey inventory.

Risks or discomforts:
No risks or discomforts are anticipated from taking part in this study.

Confidentiality:
Your responses will be kept completely confidential. We will NOT know your IP address when you respond to the Internet survey. We will ask you to include your first initial and last name, email or mailing address so that we can connect your survey answers to the data we collect as well as send you your individual results. However, this information will not be stored with data from your survey. Instead, you will be assigned a participant number, and only the participant number will appear with your survey responses. The list of e-mail and mailing addresses of our participants will be destroyed upon completion of the study.

Decision to quit at any time:
Your participation is voluntary; you are free to withdraw your participation from this study at any time. If you do not click on the "submit" button at the end of the survey, your answers and participation will not be recorded.

How the findings will be used:
The results of the study will be used for scholarly purposes only. You will not be personally identified in any reports or publication that may result from this study. The researchers, the Department of Health and Human Services (HHS), the University of Nevada, Reno Social behavior Institution Review Board may look at records related to this study as part of the standard protocol for conducting research and protection of subjects at the University of Nevada, Reno.

Contact information:
If you have concerns or questions about this study, please contact Patrick Bell at pbell@unr.edu or 775-527-1391. The University of Nevada, Reno Office of Human Research Protection oversees all human research conducted by University researchers. If you have questions or concerns about the conduct of this study, call the office at 775-527-3587 or 211 Ross Hall /331 Reno, Nevada 89557

1. By clicking Yes you consent that you understand the terms of the above study and agree to voluntarily participate.

☐ Yes
☐ No
Appendix C

DIT 2 (online version)

2.

* 1. So that we may be able to connect your pre questionnaire (this survey) with your post questionnaire (taken later in the course) please enter your first initial followed by your last name. Example: “JDoo” Remember this information is kept confidential and the name you enter will be replaced with a number and will not be used in the data analysis or reporting.

* 2. What is your major? (for education students please indicate the grade level you plan to teach Example: Secondary education or elementary education). For all other please list your primary major.

* 3. What level of Principles of Educational Psychology are you currently enrolled in?
   - EPY 330A – Elementary
   - EPY 330B – Secondary

* 4. What is the last name of your instructor?
   - Bell
   - Kulwadee

5. Students in the past have indicated an interest in receiving their results of the Defining Issues Test. If you are interested in receiving your results please put in either your email, mailing address or both below where you would like your results to be sent. Again this information will be kept confidential and all email and mailing address will be destroyed upon completion of the study.
   Email Address:
   Mailing Address:

3. Defining Issues Test-2

This questionnaire is concerned with how you define the issues in a social problem. Several stories about social problems will be described. After each story, there will be a list of questions. The questions that follow each story represent different issues that might be raised by the problem. In other words, the questions/issues raise different ways of judging what is important in making a decision about the social problem. You will be asked to rate and rank the questions in terms of how
important each one seems to you.

PLEASE TRY TO FINISH THE QUESTIONNAIRE IN ONE SITTING.

4. EXAMPLE of the task

Imagine you are about to vote for a candidate for the Presidency of the United States. Before you vote, you are asked to rate the importance of five issues you could consider in deciding who to vote for. Rate the importance of each item (issue) by checking the appropriate box.

* 1. Rate the following issues in terms of importance.

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<th>Great</th>
<th>Much</th>
<th>Some</th>
<th>Little</th>
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<tr>
<td>1. Financially are you personally better off now than you were four years ago?</td>
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<td>2. Does one candidate have a superior moral character?</td>
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<td>3. Which candidate stands the tallest?</td>
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<td>4. Which candidate would make the best world leader?</td>
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<td>5. Which candidate has the best ideas for our country’s internal problems, like crime and health care.</td>
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Note. Some items may seem irrelevant or not make sense (as in item #3). In that case, rate the item as "NO".

After you rate all of the items you will be asked to RANK the top four items in terms of importance. Note that it makes sense that the items you RATE as most important should be RANKED as well. So if you only rated item 1 as having great importance you should rank it as most important.

* 2. Consider the 5 issues above and rank which issues are the most important.

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Again, remember to consider all of the items before you rank the four most important items and be sure that you only rank items that you find important.

Note also that before you begin to rate and rank items you will be asked to state your preference for what action to take in story.

Thank you and you may begin the questionnaire!

5. Story 1

Famine

The small village in northern India has experienced shortages of food before, but this year's famine is worse than ever. Some families are even trying to feed themselves by making soup from tree bark. Mustaq Singh's family is near starvation. He has heard that a rich man in the village has supplies of food stowed away and is hoarding food while its price goes higher so that he can sell the food later at a huge profit. Mustaq is desperate and thinks about stealing some food from the rich man's warehouse. The small amount of food that he needs for his family probably wouldn't even be missed.

* 1. What should Mustaq Singh do? Do you favor the action of taking food?
   - ☐ Should take the food
   - ☐ Can't decide
   - ☐ Should not take the food

* 2. Rate the following issues in terms of importance.

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* 3. Consider the 12 issues above and rank which issues are the most important.

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6. Story 2

Reporter

Molly Dayton has been a news reporter for the Gazette newspaper for over a decade. Almost by accident, she learned that one of the candidates for Lieutenant Governor for her state, Grover Thompson, had been arrested for shop-lifting 20 years earlier. Reporter Dayton found out that early in his life, Candidate Thompson had undergone a confused period and done things he later regretted, actions which would be very out-of-character now. His shoplifting had been a minor offense and charges had been dropped by the department store. Thompson has not only straightened himself out since then, but built a distinguished record in helping many people and in leading constructive community projects. Now, Reporter Dayton regards Thompson as the best candidate in the field and likely to go on to important leadership positions in the state. Reporter Dayton wonders whether or not she should write the story about Thompson's earlier troubles because in the upcoming close and heated election, she fears that such a news story could wreck Thompson's chance to win.

* 1. Do you favor the action of reporting the story?
   - Should report the story
   - Can't decide
   - Should not report the story

* 2. Rate the following issues in terms of importance.

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<tr>
<th>Issue</th>
<th>Great</th>
<th>Much</th>
<th>Some</th>
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<tbody>
<tr>
<td>1. Doesn't the public have right to know all the facts about all the candidates for office?</td>
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<td>2. Would publishing the story help Reporter Dayton's reputation for investigative reporting?</td>
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<td>3. If Dayton doesn't publish the story wouldn't another reporter get the story anyway and get the credit for investigative reporting?</td>
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<td>4. Since voting is such a joke anyway, does it make any difference what reporter Dayton does?</td>
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<td>5. Hasn't Thompson shown in the past 20 years that he is a better person than his earlier days as a shop-lifter?</td>
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<td>6. What would best serve society?</td>
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<td>7. If the story is true, how can it be wrong to report it?</td>
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<td>8. How could reporter Dayton be so cruel and heartless as to report the damaging story about candidate Thompson?</td>
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<td>9. Does the right of &quot;habeas corpus&quot; apply in this case?</td>
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<td>10. Would the election process be more fair with or without reporting the story?</td>
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<td>11. Should reporter Dayton treat all candidates for office the same way by reporting everything she learns about them, good and bad?</td>
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<td>12. Isn't it a reporter's duty to report all the news regardless of the circumstances?</td>
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* 3. Consider the 12 issues you rated above and rank which issues are the most important.

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School Board

Mr. Grant has been elected to the School Board District 190 and was chosen to be Chairman. The district is bitterly divided over the closing of one of the high schools. One of the high schools has to be closed for financial reasons, but there is no agreement over which school to close. During his election to the School Board, Mr. Grant had proposed a series of “Open Meetings” in which members of the community could voice their opinions. He hoped that dialogue would make the community realize the necessity of closing one high school. Also he hoped that through open discussions, the difficulty of the decision would be appreciated, and that the community would ultimately support the school board decision. The first Open Meeting was a disaster. Passionate speeches dominated the microphones and threatened violence. The meeting barely closed without fist-fights. Later in the week, school board members received threatening phone calls. Mr. Grant wonders if he ought to call off the next Open Meeting.

1. Do you favor calling off the next Open Meeting
   - [ ] Should call off the next open meeting
   - [ ] Can’t decide
   - [ ] Should have the next open meeting

2. Rate the following issues in terms of importance.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Great</th>
<th>Much</th>
<th>Some</th>
<th>Little</th>
<th>No</th>
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<tbody>
<tr>
<td>Is Mr. Grant required by law to have Open Meetings on major school board decisions?</td>
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<td>Would Mr. Grant be breaking his election campaign promises to the community by discontinuing the Open Meetings?</td>
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<td>Would the community be even angrier with Mr. Grant if he stopped the Open Meetings?</td>
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<td>Would the change in plans prevent scientific assessment?</td>
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<td>If the school board is threatened, does the chairman have the legal authority to protect the Board by making decisions in closed meetings?</td>
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<td>Would the community regard Mr. Grant as a coward if he stopped the open meetings?</td>
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<td>Does Mr. Grant have another procedure in mind for ensuring that divergent views are heard?</td>
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<td>Does Mr. Grant have the authority to expel troublemakers from the meetings or prevent them from making long speeches?</td>
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<td>Are some people deliberately undermining the school board process by playing some sort of power game?</td>
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<td>What affect would stopping this discussion have on the community’s ability to handle controversial issues in the future?</td>
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<td>Is the trouble coming from only a few hotheads, and is the community in general really far-minded and democratic?</td>
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<td>What is the likelihood that a good decision could be made without open discussion from the community?</td>
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3. Consider the 12 issues you rated above and rank which issues are the most important.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Most important item</th>
<th>Second most important</th>
<th>Third most important</th>
<th>Fourth most important</th>
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8. Story 4

Cancer

Mrs. Bennett is 62 years old, and in the last phases of colon cancer. She is in terrible pain and asks the doctor to give her more painkiller medicine. The doctor has given her the maximum safe dose already and is reluctant to increase the dosage because it would probably hasten her death. In a clear and rational mental state, Mrs. Bennett says that she realizes this; but she wants to end her suffering even if it means ending her life. Should the doctor give her an increased dosage?

* 1. Do you favor the action of giving more medicine?
   - ○ Should give Mrs. Bennett an increased dosage
   - ○ Can't decide
   - ○ Should not give her an increased dosage

* 2. Rate the following issues in terms of importance.

   |   | Great | Much | Some | Little | No |
---|------|------|------|-------|-------|
1. Isn't the doctor obligated by the same laws as everybody else if giving an overdose would be the same as killing her? |
2. Wouldn't society be better off without so many laws about what doctors can and cannot do? |
3. If Mrs. Bennett dies, would the doctor be legally responsible for malpractice? |
4. Does the family of Mrs. Bennett agree that she should get more painkiller medicine? |
5. Is the painkiller medicine an active heliotropic drug? |
6. Does the state have the right to force continued existence of those who don't want to live? |
7. Is helping to end another's life ever a responsible act of cooperation? |
8. Would the doctor show more sympathy for Mrs. Bennett by giving the medicine or not? |
9. Wouldn't the doctor feel guilty from giving Mrs. Bennett so much drug that she died? |
10. Should only God decide when a person's life should end? |
11. Shouldn't society protect everyone against being killed? |
12. Where should society draw the line between protecting life and allowing someone to die if the person wants to? |

* 3. Consider the 12 issues you rated above and rank which issues are the most important.

   |   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
---|---|---|---|---|---|---|---|---|---|---|----|----|----|
Most important item |
Second most important |
Third most important |
Fourth most important |
Demonstration

Political and economic instability in a South American country prompted the President of the United States to send troops to "police" the area. Students at many campuses in the U.S. have protested that the United States is using its military might for economic advantage. There is widespread suspicion that big oil multinational companies are pressuring the President to safeguard a cheap oil supply even if it means loss of life. Students at one campus took to the streets in demonstrations, tying up traffic and stopping regular business in the town. The president of the university demanded that the students stop their illegal demonstrations. Students then took over the college's administration building, completely paralyzing the college. Are the students right to demonstrate in these ways?

* 1. Do you favor the action of demonstrating in this way?
   - Should continue demonstrating in these ways
   - Can't decide
   - Should not continue demonstrating in these ways

* 2. Rate the following issues in terms of importance.

<table>
<thead>
<tr>
<th></th>
<th>Great</th>
<th>Much</th>
<th>Some</th>
<th>Little</th>
<th>No</th>
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<tbody>
<tr>
<td>1. Do the students have any right to take over property that doesn't belong to them?</td>
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<td>2. Do the students realize that they might be arrested and fined, and even expelled from school?</td>
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<td>3. Are the students serious about their cause or are they doing it just for fun?</td>
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<td>4. If the university president is soft on students this time, will it lead to more disorder?</td>
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<td>5. Will the public blame all students for the actions of a few student demonstrators?</td>
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<td>6. Are the authorities to blame by giving in to the greed of the multinational oil companies?</td>
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<td>7. Why should a few people like Presidents and business leaders have more power than ordinary people?</td>
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<td>8. Does this student demonstration bring about more or less good in the long run to all people?</td>
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<td>9. Can the students justify their civil disobedience?</td>
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<td>10. Shouldn't the authorities be respected by students?</td>
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<td>11. Is taking over a building consistent with principles of justice?</td>
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<td>12. Isn't it everyone's duty to obey the law, whether one likes it or not?</td>
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* 3. Consider the 12 issues you rated above and rank which issues are the most important.

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Appendix D

Demographics Questionnaire

10. Demographics

Please provide the following information about yourself:

1. What is your level of education? Please mark the highest level of formal education you are currently enrolled in or have completed:
   - Grades 7, 8, 9
   - Grades 10, 11, 12
   - Vocational/Technical school (schools that do not offer a bachelor's degree)
   - Junior College
   - Freshman in a bachelor's degree program
   - Sophomore in a bachelor's degree program
   - Junior in a bachelor's degree program
   - Senior in a bachelor's degree program
   - Professional Degree beyond the bachelor's degree (M.D., M.B.A., D.D.S., J.D., Nursing)
   - Professional degree in Divinity
   - Master's in teaching or Master's in Education
   - Master's degree in graduate school
   - Doctoral degree Ed.D.
   - Doctoral degree Ph.D.
   - Other

2. Which best describes your race/ethnicity? [Check all that apply]
   - African American or Black
   - Asian or Pacific Islander
   - Hispanic
   - American Indian/Other Native American
   - Caucasian (other than Hispanic)
   - Other (please specify)
* 3. What is your gender?
   - Male
   - Female

* 4. How many brothers and sisters do you have? Put 0 if you don't have any.
   - The number of brothers: 
   - The number of sisters: 

5. What is your age?
   - Enter your age in years: 

* 6. In terms of your political views, how would you characterize yourself?
   - Very Liberal
   - Somewhat Liberal
   - Neither Liberal nor Conservative
   - Somewhat Conservative
   - Very Conservative

* 7. Are you a citizen of the U.S.A.?
   - Yes
   - No

* 8. Is English your primary language?
   - Yes
   - No

11. Test taking Environment

We would like to know something about how you completed this questionnaire. Your answers will not affect whether or not you get credit for participation but will help us understand how students take questionnaires outside of class.

1. I completed the questionnaire in one sitting.
   - Yes
   - No

2. Music was playing while I completed the questionnaire.
   - Yes
   - No
3. The TV was on while I completed the questionnaire.
   - Yes
   - No

4. I received phone calls while completing the questionnaire
   - Yes-more than one
   - Yes-just one
   - No

5. I made a phone call while completing the questionnaire.
   - Yes-more than one
   - Yes-just one
   - No

6. I received emails/text messages while completing the questionnaire.
   - Yes-more than one
   - Yes-just one
   - No

7. I responded to emails/text messages while completing the questionnaire.
   - Yes-more than one
   - Yes-just one
   - No

8. I stopped and talked to friends while completing the questionnaire.
   - Yes-more than once
   - Yes-just once
   - No

9. Compared to how I take surveys in the classroom I took this questionnaire:
   - The same way - not different at all
   - About the same way – I had a minimal amount of distractions
   - Not the same way– I had distractions that made me stop and start the questionnaire.
   - Not at all the same way – I completed the questionnaire when I could while doing other things.
Appendix E

Testing Environment / Distraction Survey

Question 1: I completed the questionnaire in one sitting.

Question 2: Music was playing while I completed the questionnaire.
Question 3: Music was playing while I completed the questionnaire.

![Bar Chart for Question 3](chart3.png)

Question 4: I received phone calls while completing the questionnaire.

![Bar Chart for Question 4](chart4.png)
Question 5: I made a phone call while completing the questionnaire.

![Bar chart showing the number of calls made during the questionnaire completion.](image1.png)

Question 6: I received emails text messages while completing the questionnaire.

![Bar chart showing the number of text messages received during the questionnaire completion.](image2.png)
Question 7: I responded to emails text messages while completing the questionnaire.

Question 8: I stopped and talked to friends while completing the questionnaire.
Appendix E

DIT-2 Indexes and Measures

According to the Center for the Study of Ethical Development (2003), the Defining Issues Test, Version 2 (DIT-2), is a measure of moral judgment derived from Kohlberg’s model of moral development (Kohlberg, 1984). The DIT-2 includes five hypothetical moral dilemmas, each followed by 12 issues that could be involved in making a decision about the dilemma. Participants rate each issue and choose the first, second, third, and fourth most important issues for each of the five dilemmas. Participants are also asked what decision they would make in each moral dilemma. The results of the test provide the following scores:

**Stage 2-3 Score**
Personal Interest Schema Score: this score represents the proportion of items selected that represent considerations from Stage 2 (focus on the personal interest of the actor making the moral decisions) and Stage 3 (focus on maintaining friendships, good relationships, and approval).

**Stage 4P Score**
Maintaining Norms Schema Score: this score represents the proportion of items selected that represent consideration from Stage 4 (focus on maintaining the existing legal system, roles, and formal organizational structure).

**P Score**
Postconventional Schema Score: this score represents the proportion of items selected that represent considerations from Stage 5 (focus on appealing to majority while maintaining minority rights) and Stage 6 (focus on appealing to intuitive moral principles or ideals). P-score is determined by a participant’s ranking of the post-conventional items of the DIT. (level or percentage of post-conventional moral reasoning).

**N2 Score**
New Index Score: this score represents the degree to which Postconventional items are prioritized plus the degree to which Personal interest items receive lower ratings than the Postconventional items. This score is adjusted to have the same mean and standard deviation as the P score to allow for comparisons. Uses the P-score as a starting points then adjusts the P-score based on participants ability to discriminate between P items and lower stage items.

**U Score**
Utilizer Score: This score represents the degree of match between which items the participants rated as most important and what decision participants say they would make in the moral dilemma.

**Hum/Lib Score**
Humanitarian/Liberalism Score: this score represents the number of reported decisions for the moral dilemmas that match those chosen by a group of “experts” (professionals in the field of political science and philosophy). Scores range from 0 to 5 out of the possible 5 moral dilemma decisions that can match.

**Cancer10 Score**
Religious Orthodoxy Score: this score represents the sum of the rated importance and rank for one specific item from the Cancer moral dilemma that evokes the notion that only God can determine whether or not someone should live or die.

**A Score**
Antisocial Score: this score represents the degree to which items are selected that represent considerations that reflect an anti-establishment attitude. These considerations presuppose Stage 4, but fault the establishment for being inconsistent with their purpose.