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Quality and Directionality of Global Citizenship Identity Development in the Context of Online and Offline Reflections During an Introductory Global Citizenship Course

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QUALITY AND DIRECTIONALITY OF

GLOBAL CITIZENSHIP IDENTITY DEVELOPMENT

IN THE CONTEXT OF ONLINE AND OFFLINE REFLECTIONS

DURING AN INTRODUCTORY GLOBAL CITIZENSHIP COURSE

By

Sarah E. Stanlick

A Dissertation

Presented to Graduate and Research Committee

Of Lehigh University

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Doctor of Philosophy

in

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CERTIFICATE OF APPROVAL

The dissertation of Sarah E. Stanlick is approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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TABLE OF CONTENTS

LIST OF TABLES

xii

LIST OF FIGURES

ABSTRACT

Transformative learning can be characterized as a learning process that, through critical self-reflection and discourse, results in learners shifting their identity, beliefs, and/or actions (Dirkx, Mezirow, & Cranton, 2006; Mezirow, 1991, 1978). Transformative learning is rooted in adult education, with an emphasis on individual learners' meaning making and perspective shifts. Transformative curricula are often implemented in post-secondary and adult settings due to the unique cognitive and emotional development that learners experience in that time period (Cranton, 2012; Kose, 2009). The cognitive rational approach, a subset of transformative learning proposed by Mezirow (1991), outlines a process by which students are faced with disorienting dilemmas, process those experiences through reflection and discourse, and ultimately exhibit a change through behavior or actions. The critical reflection that is necessary for such transformation can take place in a variety of ways. Current research is insufficient to understand the role of different formats for reflection in aiding that transformative experience.

Using a concurrent transformative mixed methods design with emphasis on qualitative analysis, this study investigated the role of differing forms of written reflection—formal, private writing (offline) versus public, informal writing (online)—in processing and assessing the transformative experience of a global citizenship (GC) course (n=46). Differing reflection experiences between two cohorts of students provided the context for a natural experiment through which I examined the efficacy of the structure and medium of the reflection as it relates to the development of GC identity in undergraduate learners through transformative learning and the cognitive rational approach. Implications for research and teaching are provided, as well as an exploration of emergent themes in the data around learner agency, disorientation and meaning perspective shift.

1

CHAPTER 1. INTRODUCTION

Background of the Problem

Global citizenship is a growing topic of interest in post-secondary education within the United States and around the world (Brigham, 2011; Holden & Hicks, 2007; Tarrant, 2010). Globalization, transnational issues, and an increased focus on internationalization of college curricula have only contributed to the rising popularity and necessity of such programming (Knight 2004, 2006). Numerous institutions around the world have established programs in global citizenship, with at least 15 self-identified programs in the United States alone (UNAI, 2014). Oxfam, an international non-governmental organization, created a curriculum and guiding principles for global citizenship education in 2006. In 2010, the *Journal of Global Citizenship and Equity Education* began publication at Centennial College in Toronto, Canada. Lehigh University—to offer one instance of a private, highly selective, nationally-ranked American university—instituted a global citizenship program in 2004. The curriculum is built as a four-year sequence that includes a first-year seminar, trips abroad, and a senior capstone project.

Global citizenship is an interdisciplinary field consisting of nested theories and practices. Global citizenship education addresses topics from geography, history, political science, economics, sociology, and philosophy (Abowitz & Harnish, 2006; Shultz, Abdi, & Richardson, 2011). It is individual and collective, practiced globally and locally, and can consist of both thoughts and action. Global citizenship learners must have self-efficacy, the ability to connect with and learn from peers and outsiders, and the ability to communicate across cultures (Hanvey, 1976; Kirkwood, 2001; Knott, Mak, Neill, 2013). Education in global citizenship encompasses foundational concepts such as the respect and value for diversity (e.g. ethnocultural empathy), an

2

understanding of one's self in relation to the larger world, a commitment to righting inequities, and active engagement in one's community (Oxfam, 1997, 2006). Finally, tolerance of ambiguity or uncertainty and the adaptability to thrive in differing environments is essential to developing leadership skills and competency in a global setting (Caligiuri & Tarique, 2012).

Global citizenship curricula have been implemented in different settings and formats, yet they all share foundational concepts and principles (Ibrahim, 2005; Merryfield, 2008; Oxfam, 1997, 2006). First, global citizenship education is distinct from traditional citizenship or civics education, which is based on the concept of defined, unitary national citizenship (Banks, 2004, 2008). Instead, global citizenship stresses cross-cultural awareness, development of personal traits such as empathy and ambiguity tolerance, social justice orientation, personal identity development, and relationship with the larger world (Hanvey, 1976; Hicks, 2003; Oxfam, 1997, 2006). Second, global citizenship curricula typically include service learning, experiential learning, and/or study abroad, along with traditional instructional experiences that are mediated by reflection and discourse (Appleyard & McLean, 2011; Bringle & Clayton, 2012; Tarrant, 2010). In a global citizenship course, for example, students may engage in service learning that involves a global problem on a local level, such as refugee issues. While they learn the political and logistical issues surrounding a refugee's circumstance abroad, they could also volunteer with a local organization that resettles refugees in a nearby city (Gisolo & Stanlick, 2012). An experiential exercise for global citizenship education might be a day-trip to the United Nations to listen to a briefing on transnational issues, followed by a guided reflection session to discuss the learning experience and the individual learners' impressions.

Along with the instruction and experiences described above, global citizenship education typically includes sustained personal reflection. Dewey (1933) defines reflection as an "active,

3

persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (p. 9). Dewey characterized reflection as a secondary experience that takes place after the learning experience, wherein the physical and social environment then became the articles of knowledge and reflection (Miettinen, 2000). Subsequent educators have found that reflection is an effective processing tool for learners engaged in study abroad, experiential, and intercultural experiences, including study abroad, service learning, and experiential learning (Elola & Oskoz, 2008; Eyler, 2002; Gibson, Rimmington, and Landwehr-Brown, 2008; Gray, 2007).

Reflection facilitates metacognition and emotional exploration, allowing learners to process and internalize intrinsic motivations for behaviors and academic practice (Blumenfeld, 2010; King & Kitchener, 2004; Kitchener & King, 1981). Bruner (1964; 1975; 2009) noted that language is the most effective tool for cognitive growth. Another function of reflection is as an effective mediator of the student experience, allowing processing and permanence to take place in the learner's mind (Cord & Clements, 2010; Gómez-Chacón, García-Madruga, Vila, Elosúa, Rodríguez, 2013; Jordi, 2011). Reflection allows students to participate without fear of judgment, consider content independently, and fit it into their prior knowledge (Blumenfeld, 2010). Technology-mediated communication – communication assisted or transmitted by technology – can serve as a tool to facilitate deeper conversations and reflection, as well as a transparent record of student learning and connection-making.

Within global citizenship education, reflection activities typically include written private reflections that range from surveying global literature to responding to international current events to personal introspection on service learning endeavors (Ibrahim, 2005; Lewin, 2009; Martin, Smolen, Oswald, & Milam, 2012). These reflections are written for the sole audiences of

the learner and the instructor and process curricular and experiential aspects of the learning endeavor (Hanson, 2010; Lutterman-Aguilar & Gingerich, 2002). Global citizenship instructors typically count these reflections as part of the course grade; they may or may not receive feedback from the instructor or be revisited by the student (Hendershot, 2010; Merryfield, 2008). In contrast, reflective activities in other, related fields—such as service learning, internships, study abroad, field trips, and problem-based learning—take on more varied forms. In experiential learning literature such as Baker, Jensen, and Kolb (2005), for example, not only personal reflection but also discourse are cited as tools for meaning-making. This emphasis on discourse is largely absent from global citizenship literature. One exception is the research of Gibson, Rimmington, and Landwehr-Brown (2008) which found that technology-mediated reflection and discourse in a global learning capacity could develop the knowledge, skills, and attitudes for global citizenship in learners. Thus, one could apply the reflective tools from the individual components of global citizenship education (experiential learning, service learning, and traditional curricular materials) to study and understand the differing types of reflective work on global citizenship education with regards to technology.

Research on reflection within the context of global citizenship education is limited, typically focusing on the instructor experience or pedagogical implications of global citizenship education (e.g., Corrie, 2013; Riley, 2006). The small research base addressing learners' reflection and outcomes has taken a narrow pedagogical focus, exploring oral and/or written responses to globally-themed literary works. Martin, Smolen, Oswald, and Milam (2012) examine the relationship between global literature, reflection, and social justice to prepare elementary students for global citizenship. Jackson (2011) explores the idea of intercultural citizenship in the context of undergraduate study abroad and the place that reflection has in

deepening those experiences for the learner in terms of intercultural awareness and sense of self in the world. While both of these studies draw our attention to instructional possibilities of reflection, they only begin our understanding of the complexity and efficacy of reflection's role in transformative global citizenship education. For example, only one published research piece addresses the use of technology-mediated reflection and discourse in global citizenship education, opening the door for other research to compare reflective practices and its impact on identity and academic development (Gibson, Rimmington, & Landwehr-Brown, 2008).

Reflection in an online context and technology's influence on reflection are other areas for growth in understanding learner change. Discourse and discussion (which has the capacity to be reflective in nature) are important learning tools that can be facilitated easily in an online or technology-mediated setting (Gilbert & Dabbagh, 2005). Online discussion forums are tools used both to mirror face-to-face interactions that would take place in the classroom and to provide another medium through which social learning to take place (Andrusyzyn & Davie, 1997; Lapadat, 2002). Studies have indicated that through online discussions, higher-order thinking and development of critical thinking skills can take place (Scott, 2010). The use of online discussion forums can influence the kinds of learning processes that take place for individual learners, and that differing structures of discussion can influence reasoning, depth of reflection, and individual growth (O'Donnell, Hmelo-Silver, Erkens, 2013; Prestridge, 2010; Koopman, 2010; DeSanctis, Fayard, Roach, & Jiang, 2003). Bullen (2007) found that university-level courses that had the computer conferencing component – specifically an online forum – built student participation and critical thinking skills.

While research has pointed to the positive aspects of technology-mediated communication, technology-mediated communication's role still has not been conclusively established as to whether it facilitates reflection or promotes a significant increase in quality of reflection (Kutner, 2010). Studies suggest that technology-mediated communication allows an anonymity – real or perceived – that manifests itself as a disinhibition in online interactions (Morahan-Martin & Schumacher, 2000; Suler, 2004). Joinson (2001) concluded that visual anonymity alone in computer-mediated communication leads to high levels of self-disclosure. Garrison and Kanuka (2004) assert the relevance of that fact as a positive for blended learning, which they define as the "thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (p. 96). They found that such integration, and specifically technology-mediated reflection, has great potential to enhance meaningful educational endeavors. This can be done through restructuring of lesson plans to incorporate sustained reflection, leveraging tools to connect to experiences not previously available, and by transforming the relationship between leadership in schools, educators, and the students. They caution, however, that more empirical studies are needed to focus on the impact of blended learning in post-secondary education. However, promising studies indicate a relationship between reflection, identity, critical thinking, and meaningful uses of technology, including within global citizenship contexts (Elola & Oskoz, 2008; Gibson, Rimmington, & Landwehr-Brown, 2008; Harrington, 1992). Blended learning – specifically the leveraging of technology to facilitate reflection and discourse – presents a new research opportunity to analyze and understand the development of a global citizenship identity and orientation through differing forms of reflection.

Research on global citizenship education and pedagogy as a general construct – not just in the realm of reflection and/or technology integration – is limited and often lacks connection to the broader theory base (Peters, Britton, & Blee, 2008). Global citizenship is an emerging field for researchers, with evolving definitions and frameworks to understand individual learners' role in the global context (Merryfield, 2008; McDougall, 2005; Carter, 2002). As educators, we proceed with many assumptions about the experiences and curricula planned for the students and its impact, such as transformative potential of cross-cultural interactions or content knowledge development of social processes behind issues such as poverty. However, clear empirical research on those outcomes is limited. As an emergent field, global citizenship is also finding its way in terms of assessment and understanding of individual learner change. While definitions set forth by Noddings (2005) and Oxfam (1997, 2006) have largely been adopted by academicians and practitioners alike (see Definition of Terms, below), the focus now has shifted to the individual learning outcomes of global citizenship education. The student outcomes of Global Citizenship (GC) education have not yet been fully explored or understood, and there is considerable debate about the delivery of such education in terms of its planning, function, and situation within or outside of departments (Banks, 2008; Davies & Pike, 2008; Davies, Harber, & Yamashita, 2004). Furthermore, there has not yet been a comprehensive study that looks specifically at the role of technology during instruction, service learning, study abroad, and experiential learning in a global citizenship context. The use of a robust mixed methodology and sophisticated data analysis techniques have not been adopted in the study of this field. Finally, previous research in global citizenship education has not been well-rooted in learning theory, but rather instructional frameworks. For example, the Oxfam framework provides a legitimate, respected voice on instruction, but the tie to established learning theories has not been made.

Through this study, the researcher strives to connect the material to the larger theoretical base, thus understanding student learning development not only in a global citizenship context, but in a postsecondary, transformative theoretical framework.

One theoretical framework that can inform global citizenship education and research upon its use of reflection is transformative learning, specifically the cognitive rational approach as identified by Mezirow (1991). Transformative learning can be characterized as a learning process that, through critical self-reflection and discourse, results in learners shifting their identity, beliefs, and/or actions (Mezirow, 1981). For example, Kose (2009) studied transformation in K-12 teachers, exploring the role of principal leadership in creating a culture of reflection and changing identity, beliefs, and actions towards social justice. Clark (1991) identifies three dimensions of learner change to characterize perspective transformation via transformative learning: psychological, convictional, and behavioral. Psychological transformation denotes a change in self-concept (e.g. one's view of their responsibility to the larger world); convictional transformation relates to the learner's belief system (e.g. more empathy towards those originating from a different culture); behavioral transformation is the intended or displayed changes in student behavior (e.g., increase in service participation, increased attendance at intercultural or civic events).

This study applies the transformative learning framework, operationalized as Mezirow's (1991) cognitive rational approach, to the role of critical reflection within global citizenship education across multiple contexts (i.e., both technology-mediated and non-technology-mediated). It examines first-year global citizenship education and the resulting relationships between the learners' reflective writing and change in characteristics indicative of a global citizen. Specifically, the study examines the contrasting outcomes from two different

9

combinations of techniques for structuring student reflection: the traditional approach of extended private, formal writing and the inclusion of online, public writing in a class-wide discussion board. The research questions that guide the study are:

1. What impact does the inclusion of whole-class, online discussions have on undergraduate students' development (demonstration of directionality, quality, and interdisciplinarity) as compared to students who have only reflected in an offline, formal paper?

2. What comparisons and relationships can be observed in terms of directionality, quality, and interdisciplinarity between the informal, online and formal, offline writing?

3. Through emergent coding both across cohorts and across reflection formats, what patterns, themes, and/or relationships can be observed as evidence of transformative change?

Methodology

The study addresses the learning experiences of two successive cohorts of undergraduate students in the first year of an interdisciplinary global citizenship certificate program. Each cohort is being examined in the first semester of a four-year certificate program in Global Citizenship. The Global Citizenship Program is unique in its structure as a program with its components of service, experiential, and curricular learning. As a high-impact learning experience, students undergo an intense first-year course that incorporates such practices (see Figure 1).

Fig. 1. Model of the GC student learning process (Cohort 1 vs. Cohort 2)

	GC Learner Experiences			GC Learner Products	
Cohort 1 (n = 22)	Enacted Curriculum (Readings, Classroom Instruction, Classroom Discussion)	Experiential Learning (Field Trips, Interviews)	Service Learning (Refugee Program, Supplies Drive)	↑ Offline, Private Reflections ↓	(none)
Cohort 2 (n = 23)	↓	↓	↓		Online, Public Reflection/ Discussion

Figure 1 note: Each cohort can be characterized using demographic data (age, gender, program of study, etc.) and archived academic and social data: SAT scores, ambiguity tolerance (via AT-20 inventory—see MacDonald, 1970), and ethnocultural empathy (via SEE—see Wang et al., 2003).

As suggested by the figure, the two cohorts present a natural quasi-experiment. As outlined by Shadish, Cook, and Campbell (2002), a natural quasi-experiment allows the researcher to deliberately vary or observe a variation of a natural system to discover what effects take place later as a result of that variation. The experimental characteristic (variation) comes from the fact the two groups experienced slightly different learning processes: instruction plus the traditional reflection format (private, formal writing) versus instruction plus an expanded reflection format (private, formal writing plus online reflective discourse). The two sets of course documents (readings, instructional materials, records of field trips and interviews, etc.) provide a basis for the comparability of the curricular experience of the two cohorts, and the two sets of student products provide an observable record of learner outcomes within the each context. The two cohorts' experiences present a quasi-experiment and not a true experiment

because they are intact groups rather than randomly assigned. Accordingly, the researcher

established the comparability of the two groups using demographic information (gender,

geographic location, programs of study, etc.) plus quantitative data on relevant constructs:

ambiguity tolerance, ethnocultural empathy, and SAT scores. Commonly accepted definitions of

global citizenship speak to the adaptability and flexibility needed to thrive in a global world, and

both ambiguity tolerance and empathy are appropriate measures of one's ability to negotiate the

foreign, uncertain, and ambiguous (Noddings, 2005; Oxfam, 1997, 2006).

Each cohort can be observed as sharing a common profile of diversity in gender,

geographic location, programs of study, and age, thus establishing group equivalence. The study

is a natural quasi-experiment because this composition of groups and variation in treatment

occurred without active manipulation by the researcher. A natural experiment occurs when

events, rather than random assignment or another mechanism, place participants into a control

and an experimental condition (Dunning, 2012). The dataset is intact and archived, including

student demographics and pre- and posttests of ambiguity tolerance and ethnocultural empathy

that had been collected as part of the Global Citizenship program's on-going evaluation process.

The research questions demand a mixed-methods design: global citizenship

understanding and self-concept are complex constructs that can only be exposed through

qualitative data such as students' reflective writing. Comparison across the two cohorts,

however, requires the use of both standardized, quantitative data (to compare learners'

characteristics such as ambiguity tolerance and ethnocultural empathy) and qualitative data (to

compare the common elements of readings, instruction, and other learning activities). In

addition to the complexity of data sources, this study calls for a sophisticated approach to data

analysis. Transformative learning is difficult to research as the changes in students are

individual and subjective. In order to navigate those individual nuances and indicators of learning, narrative analysis was employed to assess the individual qualitative data from the students, while the quantitative data serves the function of creating a more complete assessment of individual learner change.

The sophisticated, methodical coding process on the learner products was an essential component to the success of the data analysis. Reflection serves as a processing tool for the student and as a qualitative assessment to understand the method and outcomes of student learning and growth for an instructor or a researcher (Blumenfeld, 2010; Wald, Norman & Walker, 2010; Xin & Lal, 2005). Reflection, however, is a highly subjective assessment; in order to be an effective measure of student change, validated rubrics and accepted qualitative practices must be leveraged for maximum legitimacy. Previous research in experiential learning contexts such as nursing practicum has proven the ability to analyze reflection for quality (Nielsen, Stragnell, & Jester, 2007). Cranton (2006) found that transformative transfer and processing can be fostered through online reflection. Lapadat (2002) also cites online, written interaction as a key component of socio-cognitive and conceptual development. Thus, reflection's multifaceted role can provide insight and evidence to understand learner development and the transfer of knowledge.

Reflection is a means by which learners create a narrative based on the curricular and experiential inputs from their academic and social development. Narrative inquiry is a natural tool of assessment for learner development, as it is a rich source of qualitative data. Narrative inquiry is one of the four key approaches to transformative learning research, as the individuality, process, and depth of a learner's meaning-making is observable through their

writing (Kim & Merriam, 2011). In this research format, each student has the potential to become his or her own narrative case study.

In this study, as in other found-problem research, there are issues of unpredictability and naturalistic inquiry that must be addressed with appropriate research design. Designing for variability is key to the flexibility of dealing with human subjects research (Marshall & Rossman, 2010). Naturalistic inquiry dictates that the environment in which the research is taking place is not manipulated and is as authentic a space as possible (Lincoln & Guba, 1986; Lincoln, 1985). This type of inquiry also emulates the natural environment where solutions or recommendations coming from the research would then be implemented (Kaplan, 1973). As such, real-world scenarios with such complexity demand a naturalistic approach to the research that is well-facilitated by mixed methodology. So-called "wicked problems" – a problem that has so many confounding factors, that isolating and identifying causality is a difficult process that is outside normal disciplinary tools – have variables that are difficult to isolate and complex interactions that must be studied in a robust, comprehensive manner (Rittel & Webber, 1973). Mixed methodology, as per Teddlie and Tashakkori (2009), is a tool by which a research can access and analyze the depth and complexity of these wicked problems. Mixed methods research emphasizes a bricolage of methods that allows the research to see the found problem or phenomenon from many different angles (Johnson & Onwuegbuzie, 2004). While Geertz was mainly a qualitative researcher, his call for a "thick" (1973, p. 7) description of research subject and environment can be aided by mixed methodology as it incorporates multiple data sources and triangulates between these methods to create a more valid and complete picture.

Definition of Terms

14

- **Ambiguity tolerance** is defined as "a willingness to accept a state of affairs capable of alternate interpretations, or of alternate outcomes: e.g., feeling comfortable (or at least not feeling uncomfortable) when faced by a complex social issue in which opposed principles are intermingled" (English & English, 1958, p. 24). Ambiguity tolerance is an attribute of global citizenship identity development outlined by Noddings (2005). The ability to process ambiguity is identified as a necessary component of the transformative learning process, as grappling with ambiguity leads to meaning perspective shifts in learners (Mezirow, 1985; Taylor, 1994).

- **Critical Reflection**: Mezirow (1990) describes critical reflection as a "elaborating established meaning schemes… reflecting back on prior learning to determine whether what we have learned is justified under present circumstances" (p. 5). As an operationalized definition, Dewey (1933) characterizes critical reflection as "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it includes a conscious and voluntary effort to establish belief upon a firm basis of evidence and rationality" (p. 5). This definition takes reflection one step beyond the experience at hand, emphasizing an "active, persistent" process by which the learner questions prior knowledge, considers new inputs, and crafts a new meaning perspective.

- **Empathy**: Empathy is defined as "feeling in oneself the feelings of others" (Strayer & Eisenberg, 1987, p. 391). Ethnocultural Empathy, more specifically, is defined as "is attention to the feeling of a person or persons from another ethnocultural group to the

15

degree that one is able to feel the other's emotional condition from the point of view of that person's racial or ethnic culture" (Wang et. al., 2003). Empathy is an identified global citizenship attribute outlined by the Oxfam (1997, 2006) curriculum, as well as an attribute found to be developed through transformative learning (Butin, 2010; Einfield, & Collins, 2008).

- **Global Citizenship** is a concept that has many facets and perspectives. The operating definition for this paper is at its most basic the Noddings (2005) definition that states "A global citizen… is one who can live and work effectively anywhere in the world, and a global way of life would both describe and support the functioning of global citizens" (Noddings, 2005, p. 3). For a larger exploration into the components of the knowledge, skills, and attitudes of a "good" global citizen, the Oxfam (1997, 2006) definition that outlines essential indicators. A global citizen in their view is one who:

    > is aware of the wider world and has a sense of their own role as a world citizen; respects and values diversity; has an understanding of how the world works; is outraged by social injustice; participates in the community at a range of levels, from the local to the global; is willing to act to make the world a more; equitable and sustainable place; and takes responsibility for their actions (p. 3).

- **Metacognition**: The terms reflection and metacognition are distinct concepts. In this study, reflection is a process in which metacognition transpires. Metacognition is a more overarching concept, defined as "knowledge concerning one's own cognitive processes or anything related to them" (Flavell, 1976, p.232). As a skill, Schraw and Dennison (1994) define metacognition as "the ability to reflect upon, understand and control one's learning" (p. 460).

- **Transformative learning**: Transformative learning is defined at its most basic by

  Merriam, Caffarella, and Baumgartner (2007) as encouraging "change, dramatic,

  fundamental change in the way we see ourselves and the world in which we live" (p.

  130). The expanded definition from Merriam and Clark (1993) states that transformative

  learning is "learning that induces more far-reaching change in the learner than other kinds

  of learning, especially learning experiences which shape the learner and produce a

  significant impact, or paradigm shift, which affects the learner's subsequent experiences"

  (p. 135). Mezirow (1991), considered the initiator of transformative learning theory,

  proposed a further specification of the transformative process in his cognitive rational

  approach (CRA). Cognitive Rational Approach, outlines the following sequence of

  learner processes in a transformative capacity to shift meaning perspectives:

  disorientation (step 1), critical reflection on assumptions (step 2), dialogue (step 3), and

  action (step 4)

- **Reflection**: Reflection in this instance is defined as "process of stepping back from an

  experience to ponder, carefully and persistently, its meaning to the self through the

  development of inferences" (Daudelin, 1997, p. 39). This definition focuses on the

  meaning of the experience at-hand.

- **Self-Concept:** Self-concept is at its most basic "a person's mental model of his or her

  abilities and attributes" (APA, 2012). Linkages between academic self-concept and

  motivation have been established, as well as self-efficacy and the individual learner

  growth (Byrne, 1984; Bong & Clark, 1999). Self-concept is an important component of

the learning process, as a negative self-concept and anxiety can inhibit the work of the amygdala, preventing learning from occurring (Sousa, 2006, p. 57).

Delimitations and Limitations

Delimitations, the intentional exclusions for the purpose of research, include the purposeful sampling of students in a particular program. The researcher is not looking at all first year writing, but the writing done by first year students in a specialized scenario. In this study, the non-treatment cohort's access to the treatment (i.e., Cohort 1's access to online, public reflection) is controlled through the course design: the version of the course at that time did not include this activity.

As a purposeful sample, one must be aware of coverage errors. For the purpose of this study, all students who are available in the first year cohorts are included to the level in which they provided data and writing samples for the course. If a student did not turn in assignments or was not included in class surveying, a complete record of their growth cannot be completed. This would be considered a non-response error, and because this is pre-existing data, would be accounted for prior to data analysis (Axinn & Pearce, 2006; Mertens, 2005).

Limitations to this research include the issue of selection bias and instructor bias. In order to address issues of selection bias, the researcher established cohort profiles drawing from information that students provided prior to their study in the introductory global citizenship course. Other measures such as application materials, SAT scores, and pre-test survey data (demographics, ambiguity tolerance, and empathy) was used to establish that the cohorts are starting from a similar academic, social, and experiential standpoint to account for potential selection bias between the two cohorts. As for instructor bias, there are a few constants that provide stability between cohorts. The curriculum, service, and experiential aspects of the GC

program have stayed constant between Year 1 and 2, a new instructor – the researcher – taught the course for the 2012 cohort. While there certainly could be instructor influence, the vast majority of the first year GC-experience is identical and was established prior to the researcher/instructor's tenure.

A final limitation to address is the role of researcher as active participant (as a course instructor across both cohorts) in the course which is being evaluated. This role is a difficult one, but with proper research design to avoid bias and ensure integrity of data analysis, such bias can be avoided.

Importance of the Study

Global citizenship is an emerging field that has not had the attention and empirical research necessary to form a complete understanding of the learner outcomes and changes in self-concept. Furthermore, while reflection is widely used as a metric to understand change, different types of reflection, as well as correlation to psychometric indicators, have not been used to assess such transformation and learning.

Through use of different types of reflection – online, informal, public and offline, formal, private – this study explores whether different types of reflection experiences affect the learning and growth outcomes of global citizenship learners. The study assesses the quality and directionality of student reflections by using multiple rubrics to establish individual learner outcomes and identity development. The interdisciplinary writing rubric created by Mansilla, Duraisingh, Wolfe, and Haynes (2009), when combined with the GC understandings outlined by Oxfam can be used to assess the directionality of the GC self-concept as exhibited in GC learner reflections, thus the directionality of GC student identity development. Using the King and

Kitchener (1994) model to assess reflective judgment, it is possible to gauge the quality of the reflection and depth of critical thinking done by the individual learners.

The first area of importance that this study expounds upon is the role of technology in transformative learning and global citizenship education. The ever-increasing presence and functionality of the internet to facilitate varying levels of dialogue between people is seen in developments in social media, discussion boards, and online gaming (Wood, 2012; King, 2011). Mezirow (1991) states the Cognitive Rational Approach to transformative learning necessitates critical dialogue to process experiences and new knowledge to create lasting change. Traditionally, this dialogue has taken place via face to face discussion in-classroom or through private reflections that only the instructor sees and discusses with the student (Drie & Dekker, 2012; Earl, 2012; Ellsworth, 1989). One unexplored technology tool to extend this discussion is online forums. Online forums, or discussion boards, are a space for learners to have such critical dialogues and challenge each other's' assumptions and assertions (Davie & Wells, 1991; Vogler et al., 2013). Austin & Anderson (2008) found that well-managed online collaborations could yield meaningful development in secondary school-aged learners in both citizenship and intercultural understanding.

Another area of importance that this study seeks to address is the use of mixed methods research to understand the impact of transformative learning. Transformative work is oftentimes highly theoretical, with an apologetic tone in empirical studies that speak to the difficulty of conducting a research in a field that is so highly variable and individual (Cranton, 2000; Mezirow, 1997). Most studies done in transformative learning are purely qualitative (Taylor, 1997. 2007). This study brings a quantitative aspect to establish the comparability of the cohorts in order to provide a base for the assessment of transformation and provide context for more

detailed understanding of the relationship between reflection and individual personality metrics. Through a robust, yet naturalistic design, with ample qualitative and quantitative data, this study used sophisticated analysis to provide insights into the impact of differing types of reflection on individual learner development in the context of global citizenship.

CHAPTER 2. LITERATURE REVIEW

Technology is altering the parameters of the traditional classroom and, specifically, the learner experience in higher education (Dede, 2011). Traditional educational delivery has shifted from a hierarchical, top-down teaching approach to that is more networked, social, and mobile (Hwang & Tsai, 2011; Kolb & Kolb, 2005; Martin, Diaz, Sancristobal, Gil, & Castro, 2011). New technological tools have made way for more learner autonomy and individual engagement, as well as opening up asynchronous and blended learning opportunities (Brears, MacIntyre, & O'Sullivan, 2011; Coppola, Hiltz, & Rotter, 2002; Garrison & Kanuka, 2004). With these new opportunities come new challenges. Researchers and educators alike must now implement and test technologies to maximize student learning and development. Educators of post-secondary learners, who are charged with the transformative development of their learners, must find ways to leverage technology to support that process through critical reflection and discourse (Rovai, 2004; Song, Singleton, Hill, & Koh, 2004). At present, there is insufficient empirical research that studies differences in reflection types as it relates to individual learner development in adults, but ample theoretical frameworks and research that suggests this is an area of opportunity for future exploration (King, 1999, 2002; Merriam, 2004).

The following chapter will delve into the historical, theoretical, and research underpinnings of transformative learning and global citizenship, and the opportunity for individual development through reflective writing online and offline formats. The chapter will begin by exploring theories and characteristics of adult learning and post-secondary education. Next, it will detail the connection between adult learning and transformative learning. Transformative learning and meaning perspective creation will segue into an examination of literature surrounding reflection, which is widely acknowledged as a critical tool for learner

processing and metacognition. The specific context for the following study, global citizenship education, will then be detailed. Global citizenship education is a transformative learning endeavor at its core, and the use of reflection within that paradigm will be explicated. Research on technological tools for reflection and the differing formats for reflective writing will be presented in order to set the parameters for the study that will follow. The chapter will then conclude by charting the opportunities for research on reflective writing and its relationship to transformative learning and individual learner identity development.

Adult Learning and Post-secondary Education

As this study focuses on postsecondary learners, we must begin with adult learning theory. In primary and secondary education, the focus for educators and learners is acquiring content knowledge in core subjects, developing motor and social skills, and attaining the tools for problem solving (Baum, Kurose, & McPherson, 2013: Snyder & Dillow, 2012). When adults learn, the focus of the learning process shifts from knowledge acquisition alone to incorporating meaning making and identity creation (Tennant, 2006). Adult learning theory outlines ways in which knowledge is constructed in adults, how they make meaning of their lives, and how they incorporate new information they encounter (Dirkx, 2001; Kegan, 1994, 1982; Perry, 1999). Merriam and Caffarella (1991) emphasize that adult intelligence is more complex than simply IQ and must be viewed as grounded holistic conceptions of the individual that address their experiences and diversity. Rather than practicing rote memorization or processing content knowledge, adult learners engage in "deep learning." Deep learning is the process of moving away from a state of unconsidered, non-reflective knowledge and beliefs that are usually rooted in cultures, families, organizations, and/or society (Dirkx, Mezirow, & Cranton, 2006; Kitchenham, 2008).

Research has established that undergraduates in their adult, post-secondary stage of life are in a unique period of individual growth that can be predicted and nurtured by educators and academic communities (Chickering, 1961; Perry, 1970). Perry (1981; 1970) identifies three broad stages that encompass how college students understand knowledge: (1) dualism modified (e.g. right versus wrong is clear and dictated by authority), (2) relativism discovered (e.g. uncertainty is introduced in thinking, but the uncertainty brings about a lack of confidence in the "right" answer), and (3) commitments in relativism developed (e.g., knowledge is uncertain, but the uncertainty is accepted and the learner has the agency to define what is "right" for themselves based on their learning). These realms of understanding highlight the post-secondary learner's metamorphosis into thinkers who relate information, experiences, and prior knowledge to challenge and transform their perspective.

Adult learning is distinct in the level of philosophical depth to which learners are expected to probe, allowing them to transform meaning perspectives by wrestling with issues of epistemology and ontology. Meaning perspectives are a key facet of the adult learning process, as it is the way in which learners view the world and create their own identity in relation to the larger world. Meaning perspectives, as defined by Mezirow (1985), are "the structure of cultural and psychological assumptions within which our past experience assimilates and transforms new experience" (p. 4). Reflection is critical in this learning phase, as adults process the meaning perspective shifts—as well as identity creation—through writing, critical inquiry, and discourse. Reflection and its impact or influence in adult learning is evident, as it serves as a processing tool that allows individuals to process such "deep learning" identified by Merriam (1993; 2004). Adult learners grapple with the unknown, as well as the acknowledgement of knowing what they do not know or questioning previously held assumptions critically (Kegan,

24

1982; 1994). With this challenge and tension arising from meeting with conflicting information to held beliefs, reflection serves as the essential processing tool where they can resolve that tension.

As identified in the "deep learning" concept of postsecondary education, the learner development process is one characterized by difficult discussions – internal and external – that reframe meaning perspectives (Mezirow, 1985; 1990). Adult learning is a meaning-making process that often conflicts with prior held knowledge to transform an adult learner's perspective. Mezirow (1981; 1985) labels this type of cognitive dissonance a "disorienting dilemma" that is a central feature of his adult learning theory, transformative learning, which focuses on adult learners creating new meaning perspectives through metacognition.

As a result of this metacognition, negotiating new inputs, and increased self-efficacy, adult learning is often viewed as an emancipatory experience (Habermas, 1970; Imel, 1999). Emancipatory knowledge, as defined by Habermas (1970), is knowledge of one's own history and biography in a way that is related to role and social expectation and the recognition of the correct reasons for one's world-view and issues. Knowledge is gained through self-emancipation that is practiced and cultivated through critical self-reflection. That critical self-reflection leads to perspective transformation, also called "transformed consciousness". Transformed consciousness is another term for perspective transformation, and is characterized by critical self-awareness and recognition of one's role in the world as opposed to a passive existence and then undertaking action to become an agent of change (Friere, 1970; Habermas, 1970). For an individual learner in a post-secondary setting, the emancipation, identity development, and meaning perspective are the main objectives of their learning.

Researchers have established the connections among adult learning, peer interaction, and constructivism (Bonk & Kim, 1998; Huang, 2002: Rovai, 2004). Theorists have documented the social construction of knowledge, as learners constantly relate information attained from peers and experiences to their past held knowledge and bridge that disequilibrium (Piaget, 1985; Papert & Harel, 1991). Vygotsky theorized that dialogue and scaffolding (instructional and social ways to assist the learner in gaining knowledge or skills) are essential to gaining independence and mastery (Kozulin 1990; Pea 2004). Kegan (1994) builds from that work in mastery and independence to focus on individual motivations for learning and competence-building. He affirms that the two greatest motivators in human existence are inclusion and agency, with humans needing to belong and to have autonomy and purpose. He extends that notion to the larger global community, affirming that understanding one's role in and relationship with the world is a higher order of thinking (Kegan, 1994). Therefore, learners in this period of their education are developed by the opportunity to engage with their peers in a way that is rich in reflection and discourse in a meaningful and sustained way.

Adulthood is also a time period where learners benefit from social constructions of knowledge as related to their own identity development and competence creation. McAdams (1988) defines identity as "a life story which individuals begin constructing, consciously and unconsciously, in late adolescence." For first year students, they are already in a stage of post-adolescence that is ripe for identity development and change (Chickering 1960, 1993; Kegan, 1994; Reisser, 1995). One's identity as a person, scholar, and citizen is shaped by the influencers of experience, knowledge, and society (Yates & Youniss, 1998). McAdams (1993) asserts that the work of learners in adolescence/post-adolescence is developing the ability to take in and reinterpret experiences to process diverse influences into the story of who they are. Those

experiences are incorporated into what Mezirow (1981) identifies as a meaning perspective, and thus subject to transformation through educational experiences designed to encourage individual learner change. Competence development occurs simultaneously with the process of shaping identity. Learners create more concrete meaning schemes, agency, and confidence in the learner that directly influence that identity (Chickering, 1960; Chickering & Reisser, 1993). Chickering and Reisser (1993) assert that competence is created through precollege reading and writing, elective courses, and extracurricular interpersonal encounters. They affirm that "through these increments of growing mastery and assuredness… the development of competence occurs" (p. 82).

Adult Learning and Transformative Learning

Transformative learning directly relates to adult learning theory, as transformation is a main goal of postsecondary education. Higher education is an environment that enables post-secondary learners transform into engaged, confident citizens and critical thinkers (Ehrlich, 2000; Englund, 2002; Kinchin, Cabot, & Hay, 2008). Specifically, adult learning is an emancipatory process by which individuals become independent and critical thinkers, thus transforming their perspectives (Merriam, 1993: 2001). Mezirow originated the transformative learning framework (Mezirow, 1978, 1981; Taylor, 2007), refining the liberation and transformation theories established by Friere (1970) and Habermas (1970) into a pragmatic, organized pedagogical process. Friere (1975) first defined the term "conscientization" or "critical consciousness" to explain one's ability to understand the world, allowing individuals to perceive and be exposed to contradictions, and to take action on oppression seen in one's daily life. Mezirow (1991) stressed that learning in adulthood meant the adaptation of the individual "toward a more inclusive, differentiated, permeable, and integrated perspective" (p. 7). Such

27

transformative learning, as he labeled it, would be catalyzed by experiences that posed a disorienting dilemma or contrary information to the learner, and then processed through reflection and dialogue.

Transformative learning is the goal of adult education, as much as learning new skills; adult education is almost always centered on a perspective transformation that radically shifts the learner's life, values, or understandings (Merriam, Caffarella, & Baumgartner, 2007). Transformative learning is connected to adult learning because it grew from Mezirow's work with adults and the aforementioned goal of change and emancipatory thinking. Mezirow (2000) makes the clear link between transformative learning and adult learning stating that transformative learning fosters "liberating conditions for making more autonomous and informed choices and developing a sense of self-empowerment is the cardinal goal of adult education" (p. 26).

Adult learning is deliberative, as individual learners constantly negotiate and revisit their prior conceptions with the new experiences and materials they encounter through their education (Merriam, 1993, 2001; Merriam & Caffarella, 1991). This deliberation takes place in reflection exercises that can be individual or grouped, through discussion and dialogue, or through the creation of artifacts that are constructivist in nature (Merriam, 2004; Mezirow, 1985). That process of deliberation must be mediated to allow students to process and transform; reflection is the learner's internal mediation of this processing and (eventual) transformation (Ash & Clayton, 2009; Mezirow, 1985, 1990). Reflection's unique, and necessary, role in the transformative process is defined in further detail by Mezirow's (1991) cognitive rational approach, which will be explored in-depth in the following section.

Transformative Learning and Cognitive Rational Approach (CRA)

Transformative learning is defined as a process that, through disorienting dilemmas, critical self-reflection and discourse, a learner can shift their identity, beliefs, and actions (Mezirow, 1981). Clark (1993) further expands on this definition, characterizing transformative learning as learning that induces more far-reaching change in the learner than other kinds of learning, especially learning experiences which shape the learner and produce a significant impact, or paradigm shift, which affects the learner's subsequent experiences (Clark, 1993). Mezirow (1991) further expanded his theory to explicate the process by which transformative learning takes place. Mezirow identified this operationalization of transformative learning as the Cognitive Rational Approach, which takes place in a sequence of learner processes. Figure 2 (below) provides an overview of the cognitive rational approach as proposed by Mezirow (1991), as experienced by individual learners.

Fig. 2. Internal transformative process (learner) Via Mezirow's (1991) Cognitive Rational Approach

Disorientation (Step 1)	Critical Reflection on Assumptions (Step 2)	Dialogue (Step 3)	Action (Step 4)
Disequilibrium occurs as a result of experience and/or by confronting information designed to shift learners' meaning perspective (e.g. intercultural education, etc.).	Learners process disequilibrium via critical reflection and through creation of artifacts. Critical reflection includes confronting attitudes, behaviors, and beliefs, as well as challenging assumptions. Learners make meaning or fit information into their prior schema.	Learners engage in peer learning and social construction of knowledge through discussion, discourse, and collaboration on projects (e.g. a lesson plan for a community workshop) or artifacts (e.g. op-ed on a social justice issue). Learners continue to make meaning or fit information into their prior schema.	Learners exhibit evidence of a meaning perspective shift. This shift includes transformed attitudes, skills, and knowledge through action/behavior.

Figure 2 (above) outlines the process by which learners experience transformation in the cognitive rational approach. The figure elaborates each step of the cognitive rational approach in which learners experience disorientation, reflect, discuss, and then take action or show observable change via the learning process (Mezirow, 1985). It should be noted that the processing tool by which students change is via critical reflection in individual and discourse formats. *Critical* reflection, not simply reflection, is the necessary component of the transformation. Through critical reflection, learners challenge what was previously held knowledge and confront ingrained attitudes, behaviors, and beliefs that could impede individual growth (Mezirow, 1991). It is through the active reflection and challenging of past beliefs that learners truly shape their meaning perspectives and identity (Chickering, 2003; Mezirow 1985, 1991).

Cognitive Rational Approach: The Distinction between Reflection and Critical Reflection

Dewey (1933) defines reflective thought as "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (p. 5). He outlines five phases of reflective thinking in his book *How we think* (1933) and emphasizes the cyclical nature of thinking and reconsideration. In an experience-dependent context, Daudelin (1996) defines reflection as the "process of stepping back from an experience to ponder, carefully and persistently, its meaning to the self through the development of inferences" (p. 39). Daudelin (1996) further asserts that learning happens through the reflective processes as meaning is made from past or current events to guide future behavior.

Dewey (1933) was an initial proponent of critical reflection, exploring the concept of "good thinking" and citing the need to step back from experiences and think about them in

relation to one's prior experience and perspectives. He wrote "the denotative reference of 'mind' and 'intelligence' is to funding of meanings and significances, a funding which is both a product of past inquiries or knowing and the means of enriching and controlling the subject-matters of subsequent experiences" (Dewey, 1939, p. 520). Though he used the term "reflection", his definition instead describes what critical reflection is at its essence: a deliberate, deep, questioning approach to one's relationship in the world and the material they are learning.

Reflective thinking about beliefs and actions is the process by which the learner to processes their motivations and reasoning for those actions and beliefs. Reflective exercises (when captured in writing, artifact creation, or video/audio recording) can also be used as an observable record of transformative change. Educators have used reflection to help students process and bring about positive effects from experiential learning opportunities for cognitive and personal outcomes (Bringle & Hatcher, 1995; Eyler & Giles, 1998; Mabry, 1995). Reflection is the most common assessment for service learning (Eyler, 2002; Eyler, Giles, & Schmiede, 1996). Through written papers, diaries, blogs, or portfolios, most service learning projects have a component requiring students to exhibit their growth and change through individual reflection. Bay and Macfarlane (2011) stress the importance of reflection for processing and deepening experiential learning endeavors in social work education. Social work, much like global citizenship education, aims to transform students into professionals with empathy, ambiguity tolerance, and social justice focus to work for equality for the underserved (Gilgun, 2005).

Per Mezirow's cognitive rational approach, critical reflection is identified as a necessary component to the transformative learning process. Mezirow (1990) characterizes critical reflection as the process by which learners are "elaborating established meaning

schemes…reflecting back on prior learning to determine whether what we have learned is justified under present circumstances" (p. 5). Mezirow (1991) also describes critical reflection as a "critique of the presuppositions on which our beliefs have been built" (p. 1). Kroll (1992) also asserts that this is a time when postsecondary learners are working through an epistemological crisis as they struggle to accept the notion that there are some subjects that will remain uncertain and without resolution. Reflective judgment in the form of critical reflection, he observes, is how learners reveal those internal conflicts, their decision-making process, and their understanding and acceptance of uncertainty (Kroll, 1992). Thus, critical reflection is a more transformative process that pushes learners to rethink their past attitudes, beliefs, and behaviors, whereas reflection can vary widely from a simple retelling of events to a deep, metacognitive event. Figure 3 outlines the learning paradigms proposed by Mezirow (1991) that can be observed through critical reflection.

Fig. 3. Learning paradigms per Mezirow as observed through critical reflection (1991)

Observed Through	Paradigm	Examples of Potential Student Observations
Critical Reflection	Elaborating existing frames of reference	"I knew X (content) but did not know Y (context)."
	Learning new frames of reference	"I did not know anything about X (content), and I now know Y (context) and have a different view of X (content)."
	Transforming perspective	"I now see Y (context) when I have only ever believed X (content), and this is a new worldview for me."
	Transforming habits of the mind (e.g., approach to new information).	"In future, I will look to understand Y (context) before I make a decision X (content) differently."

Neurobiology and memory play a significant role in the process of metacognition and the ability to transform through critical reflection. Taylor (2001) explores in depth the

32

neurobiological implications of reflection as it relates to implicit memory. Implicit memory, characterized as "other ways of knowing", involves both rationality and unconscious ways of knowing (implicit memory). The role of implicit memory is to process, store, and recover shapes attitudes, habits, and behavior outside of the consciousness of the learner (Baddeley, 1997). This continues to be studied extensively in both educational and medical settings. For instance, meaning perspective change was studied in stroke victims as individuals reformulate priorities and adapt to new limitations following a critical event (Kessler, Dubouloz, Urbanowski, & Egan, 2009). In an educational context, Neuman (1996) found that adult learners in a leadership program developed a more sophisticated critical reflective capacity through engagement with emotions as a biological trigger for learners to want to delve deeper and make meaning. Taylor (2001) highlights the inter-reliant relationship of implicit memory, critical reflection, and emotional responses as necessary for transformation.

There exist other models for understanding critical reflection, as researchers wrestle with the difficult task of assessing a highly qualitative, somewhat subjective measurement. Researchers have expressed the need for a more organized and sophisticated understanding and model of critical reflection, with a few creating models to explicate the critical reflection process. The DEAL model for critical reflection states that critical reflection is comprised of the following parts: describe, examine, and articulate learning (Ash & Clayton, 2009). Kiser's (1998) integrative process model outlines ways to reflect on an experience to connect to knowledge, skills, attitudes, and professional values. These models all draw from the framework of Mezirow, but focus on a specific context or variable as it relates to the critical reflection process (e.g. professional values development in Kiser's model). King and Kitchener (1981, 1994) developed a widely used model that focuses at-large on postsecondary critical reflective

33

judgment and the depth at which learners reflect. King and Kitchener use Mezirow's (1985, 1990) critical reflection as the basis for their work, thus tying it to the authority on transformative learning theory. Furthermore, their use of Perry's adult learning model provides the necessary context to assess and understand post-secondary learners. Critical reflection is a tool that develops and captures the "meaning shift" that takes place during the transformative learning process. Reflection has a significant impact on reasoning and the ability of undergraduates to do higher order thinking (Alterio & McDrury, 2013; Brophy, 2013; King & Kitchener, 2004). Nielsen, Stragnell, and Jester (2007) worked in the experiential setting of nursing practicum to assess nursing students' ability to process information and develop competency in their field through writing reflective papers. They found that using Tanner's (2006) Clinical Judgment Model, they could survey for logical thinking, decision making skills, empathy, and development as a nurse. Loes, Pascarella, and Umbach (2012) found that introducing experiences in a course that specifically address and introduce diversity and diverse interactions allow for more complex types of thoughts and sophisticated critical thinking skills.

The work of Mansilla, Duraisignh, Wolfe, and Haynes (2009) contains a model for operationalizing and assessing interdisciplinary writing and reflection in higher education contexts. Such interdisciplinary writing and reflection would be expected in cluster courses (e.g. a seminar course with themes and knowledge that span disciplines) or experiential/service learning courses that focus on real-world challenges that demand multidisciplinary understanding. Such writing allows the learner to process information and make meaning of the experiences and knowledge attained in such a course. For a researcher, the writing process for learners also creates a record of their metacognitive process that is able to be studied and assessed. This process of interdisciplinary writing has been studied in literature ranging from

34

engineering (Paretti & McNair, 2012) to employee development (Fisher-Yoshida & Geller, 2009) to agriculture (Kul Prasad Tiwari, 2012). Thus, reflection is an effective dual-use tool for education and research, giving a written record of change for educators and researchers to understand the progress and development of learners.

Global Citizenship Education

Global Citizenship at its most basic is defined as "is one who can live and work effectively anywhere in the world, and a global way of life would both describe and support the functioning of global citizens" (Noddings, 2005, p. 5). The concept of global citizenship is much debated and the definition is contentious (Hicks, 2003; Ibrahim, 2005). Research explores and solidifies definitions of global citizenship, and Delphi studies have yielded some consensus from educational leaders on what it means to be globally competent (Hunter, White, & Godbey, 2006). Guiding principles of global citizenship, however, are agreed upon and cited by a majority of global citizenship scholars (Merryfield, 2008). The Oxfam (1997, 2006) definition is widely accepted by global citizenship and international education scholars. Oxfam (1997, 2006) outlines a more formalized set of principles in their curriculum for K-12 education. These principles are as follows: A global citizen…

- Is aware of the wider world and has a sense of their own role as a world citizen;

- Respects and values diversity;

- Has an understanding of how the world works;

- Is outraged by social injustice;

- Participates in the community at a range of levels, from the local to the global;

- Is willing to act to make the world a more equitable and sustainable place

- Takes responsibility for their actions (Oxfam, 2006, p. 3)

Furthermore, Oxfam has identified knowledge, skills, and attitudes that are essential outcomes of the global citizenship education process (1997, 2006). This framework was and is largely adopted by the global citizenship community. Scholars such as Merryfield (2008), Davies (1999) and Kirby & Crawford (2012) have all cited the Oxfam definition and used it as the basis of their work. Marshall (2009) notes the impact of Oxfam's definition and curriculum as the major impetus for worldwide adoption of global citizenship curriculum. Table 1 (below) outlines the knowledge, skills, and attitudes identified through the Oxfam framework (1997, 2006) for individual learners to develop. Table 2 (below) presents an overview of the domains and attributes of global citizenship education, and examples that illustrate its multifaceted nature.

Table 1. Knowledge, Skills and Attitudes for Global Citizenship Competency

Knowledge and Understanding	Skills	Attitudes and Values
Social justice and equity	Critical thinking	Sense of identity and self-esteem
Diversity	Ability to argue effectively	Empathy
Globalization and interdependence	Ability to challenge injustice and inequalities	Commitment to social justice and equity
Sustainable development	Respect for people and things	Value and respect for diversity
Peace and conflict	Co-operation and conflict resolution	Concern for the environment and commitment to sustainable development
		Belief that individuals can make a difference

NOTE: Items highlighted in red have been identified as the core elements of global citizenship education that have consistently reappeared throughout literature. Those principles form the simplest definition of a global citizen (Merryfield, 2008; Noddings, 2005; Oxfam, 1997, 2006)

Table 2. Global citizenship's multifaceted nature

Domain	Attribute	Example
Local	Occuring in the immediate area	Engaging with international populations at home. Practicing active citizenship as it relates to one's own backyard
Global	Connected to the larger world	Studying abroad, participating in international service. Connecting one's experience in active citizenship in contexts beyond their home borders
Thoughts	Attitudes, behavior and knowledge that is internal to the learner	Ability to understand and verbalize GC concepts and theory
Action	Engagement through displayed acts or intentions	Ability to act upon the held concepts and beliefs of global citizenship in a real-world capacity

Global citizenship education has become an increasingly popular thematic addition both as a curriculum and enrichment for leaners K-12 and postsecondary (Hicks, 2003). Gibson, Rimmington, and Landwehr-Brown (2008) taught global citizenship concepts and leveraged technology for gifted secondary school students. Stott and Jackson (2005) outline efforts to implement global citizenship education in a middle school setting to meet guidance goals such as personal awareness, social skills, knowledge creation, career skills, and character education. Brigham (2011) cites the implementation of global citizenship attributes across a Canadian college as a strategic learning objective to create world-savvy, interculturally-competent graduates. Global citizenship's increasing presence in education at all levels makes it a timely and important subject to study and understand.

Global Citizenship and Transformative Learning

When applying transformative learning to global citizenship education, a distinction must be made regarding what transformation entails. Transformative learning as a larger societal construct is separate from transformative learning as an instructional goal. In the field of Global Citizenship, transformative learning takes on the more colloquial sense: the educator works with the students as they adopt a new, "transformed" worldview that is (typically) more open-minded

and inclusive of the global community (Merryfield, 2008; Myers, 2006, 2010; Veugelers, 2011). In the literature on global citizenship education, "transformed perspective" typically takes on a socio-political definition as learners develop specific knowledge, beliefs, and attitudes related to the political theories and comparative politics around citizenship (Carter, 2002; Hicks, 2003; Osler & Vincent, 2002). While the global citizenship learners in this study can be engaged in this socio-political transformation, the researcher's aim is to observe a change in learners' worldview in Mezirow's sense of identity, beliefs, and action, regardless of the specific outcome.

The conceptual fit between transformative learning and global citizenship—and particularly global citizenship for post-secondary learners—is intuitive. However, the specific connections must be described with care. Cranton (2002) describes transformative learning as a process that inherently assumes desire to make a change and "transform" in some way. The term "transform", of course, has a colloquial understanding, and much of the global citizenship education literature uses it in this way. For example, a study abroad-focused curriculum might say they aim to "transform" students into world travelers, without attention to the meaning perspective shift that might have occurred to *transform* a non-traveler with anxiety about other cultures into an individual who loves travel and displays high intercultural awareness. However, this dissertation focuses on the more intentional, theoretically-rooted concept of transformation of such meaning perspective shifts (Mezirow, 1981, 1991).

A key component agreed upon by most global citizenship scholars is the transformative element to global citizenship education and the change in individual learners that must occur to become more empathetic, engaged citizens (Deardorff, 2006; Marshall, 2009; Merryfield, 2011). Transformative learning has been applied to the Global Citizenship context previously; however, the focus was on learner outcomes after four years of education, including study abroad, and

38

utilized reflective interviews, focus groups, and surveys (Hendershot, 2010; Hendershot & Sperandio, 2009). Due to these different contexts and foci, there is a gap within the existing literature, requiring examination of (a) individual learner outcomes in global citizenship education in (b) the first year of their program, prior to the oft-transformative experience of study abroad. The prior methodology can also be improved by examining students' reflective writing and dialogue. By applying the lens of transformative learning theory to these student reflections, one can assess the global citizenship learning experience through rigorous, theory-driven research. The emphasis on reflection is essential as it is a mediator of the experience and processing tool for the transformative meaning making per Mezirow's cognitive rational approach.

The purpose of global citizenship education is to develop a strong global citizen identity and to cultivate a 'thick citizenship' as defined by Faulks (2000). Thick citizenship is characterized by seven attributes: right and responsibilities are mutually supportive, active, political community as foundation of good life, pervading public and private, interdependent, freedom comes through civic virtue, and morality is the arbiter. Through global citizenship education, learners ideally cultivate what McDougall (2005) refers to as a "moral disposition which guides individuals' understanding of themselves as members of communities—both on local and global levels—and their responsibilities to these communities" (p. 25). The cultivation that McDougall identifies can be viewed as a transformative process where learners develop the disposition through education emphasizing community membership and global citizenship. Coupled with the definition from Noddings (2005), one can view global citizenship curriculum as a transformative experience intended to develop attributes that would help learners flourish in

a global context, including traits such as ambiguity tolerance, empathy, and self-concept of one's role and responsibility in that world.

Cognitive Rational Approach, Critical Reflection, and Global Citizenship Education

Transformative learning at its base for a practitioner is a "means for teaching change through intentional action" (Fisher-Yoshida, Geller, & Schapiro, 2009, p. 1). In other words, transformative learning should be facilitated by experiences that are intended to transform one's meaning perspective and bring about change. Global citizenship education, in the same vein, is a medium to encourage identity change as it pertains to one's worldview and concept of citizenship (Banks, 2004; Ibrahim, 2005). The process of the experiential and course-related events that occur fall into the category of "disruptive" or "disorienting" events necessary for the transformation to occur as per Mezirow's Cognitive Rational Approach (Mezirow, 1991; Cranton, 1994, 2006). Figure 4 (below) outlines this process visually using global citizenship as the context for transformative change. Learners enter into the global citizenship program and experience disorienting dilemmas through curriculum, intercultural experiences, service and experiential learning. In order to process those disorienting experiences, learners must engage in critical dialogue and reflection to make meaning and lasting understanding of that knowledge (Mezirow, 1990; Jackson, 2011). Finally, the learner exhibits change in knowledge, skills, or attitudes that are indicative of a meaning perspective shift.

Fig. 4. Transformative learning process for global citizenship education (via Mezirow's (1991) Cognitive Rational Approach

Disorientation (Step 1)	Critical Reflection on Assumptions (Step 2)	Dialogue (Step 3)	Action (Step 4)
• Service Learning • Experiential Learning • Intercultural Experiences • Conflicting Curricular Information	• Informal, Online Reflection • Formal, Private Reflection • Digital Portfolios	• Online and Face-to-Face Class Discussion • Debriefs after Service Learning / Experiential Learning • One-on-One Meetings	• Δ Knowledge, Skills, Attitudes • Δ Empathy • Δ Ambiguity Tolerance • Δ Self-Concept / Identity

Fig. 4 outlines the cognitive rational approach with examples specific to the global citizenship context.

Within transformative learning theory, Mezirow (1991) theorized the CRA framework as the process by which change occurs in a learner's worldview, Transformative learning theory dictates that learners experience 'disequilibrium' as the curriculum and/or course experiences conflict with a pre-supposition or set of previously held beliefs (Mezirow, 1991). In the context of global citizenship education, the curriculum is designed to present experiences and material that will trigger these disorienting events for the learner. The purpose of such design is to develop or shift student meaning perspectives (e.g. their orientation toward or away from global citizenship). According to Mezirow (1991), learning occurs in four ways that can be captured in critical reflection (as shown in Figure 5, below): elaborating, learning, transforming perspective, and transforming habits. Evidence these ways of learning and the transformation within the learners would be captured through critical reflection and exhibited in written and created artifacts from the learners. In the global citizenship curriculum, educators would leverage critical reflection to process the disorienting events that are a result of intercultural education, curricular material, service, and experiential learning.

The cognitive rational approach (CRA) cites critical reflection as an essential tool for meaning-making in learners, and empirical studies support this theory in a postsecondary setting (Mezirow, 1991; Taylor, 2007). Bay and MacFarlane (2011) examined critical reflection in the undergraduate classroom as a necessary tool for recognizing others' frame of reference, reconceptualizing identities, and making meaning of their own and clients' experiences. Ryan (2013) examined critical reflection in professional development and observed that various levels of reflective practice in terms of depth must be exercised equally to prevent gaps in the transformative experience. Brookfield (2000) asserts that learning cannot be considered transformative if it does not involve critical questioning, or reorientation of how one thinks and acts. Thus, deep questioning and reflection can be an observable marker of transformative change. For global citizenship learners, reflection allows the learner to process all of the intercultural, curricular, and experiential factors that affect change and individual growth (Lutterman-Aguilar & Gingerich, 2002).

Critical reflection is both integral to the student growth and learning process, as well as a vehicle for assessment and research in global citizenship education. Mezirow (1991) and other adult learning theorists assert that critical reflection is a validation and critique process. King and Kitchener (1994) state that critical reflection is "the process an individual evokes to monitor the epistemic nature of problems and the truth value of alternative solutions". For learners in the global citizenship classroom, they grapple with real world issues that the educator/facilitator poses to develop learners' problem-solving and critical thinking abilities (Hicks, 2003; Ibrahim, 2005). The critical reflection process also has been found to develop the social justice orientations and intercultural competence (Howard, 2003; Kumagai & Lypson, 2009), both of

which are defined by Oxfam (1997, 2006) as part of the knowledge, skills, and attitudes indicative of global citizenship education.

To assess perspective transformation, critical reflection creates a summary of the experience while exhibiting the metacognition of the learner to examine their own thinking, recognize patterns and make meaning (Mezirow, 1990). Figure 5 (below) outlines the learning paradigms that can be observed through critical reflection per Mezirow's (1991) cognitive rational approach theory and provides an example drawn from practitioner experience of teaching an advanced level Global Citizenship practicum course.

Fig. 5. Learning paradigms per Mezirow as observed through critical reflection in the global citizenship context (1991)

Observed Through	Paradigm	Example (drawn from advanced level Global Citizenship practicum course)
Critical Reflection ↓	Elaborating existing frames of reference	"I knew refugees were displaced people, but I did not know how long they stayed in refugee camps before they were relocated to the US."
	Learning new frames of reference	"I did not know anything about the citizenship process for immigrants to the US, and I have a new appreciation for how many steps there are to the process."
	Transforming perspective	"I now see myself as someone who has an active role in my community and that I can affect change."
	Transforming habits of the mind (i.e. approach to new information).	"In future, I will be more critical of my understandings and open-minded to potential new information that might not agree with my held beliefs."

Online Learning, Transformative Learning, and

Technological Tools that Support Reflection

Technology has been identified as a transformative tool in education, as well as a potential tool for transformation of learners (Dede, 2011). There are two divergent sides to the debate on the use of technology and the internet. Clifford Stoll (1995), for example, famously

excoriated the internet as a medium that served to further isolate people. Through more rigorous academic thinking and research, Turkle (2011; 2012) has established a lengthy record of scholarly research on the internet's impact on social relationships and the isolating nature of the internet. These competing understandings endure as we continue to examine the internet's role in social development and its ability to isolate, mediate, and facilitate interactions between people. Research that has focused on the facilitative role of technology in human interaction has spanned tools from social media to online learning communities (Correa, Hinsley, & De Zuniga, 2010; Oncu & Cakir, 2011; Yeh, 2010).

As reflection can take many forms and have many facets, so can the technology that has evolved in recent years to promote and facilitate reflection. From private, individual, formal reflection to communal, public reflection, technologies exist that can allow students to reflect in different formats, frequencies, and formalities. The use of technology for more sophisticated reflection is a realm of inquiry for this research. Schank and Jona (1991) affirm that technology is a tool that puts more control into the hands of learners while magnifying traditional teaching methods. Through this self-efficacy gained by technology, learners are in charge of their own learning and reflection processes.

Transformative learning scholar Cranton (2006) has considered the possible impacts of technology, arguing that "Transformative transfer can be fostered in an online environment... through meaningful interactions among learners in which people feel free to express divergent points of view, feel supported and challenged by their peers and their teachers" (p. 116). Dede (2011) reaffirms the transformative nature of technology to the teaching-learning practice, and specifically growth of emerging technologies as a transformer of education and promoter of ubiquitous education. In a report for the North American Council for Online Learning, Watson

(2008) asserts that blended learning "combines online delivery of educational content with the best features of classroom interaction and live instruction to personalize learning, allow thoughtful reflection, and differentiate instruction from student to student across a diverse group of learners" (p. 4).

Studies have also shown the benefit to online social interactions and the different roles the internet can play in social development of post-secondary learners (Berge, 1999; Duffy & Kirkley, 2003). The reflective process is comprised of many aspects that lend themselves particularly well to use of technological tools. These aspects include frequency of reflection, production of a written or artistic artefact, and accessibility to reflective space. Technology was used in previous contexts to enhance reflective writing and allow students to be more frequent practitioners of reflective writing (Bouldin & Holmes, 2006; Chretien, Goldman, & Faselis, 2008).

The use of reflection as a moderator of student experience and learning efficacy has also been explored. Quasi-experimental research has shown that students expressed higher satisfaction with courses and an increased perception of themselves as having met academic goals when participating in weekly online reflection (Bye, Smith, & Rallis, 2009). Mayhew and Enberg (2010) found that authentic interactions through dialogue facilitated in online settings with diverse peers affect learners' ability to develop moral reasoning skills. Yukawa (2006) found that online mediation of reflection and artifact creation can lead to better learning outcomes and instructor-student relationships. The study examined co-creation of knowledge through online artifacts (e.g. email, forum posts, chat transcripts, journal entries, etc.) and through the data gathered found that the online medium facilitated a better interface between instructor and student and altered the environment to suit learner needs.

Reflection can serve a dual role for educator/researcher and learner as it is observable, timely, and assistive. In other words, the structure and agility of reflection allows for learner, educator, and researchers alike to benefit. Lear and Abbott (2009) found that when students use reflection as a processing tool for experiential learning, their satisfaction is higher because learner expectations get realigned and reconciled as the experience unfolds. Ward and McCotter (2004) emphasize the necessity of reflection in the classroom to reemphasize process of learning as well as being viewed as an outcome in its own right that can be assessed and viewed for learner change. Mayhew and Enberg (2010) studied pre- and post-test survey data from two sociology courses (n = 184) to compare and contrast outcomes of students taking a course in a blended format versus a traditional format. They found that those who had intergroup dialogue in an online setting had more authentic interactions between peers of different backgrounds.

Reflection, as Dewey conceptualized it, is a construct that can be deepened and leveraged for individual growth through meaningful implementation of technology. Dewey (1933) provides an operational definition of critical reflection that emphasizes "active, persistent, and careful consideration" of one's meaning perspective and the new information a learner gains through experiences, curriculum, and socialization. This idea of an active, repeated process by which learners are examining their thoughts and ideas would lend itself well to the context of online learning, where student can share, archive, and revisit works they created to make meaning of their growth and identity development. Learners can revisit old forum posts, creative assignments, etc. – anything they have uploaded or shared in a technological space – to weave together their own personal story (McAdams, 1988, 1993; Ohler, 2006).

Online discussion forums and learning community participation has also been shown to empower students, give equal voice to all, engage learners in a different medium, and give time

to process not had in a classroom setting (Barak, Boniel-Nissim, & Suler, 2004). Most research

conducted on transformative learning in an online learning environment has taken place in the

field of nursing (Cranton, 2010; Terry & Faulk, 2012; Parker & Myrick, 2010). Electronic

portfolios – collections of online artifacts and reflective writing – is an effective tool to promote

critical reflection and as a tool to develop identity (Stansberry & Kymes, 2007). Uzuner (2007,

2009) developed a model of online discussion coding called educationally valuable talk (EVT)

that is applied to online forums. The empirically-based model gives educators and researchers a

framework by which to understand the depth and meaning of contributions on an online forum in

terms of their educative value. Thus, with research affirming the constructive use of technology

as a tool for reflective practice, research priorities should now shift to understanding the different

kinds of technology-mediated reflection and its effect on transformative learning and global

citizenship education.

The Complexity of Transformative Learning and Global Citizenship:

Its Challenges as a Research Context

The complex nature of transformative learning and its assessment is complicated,

variable, and highly individual (Cranton, 1994; Cranton & Roy, 2003; Taylor, 1994). In

transformative learning, students experience different inputs from encounters both inside the

classroom and out. The nature of global citizenship education is an interdisciplinary and

intersectional one. Students are learning about and processing complex and ambiguous issues

such as human trafficking, refugee resettlement, and immigration. They then have experiential

learning that further presents ambiguous and uncomfortable information that they must fit into

their prior schema. For instance, through service learning, students would be working with

individuals who have experienced trauma from a situation such as refugee encampment.

47

Through the service learning component of the experience, empathy can be built when students engage in service learning and reflection (Wilson, 2011). Students can also gain moral reasoning skills and a commitment to social justice ideals. Critical reflection and dialogue in social work education can increase empathy and a commitment to social justice values (Gair, 2011). Through linking new content with prior knowledge via reflection or other constructivist tasks, the change in schemas and individuality of learner experience and growth can be captured (Piaget, 1957; Smith, Disessa, & Roschelle, 1994; Vygotsky, 1978). While the complex nature of transformative learning presents challenges, research can be effective if the researcher designs a mixed methods study to capture those many variables and the wealth of qualitative data captured through reflection.

The majority of criticism on transformative learning research is focused on the individual nature of transformative learning (the assumption that learners will know others by learning about themselves) and the repercussions that nature then has on learning and evaluation (Newman, 2008; 2012). Some see the individual nature of transformative learning at odds with the larger social justice or commitment to the greater good (Collard & Law, 1991). However, the relational and constructivist nature of most transformative learning literature emphasizes the connection to the wider world and the meaning perspective that is created by those relationships to other individuals, past experience, and prior knowledge. Global citizenship education emphasizes individual meaning perspective shift as a first step to an individual becoming an agent of change and should be considered a counter to that criticism.

The field of global citizenship is fraught with complexity and differing views of what global citizenship means in practice (Hicks, 2003). Global citizenship is an ideal defined by flexibility, openness to change, and intersectionalities of identity, legal status, and philosophy

48

(Ong, 1999). While many characteristics have been debated and encouraged through global citizenship education, the concept is more of an amorphous approach to the world rather than a strictly defined set of rules and responsibilities. Harkening back to the definition by Noddings (2005), global citizenship encompasses a vast set of variables, behaviors, education, and theory that are difficult to isolate and study. Furthermore, global citizenship is as much an active exercise as a theoretical construct (Davies, 2006; Ibrahim, 2005). Dewey (1916) asserts that democracy is learned through good works, thereby calling for active citizenship for young learners to form their identity as a "good" citizen.

In the context of global citizenship education, students are oftentimes undergoing many different types of experiences that would fall into the category of high-impact educational experiences: study abroad, service learning, intercultural events, and identity development opportunities (Kuh, 2008; Kuh, O'Donnell, & Reed, 2013). These experiences have been studied in different contexts, but rarely as a composite with the specific objective of developing adept global citizens. High-impact learning experiences, and specifically global citizenship education, involve many elements and variables that affect the quality of said experience. As outlined in table 2 (p. 31), global citizenship education has many facets and attributes. The complexity of that situation challenges and sometimes inhibits research. However, qualitative examination of artifacts from student experiences (i.e. written reflections) can yield data and indications of student growth and development (Ash & Clayton, 2009; Jackson, 2011; Lucas & Tan, 2013; Wong, Kember, Chung, & CertEd, 1995). For these reasons and the facets outlined in Table 2 (p. 31), global citizenship is a complex, multi-variable experience that is both difficult to research and demands a sophisticated research design to accurately portray and understand its mechanisms.

Transformative Learning, Reflection, and Global Citizenship:

Prior Studies and Future Research

Research in the field of transformative learning has been focused mainly on the theoretical exploration of its constructs and application in teaching (Taylor, 2007; Kitchenham, 2008). While the literature explores in-depth theoretical underpinnings of transformative learning in adult education, empirical research with mixed methodology has been relatively scarce. One of the most comprehensive empirical studies in transformative learning was a longitudinal study on how HIV/AIDS patients make meaning of their lives after diagnosis (Courtenay, Merriam, & Reeves, 1998). Their diagnosis is presented by the researchers as a disorienting dilemma, with patients remaking their meaning perspective to include a future-facing element after processing the diagnosis of a potentially fatal disease. The individual nature of the transformation, with the disruptive event being the diagnosis, was charted through narrative analysis. However, the criticism that met this study and has challenged others is the distinction between an intentional transformative learning experience and a transformative life experience that happens to have been charted (Taylor, 2007). While disorientation is addressed in many studies – including the ones mentioned above – a rubric or instrumentation outside of qualitative analysis does not exist to specifically capture disorientation.

Furthermore, the literature has pointed to a lack of research in the field of technology and transformative learning (Taylor, 2007; King, 2001; Zieghan, 2001). While Dede (2011) outlines the transformative potential of technology for both delivery of and consumption of educational experiences, there is still much to be discovered regarding how technology assists individual personal transformation in terms of meaning perspective and identity of individual learners (Dede & Barab, 2009). Zieghan (2001) explores the social construction of knowledge in the

classroom and its ability to encourage students to appreciate diversity and diverse perspectives, practice respect, and gain self-efficacy. In Zieghan's study, the main hypothesis was that instructional approaches are not neutral, and through the instructor's affirmation that they value the student voice, it establishes an expectation of respect and honoring self-worth for all.

Transformative learning has been previously applied in studies that incorporate reflection and the change in identity and held beliefs of learners (Jordi, 2011; Taylor, 1994; Wong, Kember, Chung, & Yan, 1995). Kose (2009) studied transformation in K-12 teachers, exploring the role of principal leadership in creating a culture of reflection and changing identity, beliefs, and actions towards social justice. Bay and MacFarlane (2011) examined critical reflection in the undergraduate classroom as a necessary tool for recognizing others' frame of reference, reconceptualizing identities, and making meaning of their own and clients' experiences. Ryan (2013) examined critical reflection in professional development and observed that various levels of reflective practice in terms of depth must be exercised equally to prevent gaps in the transformative experience.

For global citizenship education, the goal is for students to enter a higher order of thinking, demonstrable through their reflective writing (Banks, 2001; King & Kitchener, 2004). As mentioned in Chapter 1, research on reflection and global citizenship is currently limited. The research that does exist highlights either the instructor experience or pedagogy, but not the individual transformation (or lack thereof) that is aided by reflective writing. Student learning outcomes have been studied by scholars such as Marshall (2009) who looked at the changing identities of European learners as they grapple with national citizen identity and European Union citizenship and the knowledge, skills and attitudes of global orientation. In the Marshall study, however, the reflective writing component was not studied. Kroll (1992) found that first year,

51

postsecondary learners benefit from reflective thinking and inquiry-based teaching when complex, uncertain, real world problems (e.g. the Vietnam War) are presented to them for critical analysis. The specific context of global citizenship identity, however, was not the central focus. Thus, teaching global, complex topics with a reflective component to understand the transformative process and global citizenship orientation is both a promising extension of research and a potential addition to the literature.

Another impetus for transformative change in learners is through intercultural communication and meetings. Jackson (2011) posits that learners grapple with the unfamiliar and the many emotions associated with intercultural encounters. Such as disorienting event can be eased and deepened through utilizing reflection to work through such ambiguities and manage expectations (Gair, 2011; Jackson, 2011). Transformative learning and reflection has also been applied to intercultural education, which is one of the facets of global citizenship education (Oxfam 1997, 2006). Martin, Smolen, Oswald, and Milam (2012) used reflection and global literature to teach social justice issues to elementary school students, finding that the use of such literary supplements coupled with reflection helped young learners develop a burgeoning sense of social justice.

Two previous studies have explored the Global Citizenship Program at Lehigh University (Grudzinski-Hall, 2007; Hendershot, 2010). Since these studies, however, the format of the program has somewhat changed, with the study abroad experience being moved from the first year to sophomore year for students in the program, as well as the addition of a digital portfolio and formalized service learning in 2010. These additions add an extra level of curricular depth to the transformative learning experience, as well as giving other mediums and opportunities for learners to reflect. Also, in its previous iterations have been studied in two dissertations that

explored the transformative nature of short-term study abroad and global citizenship identity (Hendershot, 2010) and the larger comparison of Global Citizenship programming among US colleges and universities (Grudinski-Hall, 2007). The nexus between writing, transformative learning, and global citizenship has yet to be explored.

The purpose of this study is to analyze that relationship and understand how individual student identity takes shape during their first-year of college in respects to global citizenship and interdisciplinary thinking. Through different reflection formats, in online and offline settings, the purpose of this work is to explore and understand the relationship between learner's critical reflection, mode of reflection, and depth of thinking as it relates to the quality, directionality, and interdisciplinarity.

Constructs and Instruments for Global Citizenship as
Transformative Learning via the Cognitive Rational Approach

In order to connect and understand the relationship between global citizenship, transformative learning, and individual learner development, there exists and opportunity to analyze and explore patterns in learner-created artifacts for evidence of transformation. Rubrics can be used to survey each facet of the transformative experience for learners, assessing writing for evidence of quality/depth, interdisciplinarity, and directionality on the continuum of global citizenship identity. Rubrics identified that would accomplish this survey are Oxfam (1997, 2006) rubric for global citizenship education, Mansilla, Duraisingh, Wolfe, and Haynes' (2009), and King and Kitchener's (1994) Reflective Judgment Model.

The Reflective Judgment Model from King and Kitchener (1994) emphasizes critical thinking and attitudes, which fits into CRA as measurement/indicators for future actions in that last step of the model. They explain their model as a depth of reflective thinking that is not

simply critical thinking or an exhibition of intelligence, but a record of overlapping experience, meaning making, and knowledge creation that informs the transformative process. King and Kitchener's (1994) model breaks down reflective judgment into seven distinct stages, or epistemological assumptions. The three overarching categories of this model include pre-reflective reasoning (knowledge created by an outside authority figure, taken as rote), to quasi-reflective reasoning (acknowledging and grappling with uncertainty about learned knowledge), and reflective reasoning (ability to make judgments despite uncertain knowledge, but constructing assertions based on the best and most valid data).

King and Kitchener (2004) have worked extensively to develop a model of understanding post-adolescent development of reflective judgment and critical thinking. In King, Kitchener, Davison, Parker, and Wood (1983), researchers validated the model with a two-year longitudinal study of undergraduates (n=59) that empirically tested and verified that the stages and sequence of the reflective judgment model was supported for the seven epistemic assumption shifts. In the thirty years since, this model has been tested extensively and shows that post-secondary learners develop higher order thinking skills through frequent reflection, discourse, and writing (King & Kitchener, 1994, 2004).

The rubric created by Mansilla, Duraisingh, Wolfe, and Haynes (2009) is used to systematically analyze student writing in courses which are inherently interdisciplinary. The rubric is designed both as a tool for instructors' grading (when assessing work that crosses disciplines) and as an instrument for researchers' investigation (when seeking to identify qualities of the writing that exhibit interdisciplinarity and the level at which students are in understanding and processing interdisciplinary material: naïve, novice, apprentice, and master).

The authors described their validation process occurring in three phases. First, they drew a convenience sample of essays (n=84) across first year, sophomore, and senior interdisciplinary coursework. Second, they segmented the data, drawing a stratified random sample (n=40) representing all three levels of students. Independent scorers from two different institutions used the rubric to assess the first set of essays. The rubric was then calibrated based on disagreements between reviewers and discrepancies settled by consensus. Finally, the remaining 44 essays were independently scored by reviewers from one institution, and inter-rater reliability (IRR) was then calculated based on the number of judgments in agreement divided by total number of judgments (IRR = 83.5%). The researchers conducted Four 4x1 ANOVAs for each dimension of the rubric to test for construct validity and instrument sensitivity. Seniors were found to score significantly higher than freshman and sophomore learners, as was hypothesized by the researchers.

Mansilla, Duraisingh, Wolfe, and Haynes' (2009) rubric has been cited by 89 peer-reviewed publications. Of those 89 publications, there are a number that used the rubric for empirical research to test hypothesis and further validate the rubric. McKenney, O'Brien, Naasz, Teska (2011) used the rubric to assess the integration of interdisciplinary concepts in an environmental studies capstone. The rubric has also been used to understand the integration of arts into curriculum with interdisciplinary connections between as drama, dance, and music (Overby, Glassman, Haislip, Luzier, Schotz, & Thomas, 2013). Borrego and Newswander (2010) applied the rubric to proposals written by participants in the National Science Foundation's Integrative Graduate Education and Research Traineeship (IGERT) program (n=59) to assess depth, interdisciplinary thinking, and skills integration.

Oxfam (1997, 2006) has created a preeminent, frequently cited curriculum outlining global citizenship knowledge, skills, and attitudes. The curriculum emphasizes content knowledge such as social justice and equity, skills such as critical thinking, and attitudes such as respect for diversity. Table 1 (above) outlines these knowledge, skills, and attitudes (KSAs) and the attributes one would seek in the reflective writing of individual learners. Inclusion or absence, as well as frequency, of such KSAs would be indicative of global citizenship (GC) learner growth.

The validity of the Oxfam (1997, 2006) rubric within this research context is categorical: they form the basis of a widely accepted, frequently cited global citizenship curriculum. The Oxfam guidelines have been and continue to be used for global citizenship curriculum development and is cited repeatedly in other studies as the gold standard (see: Ibrahim, 2005; Zahabioun, Yousefy, Yarmohammadian, & Keshtiaray, 2012; Landwehr Brown & Gibson, 2012). In terms of the reliability and authority of the guiding measures, the Oxfam guidelines have been developed over decades of work and best practices in GC and development work. Their qualifier in the 2006 rewrite of the curriculum states that, "Oxfam's Curriculum for Global Citizenship is based on years of experience in development education and on Oxfam's core beliefs." It is a type of curricular validity that parallels the work of Wiggins & McTighe (2005) and their Understanding by Design (UbD) model. The guidelines set forth by Oxfam (1997, 2006) are the knowledge, skills, and attitudes that through the UbD approach would reveal to be the goals of global citizenship education for student development and knowledge creation. This study uses the curricular guide and resulting KSAs that are outlined by Oxfam to assess how the students are exhibiting these traits in writing, whereas dozens of other scholars have used the guideline to show that this is the curriculum that should guide GC classrooms.

In Chapter 3, the research design and methodology is explicated in detail. While studies have been previously conducted on this program, there is an opportunity to focus specifically on the cognitive rational approach as applied to first-year learner development and evidence of such development in their reflective writing. The population studied includes the first year in which the reflection process has been set up with a specific function in mind to aid transformative learning. Upon charting out transformative learning process, specifically the cognitive rational approach to transformative learning, it becomes clear the global citizenship first year experience is a transformative one. First, the students undergo experiential learning in the form of field trips and service. Second, students have frequent intercultural experiences. Both the intercultural and experiential learning can be considered disorienting events under Mezirow's cognitive rational approach. While this model is being applied in the context of Global Citizenship education, the model is applicable to other contexts, from pre-service teacher education to conflict resolution to pre-medical curriculum.

CHAPTER 3: METHODOLOGY

The purpose of this study is to assess the role of differing forms of written reflection—formal, private writing and public, informal online writing—in processing and assessing the transformative experience of a global citizenship course. By judging quality and directionality of the students' reflections, one can observe and assess evidence of transformative change in learners via global citizenship education and the role of such education in their identity development. This study is a mixed methods design that analyzed multiple sources of data from learner artifacts and existing survey data. Tashakkori (2009) cites two decades of mixed methodology developments that share the common thread that "a strict qualitative–quantitative dichotomy is not necessary or productive for answering research questions" (p. 288). Thus, this project seeks to collect meaningful qualitative and quantitative data on the global citizenship education experience for first-year students. The following questions guide the study:

1. What impact does the inclusion of whole-class, online discussions have on undergraduate students' development (demonstration of directionality, quality, and interdisciplinarity) as compared to students who have only reflected in an offline, formal paper?

2. What comparisons and relationships can be observed in terms of directionality, quality, and interdisciplinarity between the informal, online and formal, offline writing?

3. Through emergent coding both across cohorts and across reflection formats, what patterns, themes, and/or relationships can be observed as evidence of transformative change?

In order to address these questions, this mixed methods study explores the relationship between student reflective writing and their development of GC self-concept and understandings. The following chapter will outline the research methodology in the following sequence. Setting and

sample will be explored in three pages. The research paradigm, including design, concepts, and theoretical framework will follow in nine pages. Data collection processes, sequencing, and analysis will be explored in the sixteen pages that follow. Finally, six pages will be dedicated to the limitations, threat to validity and how they were addressed, and other acknowledgements of possible challenges that were monitored and managed.

Setting and Sample

The study population consists of two classes of 23 students each from a private, mid-Atlantic university enrolled in a specialized certificate program on Global Citizenship. This study focuses on the first year experience of the cohort of students beginning this certificate program. The first year experience includes a specialized curriculum, service learning, experiential learning trips, and extracurricular activities meant to engage the students in intercultural experiences. Students apply for this four-year program prior to entry into their university. While there is no outright compensation to motivate the students to take part, students do have an incentive in the form of a cohort study abroad trip that is funded by the university.

The Global Citizenship program that is the focus of this study is an established course curriculum that has been used for almost 10 years. Established in 2003-2004, the program admits approximately 23 students per year into the program and they all follow an established curriculum comprised of traditional courses, service, and experiential learning. This participant group constitutes a purposeful sample, as there are few programs designed such that global citizenship and the transformative learning experience of the individual learner can be easily assessed.

In global citizenship education at an undergraduate level, learners oftentimes self-select into a program where such change should be taking place. While this shows an orientation to the ideals of such a program, the prior knowledge, experiences, and motivation behind such self-selection varies (Brophy, 2013; Feldman & Matjasko, 2005). Interest does not equate to an already strong global citizen identity, and as such transformation is still both possible and observable through reflective writing, discourse, and other student-created artifacts (Brigham, 2011).

The participants studied are a sample of two cohorts out of a total of nine that have enrolled in the specialized certificate program. These two cohorts have been chosen because they are the only two cohorts who have undertaken an identical curriculum sequence with only the variation being the format of the reflections. Both cohorts wrote formal reflection papers and completed electronic portfolios. The second cohort also completed a set of online group reflections in addition to the other activities. The schedule of the assignments were the same between the two cohorts. Formal, offline assignments were assigned at the same pace for both Cohort 1 and Cohort 2. These reflections were due in September, October, November, and December for each cohort, with similar spacing and due dates within a day of each other in their respective months between 2011 and 2012. Figure 6 depicts a complete overview of the units, treatments, and settings for the two cohorts of global citizenship program students, per Cronbach's model (1982). Note that the cohorts are of fairly equal size, and settings are identical between the cohorts. Cohort 1 received treatment A (existing curriculum) and B (formal reflection; whereas Cohort 2 received treatment A, B, and C (informal, online reflections).

Fig. 6. Cronbach's (1982a) units, treatments, and settings (UTS) applied to global citizenship

	Units	Treatments	Settings
2011 Cohort	Cohort 1 (N = 23)	Traditional Curriculum (i.e. books, articles, etc.) Experiential Learning Service Learning	Classroom Service Site Experiential Field Trip
2012 Cohort	Cohort 2 (N = 23)	Traditional Curriculum (i.e. books, articles, etc.) Experiential Learning Service Learning	Classroom Service Site Experiential Field Trip

A dedicated advisor teaches the first year course that is focused on an introduction to global citizenship in place of the English 1 credits. Students are expected to participate in two extracurricular activities beyond the classroom that have an intercultural or global perspective per semester. Service learning is incorporated into the first-year introductory class, with students taking on roles of advocacy/philanthropy (i.e., raising money for and on-campus awareness of Oxfam), storytelling (interviewing local refugees and immigrants to bear witness to stories of relocation), and teaching (running programming for refugees in the community to help acclimate them to life in the United States). Experiential learning took place in the form of field trips to Washington, DC, and Philadelphia to learn about global citizenship in an applied setting.

Research Paradigm

Researching a topic such as global citizenship education and analyzing evidence of individual learner development demands a study design as complete and complex as the found problem. Thus, a mixed methodology is necessary to incorporate many inputs and data sources to understand the full breadth of the learner experience and potential influences. The following section will explore first the rationale for a mixed methods design. It will then explicate the nature of found-problem research.

Assumptions and Rationale for a Mixed Methods Research Design

Mixed methodology for this research study is an appropriate approach due to the complexity of the topic and intertwining nature of variables and inputs. Researchers such as Tashakkori (2009) and Creswell (2009) have asserted the importance of mixed methodology as a format that is both structured and pragmatic while also allowing for exploration and agility to respond to the unexpected nature of found-problem research. Tashakkori and Teddlie (2003) refer to this latest wave of integrated research as a "third methodological movement" that is simply a new way of perceiving standard formats of research while acknowledging potential for future growth as we better understand the relationship. Through quantitative assessments such as psychometric testing, the researcher can observe a change in learner traits. Using qualitative research methodology such as document analysis, the variables at play behind some of those questions is discovered.

Teddlie and Tashakkori (2012) emphasize the need for mixed methods research to be integrative, not simply running two analyses concurrently and in isolation. Mixed methods was employed to collect information to understand the full picture of student transformative experience. Use of deep reflective data, coupled with quantitative metrics is essential to achieving a "thick description" of student understanding, which Geertz points to as necessary for understanding not only behavior, but context and influencers of such behavior (Geertz, 1973).

Establishing Case for Found-Problem Research

Outlining the many rationales for embarking on mixed methods research, Teddlie & Tashakkori (2009) identify found problem research – research conducted on a phenomenon or variation that occurs naturally and not through researcher intervention or creation – as a compelling and an appropriate field of inquiry to analyze and understand complex issues.

62

Dewey (1933; 1938) believed the goal of education and research should be a meaningful, experiential one that addressed real-world problems and yield positive solutions. Johnson (2001) called for a shift in research conceptualization from methodology-driven to purpose-driven design. This would shift researchers from a mentality of controlled versus uncontrolled, qualitative versus quantitative to a model that would allow the research questions to dictate the methodology.

Found problem research is also a particularly relevant paradigm for educational research (Creswell, 2002; O'Donoghue & Punch, 2013). Individual learner development is affected by many variables – including knowledge creation, social interaction, and lived experience. As such, the qualitative and quantitative data that can be gleaned from a course or student-created artifacts can help researchers understand the mechanisms behind that learner development (Barab, Hay, & Yamagata-Lynch, 2001; Rodriguez, Frey, Dawson, Liu, & Ritzhaupt, 2012). One strong model guiding the qualitative aspect of this dissertation is the rigorous work of Polman on identity creation for learners in social studies and science education settings (Polman, 2006; Polman & Miller, 2010). Specifically, Polman (2006) drew upon his own work, incorporating sophisticated qualitative design to address identity development in youth using technology tools to boost historical inquiry skills in the setting of an urban afterschool club. From this experience, Polman established a quality framework for research in field settings. The success of Polman's research can be attributed to strong research design, a thorough literature review, and dedication to capturing data authentically and completely (Polman, 2006; Polman & Miller, 2010). Found problem research must follow the example of such high-quality field studies in order to capture data and analyze in a thorough, honest, and representative manner.

Theoretical Framework

Mixed methods studies have multiple traditions to draw upon when constructing a theoretical framework. Quantitative researchers often rely on theoretical constructs garnered from the literature review to identify possible variables and hypothesis on relationships between variables (Patton, 2005, p. 252). Thus, they are mining a vast corpus of previous research to yield a focal point to then test statistically. For qualitative researchers, the orientation towards theory varies widely. Creswell (2009) identifies four usages of theoretical/conceptual frameworks for qualitative researchers. These usages are: theory as product after grounded research, theoretical lens as guiding the research, explicating theory to explain behavior and attitudes, and rejection of theory in favor of phenomenology. This study uses this theoretical lens—specifically that of transformative learning—as a guide to the research.

The researcher accepts the validity of transformative learning to develop individual undergraduate student identity. A critical theory perspective was also applied in this research. Critical theory, as defined by Habermas (1971), affirms that we can understand people, behavior, attitudes, and society through analysis of texts and symbolic expressions. His extrapolation of this into social theory emphasizes the self-reflective knowledge that emancipates its subjects and increases autonomy, thus developing a social justice orientation (Habermas, 1971). The acceptance/affirmation of the curriculum of global citizenship inherently advocates for active citizenship, intercultural awareness, service learning, and social justice, as is defined by the Oxfam (1997; 2006) framework.

The theoretical framework of the following study is rooted in theories of transformative learning, constructivism, and interdisciplinarity. The complexity of each of these theories demands deep data to understand the many facets and inputs that could affect a student's writing,

64

reflection, and meaning perspective change. Accordingly, each of the three theories is discussed below.

Transformative learning and the Cognitive Rational Approach. As stated above, the theoretical lens through which this study was conducted and is understood affirms that transformative learning is effective in its mission to develop students, particularly in undergraduate settings. As a conceptual guide, transformative learning is complex and lends itself to mixed methods design to tackle the complex issues from multiple angles. One of the primary reasons that transformative learning demands multiple methodologies is the complexity and variability of individual learners and their meaning perspectives. Transformative learning is a learner-centered, highly-individual field that demands thorough data and artifacts for assessment of learner change (Dirkx, 2000).

The Cognitive Rational Approach model that is proposed by Mezirow dictates that students confront disorienting events that will then leave them with new information to grapple with or fit into their meaning perspective. Different disorienting events (information contradictory to a student's held knowledge or high-impact experiential learning, for instance) could pose different levels of disorientation. Thus, by capturing qualitative data, a researcher can understand the growth points and areas where specific progress/regress is made towards formulating that global citizen identity. Transformative learning is crucial to this process as it encapsulates the necessary paradigm for individual learner change. This theoretical framework sets the foundation for how the researcher understands the learning process for post-secondary learners as they grapple with prior knowledge, disorienting events, and curriculum that is designed to encourage individual identity development.

Constructivism and the relativist ontology. This study also accepts the paradigm of constructivism as a guiding force of undergraduate education and, specifically, its important part in transformative education. Vygotsky (in Kozulin, 1990) posits that learners acquire knowledge and expertise through interactions with peers. Through discussion, paired assignments, and social interaction, more knowledgeable others can work with novice learners to reinforce knowledge, skills, and attitudes of that discipline or curriculum. Another cornerstone of constructivism is Piaget's schema theory. Piaget (1959) studied the way in which children responded to new inputs of information by either accommodating or assimilating the information into an existing schema. He saw intellectual development as a process in which learners had to constantly reconstruct prior held ideas to develop higher-order thinking skills (Piaget, 1972). Both schema theory and social learning describe the learning processes of the first-year global citizenship students in this study as they encounter the curriculum described above and reflect upon curricular materials and experiences. Reflection, a type of metacognition, is inherently constructivist as it is the processing tool by which learners make sense of new information and refit their experiences and new knowledge into prior schema.

Relativism must also be considered as a theoretical framework. Connecting to the constructivist work of Vygotsky (1978) and Piaget (1957), where reality is constructed through social and experiential interactions, relativism is a group of views that affirm all we experience as humans is relative. Thus, thought, experience, evaluation, or views of reality are created based on comparative understandings of that reality as it is built from the individual and in comparison to peers. Relativism can be traced back to the work of Wittgenstein, who wrote extensively on thought, language, and the construction of meaning (Kenny, 1994; Wittgenstein, 1969). A relativist ontology relates directly to transformative learning as it mirrors the concept

of a "meaning perspective" theorized by Mezirow (1981, 1990). That meaning perspective is a construct of how an individual learning views the world or a particular issue related to their held beliefs, prior knowledge, and experiential data.

Relativist ontology assumes that reality as we know it is constructed intersubjectively through the meanings and understandings developed socially and experientially (Guba, 1992). In the context of post-secondary education, learners are creating an identity and gaining knowledge, skills, and attitudes in a way that draws upon past experiences, comparative understandings of reality, and individual prior knowledge. The meaning perspective that Mezirow (1981) emphasizes must be shifted through transformative learning. That process is mediated through critical reflection where learners assess newly acquired knowledge compared to previous held beliefs and dialogue which has a social component of comparing understandings of reality to those of one's colleagues.

The aim of global citizenship education, which is facilitated through transformative learning, is to develop self-efficacy, agency, and skills for students to develop into young adults who can exist and thrive in an international context (Noddings, 2005). In regards to relativism, learners are constantly comparing to previous experience, taking new data inputs, and reshaping their understanding of the world and their role in it.

Interdisciplinarity and the challenge of wicked problems. The field of interdisciplinary and transdisciplinarity studies is an emerging one, but with significant strides towards refocusing higher education on addressing global challenges as interdisciplinary pursuits (Holbrook, 2013). Pohl and Hirsch Hadorn (2007) emphasize that transdisciplinary thinking and research is necessary "when knowledge about a societally relevant problem field is uncertain,

when the concrete nature of problems is disputed, and when there is a great deal at stake for those concerned by problems and involved in dealing with them" (p. 103).

Global problems – wicked problems – exist in complex grey areas, whereas university education is still largely dominated by departmental organization (Brewer 1999). Cronin (2008) affirms that the new globalized world demands more interdisciplinary work that can be applied to larger global challenges. Boix Mansilla and Gardner (2008) also assert the need for students to be trained more as global thinkers rather than subject matter experts. Mansilla and Jackson (2011) connect the need for balancing disciplinary and interdisciplinary thinking as a way to create globally competent learners.

A wicked problem, first identified in 1967 by operations researcher Horst Rittel, is one that has so many confounding factors, that isolating and identifying causality is a difficult process that is outside normal disciplinary tools. Rittel and Webber (1973) outline the formulation of wicked problems via ten characteristics, which was then streamlined by Conklin (2005). Wicked problems are not understood until after they have been solved/studied, they have no stopping time, they cannot be judged as "right" or "wrong", and every wicked problem has consequences that the researcher or "solver" (in the case of a social policy problem) must take into account. A final, important point to emphasize is that found problems are almost invariably wicked problems, with each situation being unique, context-dependent, and multivariate. Thus, the mixed methodology approach to analyzing this situation is appropriate. Reflection, both analog and mediated through technology, has a role in the learning process that is essential, meaningful, and complex. Learners process in linear and non-linear ways, and reflections can capture a messy, complicated, and multivariate process. Furthermore, the differing formats for reflection and discourse can reveal different layers of individual student development and what

68

they will/will not reveal in public versus private reflective spaces. Finally, the enactments of reflection may be influenced by the individual's characteristics (e.g. gender, program of study, AT, SEE, academic strength, etc.) As such, applying reflection within the framework of cognitive rational approach of transformative learning in the context of global citizenship adds layers of complexity that demand mixed methodology to yield significant insights and make use of the rich data that the medium holds.

Global citizenship as conceptual marker. Global citizenship education is not a linear process but rather a constant grappling with issues that would directly result in student growth and regression as different topics and issues would be introduced (Nussbaum, 2002; Schweisfurth, 2006). Data can then be considered as existing on a continuum. Gray areas and unexpected directional shifts are real in this realm of student identity development, and as such, a mixed methods approach to data collection is necessary to capture the experience from different angles and time periods. Global citizenship education, as much as it is a curriculum, is also a conceptual framework within which educators and learners are oriented towards a set of attitudes and beliefs. Such attitudes and beliefs include social justice orientation, commitment to righting inequities, and intercultural approach with respect, acceptance, and engagement (Hicks, 2003; Oxfam, 1997; 2006).

Finally, the attributes and characteristics of individual learner development as a function of global citizenship education must be addressed. Global citizenship education aims to develop learners through service, experiential, and curricular learning to develop an awareness and engagement with the larger world. As such, learners develop not only the knowledge, skills, and attitudes outlines by the Oxfam (1997, 2006) but also individual characteristics such as empathy and ambiguity tolerance (Davies, 2006; Merryfield, 2008; Noddings, 2005).   Such attributes are

aligned closely with social justice orientations and intercultural competence/awareness (Dewaele & Wei, 2013; Gerdes, Segal, Jackson, & Mullins, 2011). Furthermore, reflection in these different pedagogical constructs (e.g. service/community-engaged learning, experiential learning, etc.) has been shown to have a transformative effect on learner's empathy and ambiguity tolerance (Butin, 2010; Einfield, & Collins, 2008). Thus, these attributes were measured to understand their potential interaction with reflection both formal and informal, offline and online.

Data Collection

The data in this study is pre-existing data that came from the archives of a course taught at Lehigh University in 2011 and 2012. This period covered two successive cohorts of "Introduction to Global Citizenship," a semester-long course. The existing data included surveys collected for program improvement on individual student growth, student writing and reflections, and online artifacts created for the course. Data collection was exhaustive, consisting of all existing course data: writing assignments, online forum postings, surveys, and course documents archived within the online course management system. Participants' confidentiality was preserved through blinding of data and use of pseudonyms during analysis and writing. All data is stored on a password-protected computer and was deleted upon completion and presentation of the study.

Figure 7 outlines, per Cronbach's model (1982), the units, treatments, settings, and observations for both cohorts of global citizenship program students. Note the cohorts are of fairly equal size, and both treatments and settings are identical between the cohorts, but in this figure, the observations differ. Observations for the 2011 cohort include formal, offline

70

reflections and electronic portfolios. The 2012 cohorts have both of these observations plus a

series of informal, online reflections.

Fig. 7. Cronbach's (1982a) units, treatments, observations and settings (UTOS) applied to global citizenship

	Setting	Units	Treatments	Observations
2011 Cohort	Private, mid-sized, Mid-Atlantic university Classroom Service Site Experiential Field Trip (2011 = Washington, DC; 2012 = Philadelphia, PA)	Global Citizenship Students n= 23	Traditional Curriculum (i.e. books, articles, etc.) Experiential Learning Service Learning	Formal, offline reflection Electronic Portfolios Demographic Data SEE Scores AT-20 Scores SAT Scores
2012 Cohort		Global Citizenship Students n= 23	Traditional Curriculum (i.e. books, articles, etc.) Experiential Learning Service Learning	Formal, offline reflection Informal, online reflection Electronic Portfolios Demographic Data SEE Scores AT-20 Scores SAT Scores

Reflection as a qualitative measure of student change

Reflection is a primary assessment for interdisciplinary and transformative learning

(Mezirow, 1990; Taylor, 1997). A review of literature housed in EBSCO's Education Research

Complete reveals reflection in the form of journaling, blogging, and essay assignments, among

other reflective writing exercises. Reflection is also an effective assessment for researchers

using the found problem and action research frameworks (Abou Baker El-Dib, 2007). For

service-learning projects that aim to teach social justice awareness, reflection is a popular tool

because it allows an educator to observe student change, but then can be used as a qualitative

measure of learner cognitive and emotional development (Li & Lal, 2005). Reflection's role in a global citizenship curriculum, thus, is a natural assessment and processing medium for the service, experiential, and curricular aspects of the education.

Data Analysis

Mixed methods data analysis was conducted in the order outlined below (Figure 8). The study utilized a concurrent transformative design with a heavy qualitative emphasis, using quantitative analysis to give context and comparability (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Concurrent transformative design has been found to be particularly effective in assessing natural quasi-experimental work in education (Davis & Higdon, 2008; Hanson, Creswell, Clark, Peskay, & Creswell, 2005). The use of concurrent transformative design allowed data to be analyzed with an emphasis on qualitative and with a specific lens that advocates for the research participants' individual growth (Creswell, Plano Clark, Gutmann, & Hanson, 2003). In other words, the data was analyzed with the implicit framework that learners *should* be undergoing transformation and the concurrent, qualitatively-focused analysis of data would tell that story.

First, each student was assigned a case number that was used throughout the process to protect their identity and to blind the researcher to any possibility of connecting the writing back to a student with whom they might be familiar. Online reflections were coded by week and number to ensure that the researcher is not cognizant of which student's writing they are assessing. Before starting document analysis, a codebook based on the three rubrics was created. The codebook served as a guiding document for the analysis, while there was also an open spreadsheet that had space for any anomalies, notes, or possible additional codes or themes that

72

emerged during the coding process, which were observed and will be discussed in the next chapter.

Fig. 8. Overview of data analysis process

Mixed methodology data analysis: Step-by-step		
Qualitative Analysis		Quantitative Analysis
Create codebook (for all rubrics)		Run paired T-tests to compare sets of data: 1) Between cohorts to establish similarity/differences 2) pre- and post-survey data to observe potential learner change Compare and Make Inferences Qual-Quant Data
Formal Writing	*Informal Writing*	
Document Analysis: Directionality (Oxfam)	Document Analysis: Quality (King & Kitchener)	
Write Analytic Memo	Write Analytic Memo	
Document Analysis: Interdisciplinarity (Mansilla et al.)	Document Analysis: Interdisciplinarity (Mansilla et al.)	
Write Analytic Memo	Write Analytic Memo	
Document Analysis: Quality (King & Kitchener)	Document Analysis: Directionality (Oxfam)	
Write Analytic Memo	Write Analytic Memo	

Three rubrics were utilized to compare and contrast student reflective writing. Line-by-line coding of the documents ensured a close reading of all data. The rubrics selected assessed three different aspects of the students' reflecting writing: depth of reflection, interdisciplinarity, and direction of GC characteristics/identity development. Private, offline papers were analyzed in the same fashion as the public, online forum posts, with rigorous document analysis through rubrics and constant comparative techniques. A second coder was enlisted to compare scoring on the formal and informal writing pieces. This outside coder was a necessary element to test the validity of the rubrics in relation to the objective viewpoint of the researcher. The second person, a fellow educational researcher, coded the data based on the rubrics, following the same process outlined above by the researcher and using a random sample of 10% of the reflection

data. Random selections came from both the informal, online and formal, offline reflection data. This process yielded an 85 percent coding match rate for the rubrics, with consensus after discussion being found for the remaining 15 percent.

Following the qualitative analysis and creating of the final analytic memo, quantitative analysis was done and the data processed to establish similarities and differences between the two cohorts, as well as quantitative trends or markers of the individual students. Following the quantitative data analysis, triangulation between the qualitative and quantitative data was done to assess and understand relationships, inferences, themes, and patterns. Table 3 outlines data analysis constructs, instruments, descriptions, and data sources to give a clear picture of the available rubrics and data sources for this study.

Table 3. Data analysis: A breakdown of methodology and data

Construct	Selected Instrument	Instrument Description	Existing Data Source
Quality and interdisciplinarity of undergraduate students' reflective writing	Boix Mansilla et al. (2009) rubric	Interdisciplinarity	Offline, formal, private reflection Online, informal, public reflection
	King and Kitchener (1994) rubric	Reflective judgment and quality	Offline, formal, private reflection Online, informal, public reflection
Global citizenship understanding and individual learner's GC self-concept (directionality)	Oxfam (1997, 2006) rubric	Global citizenship knowledge, skills, and attitudes	Offline, formal, private reflection Online, informal, public reflection
	Wang et al. (2003) scale	Ethnocultural Empathy	Pre- and post-course survey data
	MacDonald (1970) scale	Ambiguity Tolerance	Pre- and post-course survey data

After the qualitative analysis was complete, quantitative analysis was conducted. The purpose of this sequencing was twofold: 1) analyzing qualitative then quantitative analysis is a

method of triangulation from which emergent themes and inferences can be identified and then compared to quantitative data; and 2) qualitative analysis can take place without influence of quantitative scoring to come to conclusions about the learner's writing (Tashakkori & Teddlie, 2009). Formal writing was analyzed first, with each sample being run through a rubric, followed by an analytic memo to establish patterns and summarize themes. After formal writing, informal writing went through the same process. Finally, after all qualitative analysis was completed, quantitative analysis was done. The findings of the quantitative analysis was then compared to patterns, themes, and thoughts captured in the analytic memos.

Qualitative Analysis

Reflection data was analyzed using qualitative methods, specifically document analysis. The researcher employed rubrics to assess both the quality and directionality (place on the global citizenship continuum) that the individual student displays in their writing. Rubrics can hold many functions when assessing writing. When employed in the classroom, rubrics can be a device to engage and empower students as they have a clear understanding of what is expected in their writing and have shared ownership of the result (Stix, 1997). As a qualitative assessment tool, rubrics can provide consistency and external validity.

Rubrics can also be applied to a variety of student artifacts, from writing to electronic portfolios to mixed medium creations and more, exposing students' perspective and process for making meaning. Rubrics have been used previously to assess asynchronous online forum postings with success (Baron & Keller, 2003), as well as online electronic portfolios (Rhodes, 2010). De Wever, Schellens, Valcke, and Van Keer (2006) have successfully analyzed asynchronous online forums using content analysis rubrics and determined reliability of that methodology.

75

Rubrics also serve as learner-centered assessment tools for progress towards shared goals of learning and development (Huba, 2000; Allen & Tanner, 2006). Rubrics are especially pertinent to assessing data on a continuum (Mertens, 2009). Individual identity development in undergraduate students can be characterized as emerging on a continuum, where there can be growth and regression depending on the topics, experiences, or content the student faces (Chickering & Reisser, 1993; Reisser, 1995). Thus, the use of a rubric to apply to different stages of writing can help to keep the researcher's analysis consistent with fluctuating student experiences and expressions of those experiences through the writing.

Reflection data was analyzed using rubrics to assess the directionality (place on the global citizenship continuum), interdisciplinarity, and quality that the individual student displays in their writing. Reflective writing was analyzed by applying the externally validated rubrics of Boix Mansilla et al. (2009) for interdisciplinarity, Oxfam (1997, 2006) for global citizenship directionality, and King and Kitchener (1994) for quality and depth of reflective thinking. Document analysis, as outlined in Table 3 (above), was conducted first on the formal writing assignments, and then next on the informal writing. For each type of writing, three rounds of document analysis by rubric took place, with a final analytic memo written to capture anomalies, patterns, or data points not collected through the rubrics.

In the first round of document analysis, reflections were analyzed via the Oxfam (1997, 2006) rubric to assess directionality of GC identity creation. The Oxfam rubric (Appendix B) breaks down knowledge, skills, and attitudes related to global citizenship identity creation and provides a roadmap for researchers and educators on what to look for thematically in student writing. In order to score consistently using the Oxfam rubric and account for the many overlapping aspects, it was necessary to group the knowledge, skills, and attitudes into

76

overarching themes. Table 4 below illustrates the larger themes and the knowledge, skills, and

attitudes of global citizenship that an educator would seek to instill in global citizenship learners

through a curriculum such as the program studied in this research.

Table 4. Oxfam rubric grouped into themes

Characteristic / Evidence of GC Knowledge, Skills, or Attitudes	Code
SOCIAL JUSTICE • Social justice and equity (Knowledge) • Ability to challenge injustice and inequalities (Skill) • Commitment to social justice and equity (Attitudes and Values)	**SJ**
DIVERSITY • Diversity (Knowledge) • Respect for people and things (Skill) • Value and respect for diversity (Attitudes and Values)	**DIV**
SUSTAINABILITY • Sustainable development (Knowledge) • Concern for the environment and commitment to sustainable development (Attitudes and Values)	**SUS**
COEXISTENCE • Globalisation and interdependence (Knowledge) • Peace and conflict (Knowledge) • Co-operation and conflict resolution (Skill) • Empathy (Attitudes and Values)	**COEX**
AGENCY • Critical thinking (Skill) • Ability to argue effectively (Skill) • Sense of identity and self-esteem (Attitudes and Values) • Belief that people can make a difference (Attitudes and Values)	**AG**

The following table (Table 5) outlines the coding structure of the Oxfam rubric, the

values, and examples of each theme.

Table 5. Examples of Oxfam theme recognition in undergraduate reflective writing

Unit	Code	Type of Data	Code Name	Example
Text	1	Qualitative	SJ (Social Justice)	"Shame can be aroused when citizens see their nation committing acts they consider immoral, such as fighting an unjust war, or degrading

				other peoples. This shame emerges from citizens' identification with the community and their feeling of responsibility for its actions, which is usually extremely present in patriotic citizens. It is powerful, because it has the potential to inspire people to instigate change against unjust practices." [595, FOR2, CO2]
Text	2	Qualitative	DIV (Diversity)	"The population of immigrants in many countries such as the United States, Australia, and Canada is increasing exponentially every year. Boundless citizenship helps form cultural diversity, which benefits society." [936, FOR2, CO2]
Text	3	Qualitative	SUS (Sustainability)	"In conclusion, global warming is an imminent problem that needs to be taken seriously. While the most significant impact of climate change is at the environmental level where the potential for mass extinction looms in the future, global warming also threatens the economies of developing countries…the outcome of global warming is very uncertain and transcends borders to affect citizens everywhere." [886, FOR3, CO2]
Text	4	Qualitative	COEX (Coexistence)	The founding ideology of global citizenship is that we are all part of a global system: each component of this system depends on each other component. To polarize the grassroots component of global citizenship with the governmental component is to ignore their interdependence and destroy the unity of the system. [FOR1, 978, CO2]
Text	5	Qualitative	AG (Agency)	Global citizenship requires quite a lot from an individual's mind. It requires curiosity, open-mindedness, and, perhaps most relevant to this particular question, thoughtfulness. Since writing is such a good well to develop our thoughts and to organize and communicate all the thoughts that bounce around our heads, it is very valuable if not necessary to global citizenship.[INF4, 737, CO2]

NOTE: The above table breaks down the different themes of the Oxfam (1997, 2006) rubric. The five categories – social justice, diversity, sustainability, coexistence, and agency – are all aspects of global citizenship knowledge, skills, and attitudes that it would be expected learners in a global citizenship education program would gain and exhibit in their actions and writing.

In the second round of document analysis, the reflections were compared to the interdisciplinary writing rubric from Mansilla, Duraisingh, Wolfe, & Haynes (2009). This interdisciplinary writing rubric (Appendix B) was essential to understanding how learners make meaning of the information gained in the GC classroom as it related to their larger major and course of study. Table 6 outlines the coding structure of the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric, the values, and examples of each stage.

Table 6. Characteristics of interdisciplinarity in undergraduate reflective writing

Unit of Data	Code #	Type of Data	Code Name	Characteristics
Number	1	Qualitative	NAE (Naïve)	Lack of clarity about purpose and audience No effort to integrate multiple perspectives
Number	2	Qualitative	NOV (Novice)	Weak composition Lack of advanced understanding of a complex problem Matter-of-fact tone Broad, unspecific, and pro forma
Number	3	Qualitative	APP (Apprentice)	Clear and viable purpose Sense of multiple audiences Still includes unnecessary diversions, but deeper
Number	4	Qualitative	MAS (Master)	Sophisticated self-reflection Clear sense of purpose/ need for interdisciplinarity Express multiple genres and perspectives

NOTE: The above table breaks down the different categories of the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric. The four categories – naïve, novice, apprentice, and master – exist on a continuum of least to most interdisciplinary connection, with one being the lowest level of interdisciplinary representation in their reflective writing.

In the third round of document analysis, the reflections were compared to the reflective judgment model rubric outlined by King and Kitchener (1981; 1993; 2004). The reflective judgment model rubric (Appendix B) served as a measure of depth of reflection and the students' ability to grapple meaningfully with topics and experiences introduced through the GC

curriculum. Table 7 illustrates examples of each Reflective Judgement Model stage along with

the coding structure and phases of critical reflection (King & Kitchener, 1981; 1993; 2004)

Table 7. Phases of critical reflection per King and Kitchener (2004) and illustrative examples

Phase of Critical Reflection	Level	Example
Pre-Reflective	RJM1	"As citizens of the United States, we are fortunate enough to be a part of such a prestigious high-income country. We have access to all of the benefits that are granted by American citizenship, including the rights to primary education, voting, fair trial and governmental transfer payments (such as Medicare and Social Security). Because we have been blessed this way, Americans tend to have a sort of swagger that makes us feel superior by being part of a high-income nation, especially relative to other developing nations, due to the notion that developing countries are susceptible to problems that high-income countries are "immune" to." [268, FOR4]
	RJM2	For example, in response to the earthquake in Haiti the government of the United Kingdom donated 20 million Euros to the relief effort. These 20 million Euros satisfied the global citizenship ideal of providing humanitarian aid to those in need. [157, FOR1]
	RJM3	The Constitution was and remains the foundation for American values and citizenship; therefore a foundational document is necessary to more firmly establish global citizenship. Layered citizenship comes into play because citizens agree to a national document, thus global citizenship could be an additional layer of allegiance through a governing document with international goals and ideals. [943, FOR3]
Quasi-Reflective	RJM4	"Citizenship at its finest would be a combination of established territorial framework, coupled with cross-cultural immersion, to foster active citizens willing to tackle global problems. The structure provided by traditional entities and the sensibility spawning from boundless citizenship would yield effective action from citizens." [384, FOR2, CO2]
	RJM5	"I agree with Chimamanda in that there is danger in a single story because it automatically puts all the emphasis on only one perspective. Stories don't have a right or a wrong perspective, but

		it is wrong to assume that the only one you hear is the only out there." [787, INF1, CO2]
Reflective	RJM6	"Throughout the year, I have struggled to find a universal definition that encompasses all aspects of global citizenship; however, in our discussions our class agreed on criteria for becoming a better global citizen. This entails being open to alternate points of view, listening to multiple voices, disagreeing respectfully, and recognizing that everyone has a story that matters." [892, FOR4]
	RJM7	"there are no true, universal definitions of global citizenship. One definition may include only one of those points; others many include both or neither. I have learned that it will be my job to come up with my own definition for this term and what it means to me. Intro to Global Citizenship was just the beginning of my four years in this program, and was also just the beginning to a lifetime of work towards becoming and good global citizen."[548, FOR4]

A notable observation is that very few reflections in both cohorts fell into the RJM 4 category of quality. This could be explained by a need for clarity in the rubric to better differentiate the RJM 4 code from the codes 3 and 5. This could also be indicative of a bias on the part of the researcher where the lack of clarity of the code description lead the researcher to categorize the reflection in the higher (5) or lower (3) code. In the end, the decision was made to proceed with data analysis under the three-phase model recommended by King and Kitchener (2004) that divides the data into pre-reflective, quasi-reflective, and reflective phases.

While rubrics were used to analyze the data, analysis methods and insights from the world of grounded theory also served as an informative guide to comparing and making meaning of the rubric data (Migliaccio & Melzer, 2011). Constant comparative analysis was used to explore data and establish patterns, themes, or shared experiences between the learners. While the data was compared to the rubrics for interdisciplinarity, quality, and directionality, patterns emerge that led to second-level insights or unexpected observations. By keeping the constant comparative lens available, the data revealed insights that are valuable to the study but were not

observable through the rubric application (Glaser and Strauss, 1967; Glaser, 1987; Strauss, Valanides, 2010).

Another aspect of grounded theory helps inform the study is the existence of concomitant variation (Hallberg, 2006; Strauss & Corbin, 1997). Through constant comparison of the written reflection data, the researcher observed emerging patterns and themes that shed light on the relationship between undergraduate student reflection and their development as a global citizen (Migliaccio & Melzer, 2011). After coding each set of documents, the researcher wrote an analytic memo to reflect on the coding and analysis process. The purpose of analytic memos throughout the process was to take stock of themes, patterns, and insights gained from each round of qualitative interviewing and to ensure that each phase of the document processing was as independent as possible (Saldaña, 2013). Clarke (2005) notes that such memos are, in essence, a researcher's conversation with themselves about the data. Janesick (2011) affirms that qualitative researchers' inference-making, intuition, and unexpected information emerges throughout the process that will in turn lead to a "richer and more powerful" explanation of the connections, causality, and context of findings (p.148). Capturing those instances along the way allowed for a more complete and critically reflective analysis of the data.

Quantitative Analysis

For the purpose of this study, metrics were used to establish the similarity, and hence comparability, between the two Global Citizenship cohorts. The quantitative analysis established an understanding of the cohorts and their makeup, provided the basis for assessment of transformation, and provided context for the relationship between individual personality metrics and qualitative reflection data. First, basic demographic data (age, gender, citizenship, major, school of study, and hometown) was captured. Students also participated in surveys for

the course instructor to help inform program success and student growth. These surveys

included basic questions regarding previous service and social justice engagement and two

psychometric scales evaluating ethnocultural empathy (SEE) and ambiguity tolerance (AT-20)

(MacDonald, 1979; Wang, et al., 2003).

Response Rate

Response rate for the various components of the study differed between the surveys and

the reflective writing. All students from both cohorts completed the reflective exercises that

were assigned for their cohort. There was 100 percent participation in the offline formal

reflections for Cohort 2, and 100 percent participation in the offline, formal reflections for

Cohort 1. There were a few instances were learners missed an online, informal reflection, but

those instances were rare. Those missing data points for reflective data came only in the

informal, online reflections and were very few in number for the following learners: 394, 486,

597, 642, and 857.

Validity and Reliability

Construct validity, or the degree to which the rubric matches the underlying theoretical

construct it is trying to measure, is essential to conduct a meaningful, accurate study. Multiple

sources of information (evidence) are needed to prove that validity, as well as rigor in "the

degree to which the constructs under investigation are captured or measured" (Teddlie &

Tashakkori, 2009, p. 87). The rubrics employed for the data analysis are externally validated and

created from credible, respected sources. Complete information about internal validity,

consistency, and instrument detail can be found in the appendices.

Trustworthiness, as explained by Lincoln and Guba (1985) is verified through four

criteria: credibility, transferability, dependability, and confirmability. Additionally, Creswell

(2009) asserts qualitative validity can be ensured through a number of specific measures. For the purpose of this study, trustworthiness is established through prolonged engagement with the learner population, persistent observation (data available spans a long time period and is consistent), use of triangulation between data/experiences/voices, and thick descriptions of the data and analysis that take into account the many facets of the research phenomena.

For the instruments used – both rubrics and quantitative measures – external validity has been established. For King and Kitchener's Model (1981; 1994), the rubric has emerged from a 30- year grounded-theory development validated by applying their rubric to hundreds (maybe thousands) of pieces of writing. In 1981, they developed the named model – the Reflective Judgment Model – and it has been empirically tested in studies first in King and Kitchener (1981) and in numerous studies since. King and Kitchener (1981) studied high school, college, and graduate school students (N=60) and found significant differences (p < .001) between the age groups in their quality and depth of reflective writing. In King, Kitchener, Davison, Parker, and Wood (1983), researchers validated the model with a two-year longitudinal study of undergraduates (n=59) that empirically tested and verified that the stages and sequence of the reflective judgment model was supported for the seven epistemic assumption shifts.

The validity of the Oxfam (1997, 2006) rubric within this research context is categorical: they it forms the basis of a widely accepted, frequently cited global citizenship curriculum. The Oxfam guidelines have been and continue to be used for global citizenship curriculum development and is cited repeatedly in other studies as the gold standard (see: Ibrahim, 2005; Zahabioun, Yousefy, Yarmohammadian, & Keshtiaray, 2012; Landwehr Brown & Gibson, 2012). In terms of the reliability and authority of the guiding measures, the Oxfam guidelines have been developed over decades of work and best practices in GC and development work.

Their qualifier in the 2006 rewrite of the curriculum states that, "Oxfam's Curriculum for Global Citizenship is based on years of experience in development education and on Oxfam's core beliefs" (p. 3). It is a type of curricular validity that parallels the work of Wiggins & McTighe (2005) and their Understanding by Design (UbD) model. The guidelines set forth by Oxfam (1997, 2006) are the knowledge, skills, and attitudes that the UbD approach would reveal to be the goals of global citizenship education for student development and knowledge creation. This study used the curricular guide and resulting KSAs that are outlined by Oxfam to assess how the students are exhibiting these traits in writing, whereas dozens of other scholars have used the guideline to show that this is the curriculum that should guide GC classrooms.

Mansilla, Duraisingh, Wolfe, and Haynes' (2009) rubric has been cited by 89 peer-reviewed publications. Of those 89 publications, there are a number that used the rubric for empirical research to test hypothesis and further validate the rubric. McKenney, O'Brien, Naasz, Teska (2011) used the rubric to assess the integration of interdisciplinary concepts in an environmental studies capstone. The rubric has also been used to understand the integration of arts into curriculum with interdisciplinary connections between as drama, dance, and music (Overby, Glassman, Haislip, Luzier, Schotz, & Thomas, 2013). Borrego and Newswander (2010) applied the rubric to proposals written by participants in the National Science Foundation's Integrative Graduate Education and Research Traineeship (IGERT) program (n=59) to assess depth, interdisciplinary thinking, and skills integration.

The Scale of Ethnocultural Empathy (SEE) is a survey instrument that is used to analyze individuals' attitudes towards cultural differences (Wang et al., 2003). The reliability of the SEE has been tested with undergraduates at Midwestern universities (n=373) at ranges between $r = .73$ to $r = .91$, $p < .01$ and has a retest reliability of .76. The SEE also has subscales built in to the

measurement for more detailed understanding of which realms subjects gain or lose aptitude. The subscales within the SEE are emphatic feeling and expression, emphatic perspective-taking, acceptance of cultural differences, and emphatic awareness. Validity was established through confirmatory factor analysis (Wang et al., 2003).

In order to assess retest-reliability of this scale, the study was rerun twice by the researchers. Reliability and internal consistency for the SEE was measured by alpha coefficients for the overall scale and each subscale. Rasoal, Jungert, Hau, and Andersson (2011) developed and established a Swedish translation of the scale, which was tested on a sample of participants (N=788) and found strong internal consistency. Özdikmenli-Demir & Demir (2014) also developed and tested a version in Turkish with 328 undergraduate students in Turkish universities. The researchers report high internal consistency and test–retest reliability scores. A comparison of translated versions and their scores for internal consistency (Cronbach's α) are captured in the tables included in Appendix A (the overview of quantitative measures, their history, and validity). Le, Lai, and Wallen (2009) used the SEE to test attitudes of ethnic minority and immigrant youth (N=338). They found that the SEE is a reliable predictor of acceptance of multiculturalism and that psychological growth and flourishing could be facilitated by multicultural school settings.

The AT-20 (MacDonald, 1970) is a survey instrument that gauges the ability of participants to handle ambiguity. The participants for MacDonald's study were male and female undergraduates at a private, liberal arts college in the eastern United States (N=789). The questions posed are hypothetical scenarios where the respondent should give their preferences on situations of uncertainty, qualifying each experience as either preferable or not preferable. The scale is a modification of 16-item Rydell-Rosen (1966) ambiguity tolerance scale. After adding

the four items to this AT-20 scale, the reliability was increased from .64 to .86. The scale has demonstrated strong reliability (r =.86, p < .01) and a retest reliability of .63 for a 6-month interval.

The AT-20 has been used in a wide variety of empirical research and continues to be a useful instrument in research in the fields of psychology, business, and education both in the US and around the world (Furnham & Marks, 2013). Van Hiel, Onraet, and De Pauw (2010) conducted a meta-analysis on a large dataset (n=29,209) using the AT-20 as the ambiguity tolerance measure to compare outcomes for rigidity, cognitive style, and political beliefs. The scale has been used to survey ambiguity tolerance in business students and found that those who had high ambiguity tolerance were more conscious of future consequences, but also more prone to unethical behavior (Ferriera, Pinto, Santos, 2013). Triki, Nicholls, Wegener, Bay, and Cook (2012) used the AT-20 to survey accounting students and found that low ambiguity tolerance could negatively impact students' performance in traditional accounting education.

The Role of the Researcher

In order to ensure a fair, objective study, the role of the researcher must be examined and understood to avoid potential biases and conflicts. The researcher in this study is in the complete-member-researcher role as defined by Adler and Adler (1994), in which the researcher would be fully invested in the community and takes an insider perspective. The researcher for this project was the instructor for the second cohort of learners in the GC course. Thus, much care should be taken to account for researcher bias and to avoid projecting personal insights onto the course data. It is important to note that surveying was done as a continuation of testing done in previous years under previous instructors. Upon entering into the Global Citizenship Program, learners assent to their participation in a number of promotional and research-based

activities. It is the intent of the researcher largely continue the curriculum that has been tested

over the last decade, however, the reflective assignments were designed with more intent on

causing disorienting events and exploring alternate schemas to prompt the transformative

learning process.

Moustakas (1994) affirms that it is impossible for researchers to completely remove

themselves from the process, but must manage that relationship and the want to impose values,

beliefs, and attitudes on the subjects/data. Creswell (2003) also emphasizes the need for critical

self-reflection to understand one's biases and what ways one's experience, beliefs, and attitudes

could influence the researcher. For instance, as an educator, I believe that reflection is a

necessary component to the learning and development process. Due to this bias, I had to

examine the empirical research and theoretical backing to craft a fair, independent assessment of

reflection's use in education and identity development. As an educator and researcher, I also

observe in myself an orientation towards social justice, global citizenship ideals, and affecting

positive change. Due to that individual identity I hold as a scholar-teacher-researcher, I have to

make certain I am addressing potential conflicts of my own thinking and what expectations I

hold in those different roles.

In my own self-reflection of the lenses through which I viewed the data, I found that I

had appropriate distance between myself and the students I may have taught. A concern at the

outset of this research project in my own mind was, when working with the data, would my mind

connect students I may know to what was written in their reflections. Thankfully, I found that

the process of de-identifying data, as well as the sheer amount of data to track and analyze, made

it nearly impossible to connect specific students with their written work. A reminder on the

legitimacy of the data, as it was previously existing data, exemption was sought and gained

through the Lehigh University Institutional Review Board.

Limitations of the Study

Limitations to this study are identified in the following section. While there are a few areas of

concern to highlight, the assessment and planning for success based on this identification is a

sign of a strong research plan. Purposeful sampling can be seen as a limitation, as it could

decrease the generalizability of the results. However, while the specificity of the population

could be a limitation, the framework by which the reflection is being analyzed has potential for

extrapolation. There is the capacity to be translated to other disciplines where a transformative

experience is expected. Disciplines where individuals are facing difficult, complex, and real-

world problems could benefit from this study as it assesses the capacity for individuals to grow

through reflection and the cognitive rational approach. For instance, social work/social justice,

nursing, and teacher education are all disciplines where individuals are not only learning content,

but growing an identity of themselves in that role.

As a mixed methods study, the information that is collected in the qualitative capacity

could be open to different analyses or interpretations. The purpose of identifying researcher bias

and being clear about trying to keep that bias in check is one way in which the researcher can

both increase validity

Validity and Generalizability

Qualitative analysis is often less valued for its generalizability because the findings are usually

gained from a smaller sample size or from a scenario difficult to replicate (Patton, 2001; Punch,

2005). While this study has a rich qualitative component, steps were taken to ensure

generalizability and validity. Creswell and Plano Clark's (2007) assert that "the combination of

qualitative and quantitative data provides a more complete picture by noting trends and generalizations as well as in-depth knowledge of participants' perspectives" (p. 33). Thus, using the framework of a concurrent transformative design with a heavy qualitative emphasis allowed for a rich dataset of work to be analyzed at the same time, moving between data sets to understand patterns and relationships. The heavy qualitative focus allowed for a rich, thick narrative to unfold of student reflection, while using the AT-20, SEE, and demographic data as context and to establish comparability (Creswell, Plano Clark, Gutmann, & Hanson, 2003).

Prior to the coding by the primary researcher, an experienced qualitative researcher was brought in to serve as a second coder. The Mansilla, Duraisingh, Wolfe, and Haynes (2009) and King and Kitchener (1994, 2004) rubrics had been previously externally validated, while the Oxfam (1997, 2006) rubric was not. To ensure validity of the rubric as applied to the qualitative data at hand, the second coder scrutinized a subset of the data using all three rubrics consecutively, in the order prescribed in figure 8. Upon completion of the same blinded set of data for both the primary and secondary coder, the second coder matched at a rate of 85%. Both coders found consensus on the remaining 15%, as most were either small differences that were easily discussed and reassessed.

Validity is a complicated notion, and one that has divided the mixed methods community due to overuse and obfuscation of terms used to describe quality (Tashakkori & Teddlie, 2003). Many mixed methods researchers reject the concept of validity as it has been traditionally understood, and instead put emphasis on inference quality and legitimation (Tashakkori & Teddlie, 2009; Onwuegbuzie & Johnson, 2006). This rejection stems in part from the singularity of purpose for validity in quantitative research and the overuse of the concept to describe very different characteristics of quality. Tashakkori and Teddlie (2012) maintain that more continuity

90

of terms must be adopted in order to promote a unified approach to mixed methods research. Nevertheless, there remains an importance on ensuring that the data and analysis are valid and objective, regardless of the term one adopts to explicate that concept.

Mixed methods researchers and scholars in the field of mixed methodology affirm that a study designed with multiple inputs, data types, and tools for analysis to ensure a more robust analysis and understanding of the problem and subsequent findings. Mixed methods work is strengthened through triangulation and member checks to ensure data accuracy and truthfulness (Patton, 2001). Transparency of researcher role is one final way to reinforce the objectivity and fairness of the analysis.

Teddlie and Tashakkori (2009) have proposed inference transferability – the degree to which conclusions from one research project can be applied to other contexts – as validity for mixed methods research. Meta-inferences, another product of mixed methods research, are the large conclusions drawn not just from each research question, but the study as a whole to inform research in other contexts. These meta-inferences are one way in which research can be translated for greater generalizability to other contexts.

Related to generalizability, the framework is one that can be applied to many disciplines and areas where the aim of the education is a combination of content knowledge mastery and individual identity development. Nurses, teachers, social workers – any area of study where the learner is developing a concept of themselves as well as a disciplinary grounding – are all applicable fields that could benefit from the findings of this study on reflection and individual learner development.

Comparability of Cohorts for Natural Quasi-Experiment

The full comparability of the two cohorts was established based on student characteristics and their starting scores on psychometric scales chosen for their relationship to knowledge, skills, and attitudes of global citizenship. In determining the comparability of the two cohorts, a number of factors and variables were considered. Demographic data including gender, major, country of origin, college, and other factors can be used to establish comparability between cohorts. As shown in Table 8, total students in the cohorts equal 23 each. The major breakdown for each cohort includes individual-college based majors and collaborative, cross college double-majors. In cohort 1, 12 students had majors housed solely in the College of Arts and Sciences (CAS) and 1 joint-CAS major, totaling 13 CAS-related majors. In cohort 2, 7 students has CAS-only majors, with 3 in a joint-CAS major, totaling 10 CAS-related majors. Both cohorts has pretty equal representation of College of Business (CBE) and College of Engineering (RCEAS) majors. International student representation was almost equal with 4 international-born students in Cohort 1 and 5 in Cohort 2. Gender representation was fairly even with 17 women and 6 men in Cohort 1 and 16 women and 7 men in Cohort 2. It is important to note that each year, the program receives significantly more applications from female students than male students.

Table 8. Comparability of Cohort 1 and Cohort 2 through demographic data

	2011	**2012**
Total Students in Cohort	23	23
CAS Majors	12	7
CBE Majors	5	6
RCEAS Majors	3	5
Joint RCEAS-CBE Majors	2	2
Joint RCEAS-CAS Majors	0	2
Joint CAS-CBE Majors	1	1
International-born Students	4	5
US-born Students	19	18
Female Students	17	16
Male Students	6	7
Starting AT-20 Score (Mean)	9.176470588	9.368421053
Starting AT-20 Score (SD)	2.749016811	2.832341905

92

T-Test (AT-20 Comparison)	t (34) = 2.03, p = 0.84	
Starting SEE Score (Mean)	4.465195246	4.495256167
Starting SEE Score (SD)	0.543150448	0.420148304
T-Test (SEE Comparison)	t (34) = 2.03, p = 0.86	

Finally, the starting measurements for surveys of Ambiguity Tolerance (MacDonald, 1979) and Ethnocultural Empathy (Wang et al., 2003) also establish the comparability of the cohorts. Starting ambiguity tolerance scores for the students in each cohort were found to not be significantly different (t (34) = 2.03, p = 0.84). Ethnocultural empathy scores were also not significant for students entering the program in Cohort 1 and Cohort 2 (t (34) = 2.03, p = 0.86). Through these measure, the cohorts were found to be comparable, and thus by examining a natural treatment (the introduction of online, informal reflections), a natural quasi-experiment between the two cohorts was feasible.

In summary, the cohorts were fairly equivalent, though not identical. Their comparability was close enough to conduct a natural quasi-experiment with confidence.

Ethical Considerations

Data for this research project already exists as a function of coursework done by students in 2011 and 2012. This study was written up and sent to Lehigh University's Human Subjects Research Review Board to ensure that ethical oversight was given to the project. The Review Board found that this research and the nature of the data was exempt from review. However, privacy and security of data must be ensured to protect the identities of student reflection within the classroom. Confidentiality was maintained through security measures such as data coding and pseudonyms. Data is stored on a password-protected computer that is only accessible to the researcher. All electronic copies of the data downloaded is backed up and kept on a password-protected computer to ensure privacy of data and security.

Those issues being acknowledged, the risk for this participation in this study is minimal. As students in a specialized certificate program, they have already assented to being included in all aspects of the program and studies of it that may be conducted. The research is simply evaluates knowledge, behavior, and attitudes as revealed in writing that was already understood to be seen either by an audience of peers or by the facilitator of the course.

CHAPTER 4. FINDINGS AND RESULTS

The purpose of this study was to examine and understand the relationship between reflection quality and undergraduate student identity development within the realm of global citizenship education. The research questions that guide this study are:

1. What impact does the inclusion of whole-class, online discussions have on undergraduate students' development (demonstration of directionality, quality, and interdisciplinarity) as compared to students who have only reflected in an offline, formal paper?

2. What comparisons and relationships can be observed in terms of directionality, quality, and interdisciplinarity between the informal, online and formal, offline writing?

3. Through emergent coding both across cohorts and across reflection formats, what patterns, themes, and/or relationships can be observed as evidence of transformative change?

Data sources for this study included (1) demographic data from students; (2) pre- and post-test survey scores with metrics on ambiguity tolerance and ethnocultural empathy; (3) offline, formal reflection papers; and (4) online, informal reflections. Statistical analysis of the quantitative metrics and converted qualitative-to-quantitative data was done via tools in Excel 2013. The following section will explore each research question in order to address the relationship between students' reflective writing and their development as global citizens.

Between Group Analysis of Undergraduate Student Critical Reflection in terms of Directionality, Quality, and Interdisciplinarity

Research question 1 states: what impact does the inclusion of whole-class, online discussions have on undergraduate students' development (demonstration of directionality,

quality, and interdisciplinarity) as compared to students who have only reflected in an offline, formal paper? In order to answer this larger question, the following sub-sections guide the data analysis and break down the nested aspects that were contained within those questions: directionality, quality, and interdisciplinarity.

Directionality: Comparison of Formal Reflection between Cohorts 1 and 2

In order to assess directionality, data analysis applied the Oxfam (1997, 2006) rubric to Cohort 1 and 2's formal reflection data. The data was collected through 4 formal assignments paced at the same rate throughout their respective semesters. This scoring was for the number of lenses used in their reflective writing, and thus is a count, not a score on a continuum.

In the first analytical pass over the data, observations were made without regard to the variable of time. In the initial count of lenses between cohorts, a noticeable difference emerges. It is notable that the number of codes generated in the same number of formal, offline reflections was significantly higher for Cohort 2 (387 codes) than Cohort 1 (207 codes). In Table 9, the raw data for total codes by cohort in regard to directionality is displayed. Each formal, offline reflection had the ability to generate 5 codes: agency, coexistence, diversity, social justice, and sustainability. Table 9 shows that Cohort 2 had nearly double the amount of codes generated over the same number of formal, offline reflections and the same number of learners in each cohort.

Table 9. Directionality: Number of lenses incorporated in students' formal reflective writing by cohort

	Cohort 1	Cohort 2
AG	49	66
COEX	63	82
DIV	50	36

SJ	12	38
SUS	1	15
Total	207	387

Fig. 9. Directionality: Number of lenses incorporated in students' formal reflective writing by cohort
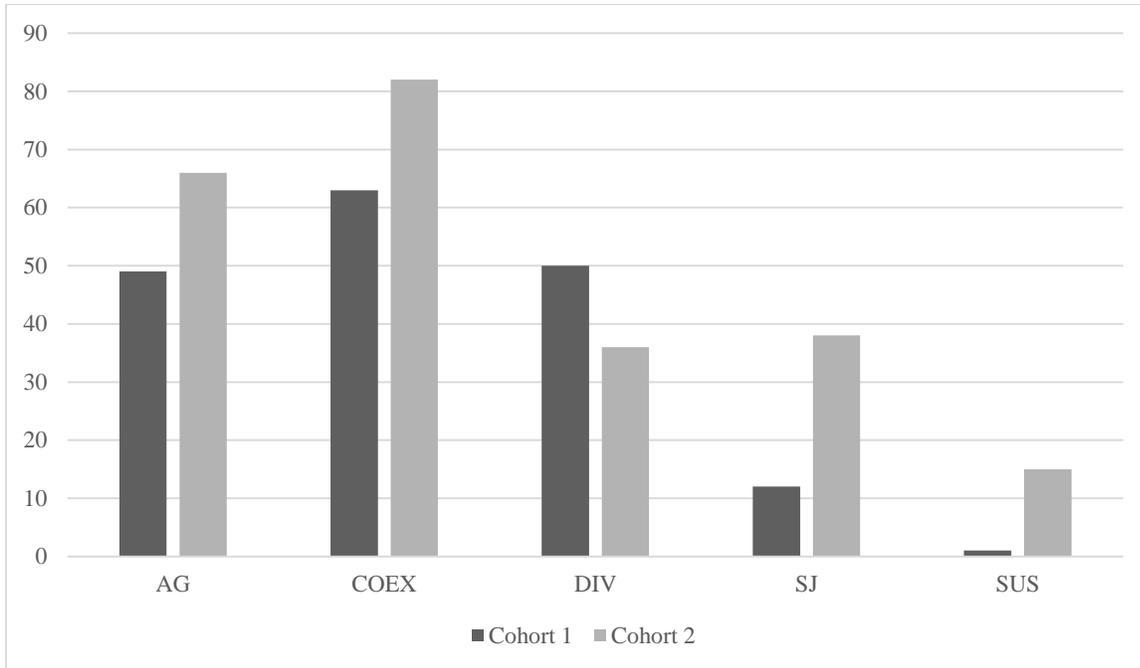
A calculation of the means of the formal, offline assignments differed between the two cohorts. Cohort 1's formal reflections averaged overall a score of 1.90, or almost two codes per formal reflection paper. For Cohort 2, the mean score for all formal, offline reflection was 2.58, or closer to three codes per paper. The data below in Table 10 reflects the number of lenses per reflection count (1, 2, 3, 4, or 5 lenses) by cohort. In terms of percentage breakdown of the number of lenses by cohort in formal, offline reflections, there is an observable difference. For Cohort 1, the breakdown of lens integration is as follows: 20.65% of reflections exhibited a one-lens view, 68.48% had two lenses, 10.87% had three lenses, and no assignments exhibited 4 and

5 lenses (0% for each). In the instance of Cohort 2, a different breakdown was show, with 2

lenses being the most prevalent (40.22%) as in Cohort 1, but with a more diverse breakdown

overall: 10.86% had one lens, 40.22% had two lenses, 32.61% had three lenses, 13.04% had four

lenses, and 3.26% had five lenses. It is notable that the breakdown for Cohort 2's formal, offline

reflections show that learners incorporated 4 and 5 lenses with some frequency, whereas Cohort

1's formal, offline reflections never reached that point.

Table 10. Directionality: Number of lenses incorporated in students' formal reflective writing per formal reflection assignment

Number of Lenses	Cohort 1 Count	Cohort 1 Percentage	Cohort 2 Count	Cohort 2 Percentage
1	19	20.65%	10	10.86%
2	63	68.48%	37	40.22%
3	10	10.87%	30	32.61%
4	0	0%	12	13.04%
5	0	0%	3	3.26%

NOTE: Denominator is equal to 92 reflections for both cohorts.

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Fig 10. Directionality: Number of lenses incorporated in students' formal reflective writing per formal reflection assignment

	1 Lens	2 Lens	3 Lens	4 Lens	5 Lens
Cohort 1	20.65%	68.48%	10.87%	0.00%	0.00%
Cohort 2	10.86%	40.22%	32.61%	13.04%	3.26%
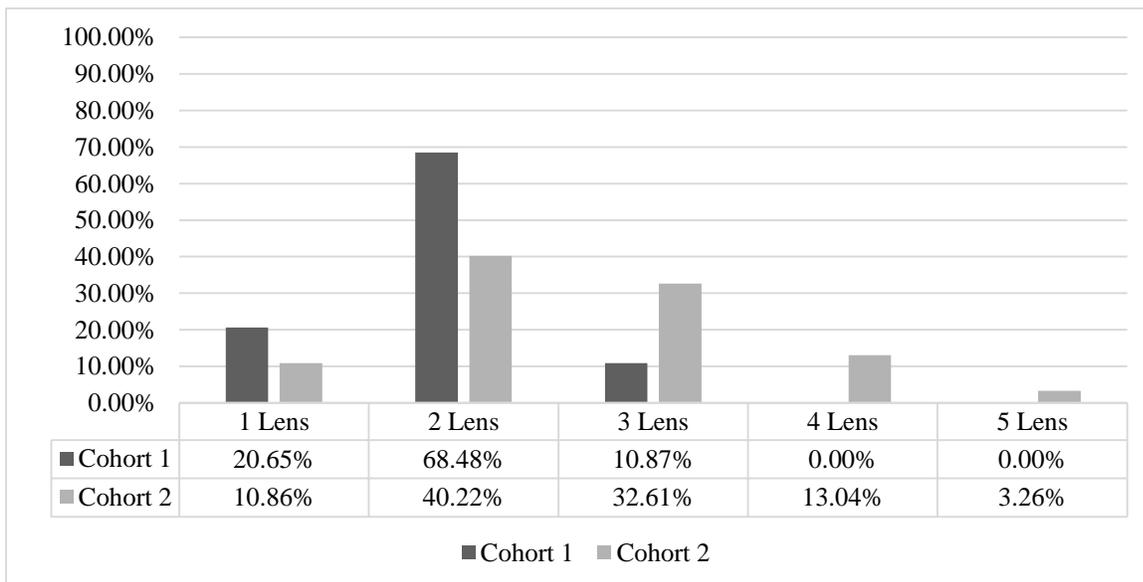
The type of lens learners used in their reflective writing was also shown to be in different proportions between Cohort 1 and Cohort 2. The data from Cohort 1's formal, offline reflection revealed that the most frequent theme was coexistence (36.00%), followed by: diversity (28.57%), agency (28.00%), social justice (6.86%), and sustainability (0.57%). The data from Cohort 2's formal, offline reflection revealed that the most frequent theme was coexistence (39.61%), followed by: social justice (18.36%), diversity (17.39%), agency (17.39%), and sustainability (7.25%).

Table 11. Directionality: Distribution of lenses in formal reflective writing by cohort

Unit	Cohort 1	Cohort 2
AG	28.00%	17.39%
COEX	36.00%	39.61%
DIV	28.57%	17.39%
SJ	6.86%	18.36%
SUS	0.57%	7.25%

Fig. 11. Directionality: Lens distribution by cohort on formal, offline reflections

99

A second analysis of the data, this time taking into consideration the issue of time, revealed the following observations. First, the schedule of the assignments were the same between the two cohorts. Formal, offline assignments were assigned at the same pace for both Cohort 1 and Cohort 2. These reflections were due in September, October, November, and December for each cohort, with similar spacing and due dates within a day of each other in their respective months between 2011 and 2012.

There is an observable trend over time for the distribution of lenses between Cohorts 1 and 2. For Cohort 1, the mode is always 2 lenses across all 4 formal, offline reflections. Cohort 2, however, has a more varied pattern of development, with the mode being 2 for formal, offline reflections 1 and 2, but moving up to 3 for formal, offline reflections 3 and 4. Furthermore, over time, more learners in Cohort 2 utilize 4 and 5 lenses in their data, where Cohort 1 never reach that stage. In Table 12, the number of lenses by formal, offline assignment is displayed.

Table 12. Directionality: Number of lenses by formal, online reflection by cohort

Unit	Cohort 1, FOR 1	Cohort 2, FOR 1	Cohort 1, FOR 2	Cohort 2, FOR 2	Cohort 1, FOR 3	Cohort 2, FOR 3	Cohort 1, FOR 4	Cohort 2, FOR 4
1	10	2	2	7	5	1	2	0
2	12	17	18	13	17	6	16	1
3	1	3	3	3	1	9	5	15
4	0	1	0	0	0	4	0	7
5	0	0	0	0	0	3	0	0

Fig. 12. Directionality: Number of lenses by formal, offline reflection: Cohort 1
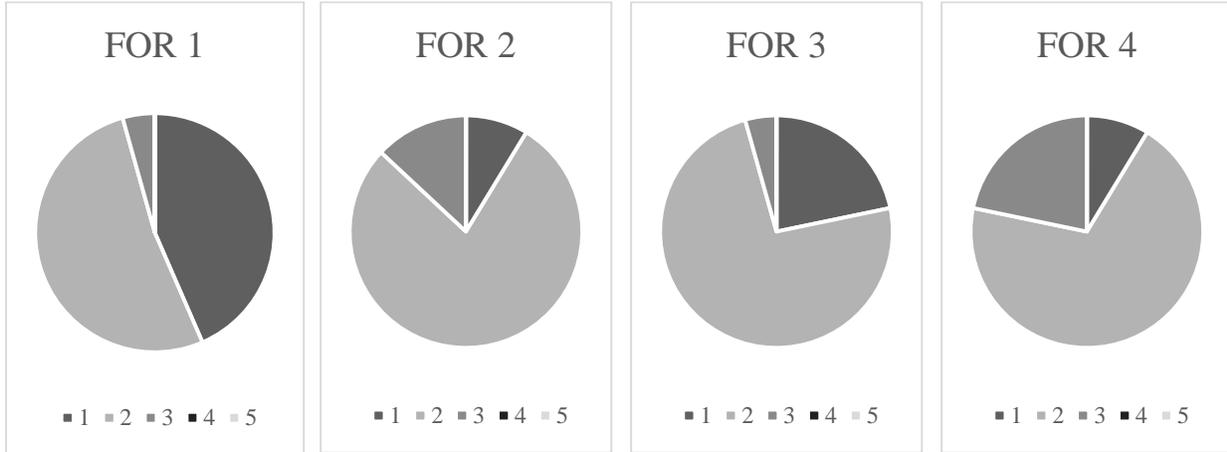
FOR 1	FOR 2	FOR 3	FOR 4
■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5

Fig. 13. Directionality: Number of Lenses by Formal, Offline Reflection: Cohort 2

FOR 1	FOR 2	FOR 3	FOR 3
■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5	■1 ■2 ■3 ■4 ■5
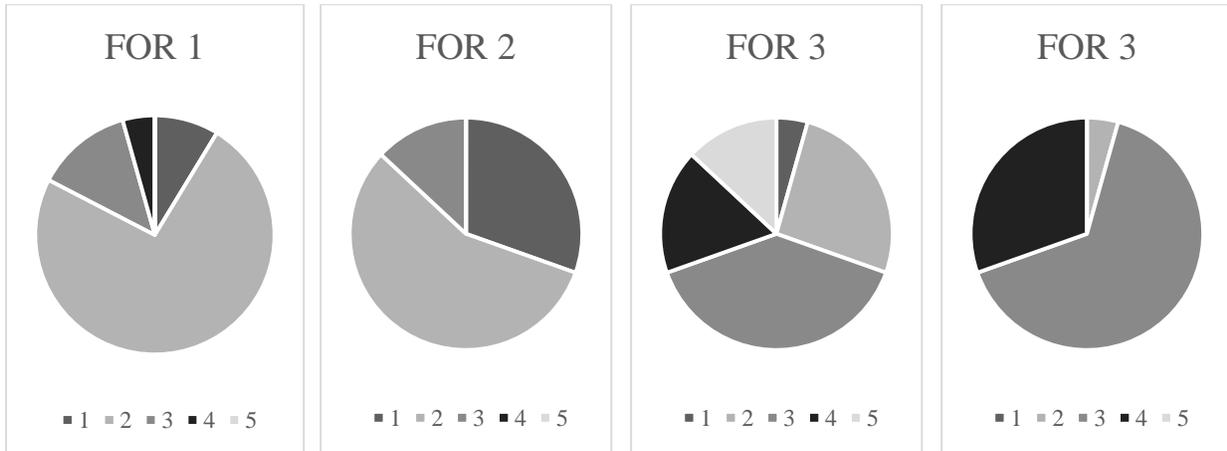
When taking into consideration code type over time, another trend emerges. For Cohort 2's formal reflection 3 and 4, the learners were incorporating more diverse lenses, as well as simply more lenses. While Cohort 1 was mainly using 1-2 lenses in their writing, Cohort 2 spread across all 5 lenses in three cases, and more equitably split their lens foci in all cases. Agency and coexistence were the most consistent lenses in Cohort 2's writing. Also in Cohort 2's writing, diversity rose over time to become the most observed lens in their formal, offline reflection 4. Sustainability was the least used lens. However, sustainability's appearances in student writing hit a peak at 12 out of 23 instances in Cohort 2's reflection 3, whereas all of

Cohort 1's sustainability connections totaled only 1. Agency in Cohort 1 and 2 started higher in

reflection 1, dipped in reflections 2 and 3, and ended high for reflection 4. As a general trend,

Cohort 2 displayed more of an upward trend in its use of reflective lenses, while Cohort 1 was

more unpredictable. Table 13 displays the breakdown of Oxfam lens types over the four formal,

offline reflections by cohort.

Table 13. Directionality: Code type count, by formal, offline reflection: Cohort 1 vs. Cohort

2

Unit	Cohort 1, FOR 1	Cohort 2, FOR 1	Cohort 1, FOR 2	Cohort 2, FOR 2	Cohort 1, FOR 3	Cohort 2, FOR 3	Cohort 1, FOR 4	Cohort 2, FOR 4
AG	13	21	0	10	15	14	21	21
COEX	19	20	15	19	18	22	11	21
DIV	4	3	23	1	8	10	15	22
SJ	0	4	9	10	1	13	2	11
SUS	1	1	0	2	0	12	0	0

Fig. 14. Directionality: Code Types by Formal, Offline Reflection: Cohort 1

FOR 1

- AG - COEX
- DIV - SJ
- SUS

FOR 2

- AG - COEX
- DIV - SJ
- SUS

FOR 3

- AG - COEX
- DIV - SJ
- SUS

FOR 4

- AG - COEX
- DIV - SJ
- SUS
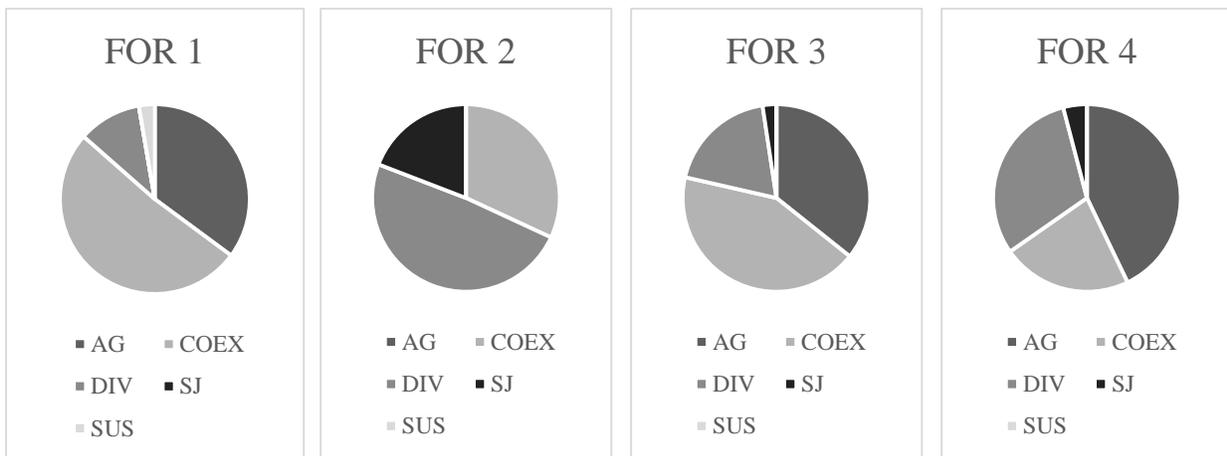
Fig. 15. Directionality: Code Types by Formal, Offline Reflection: Cohort 2
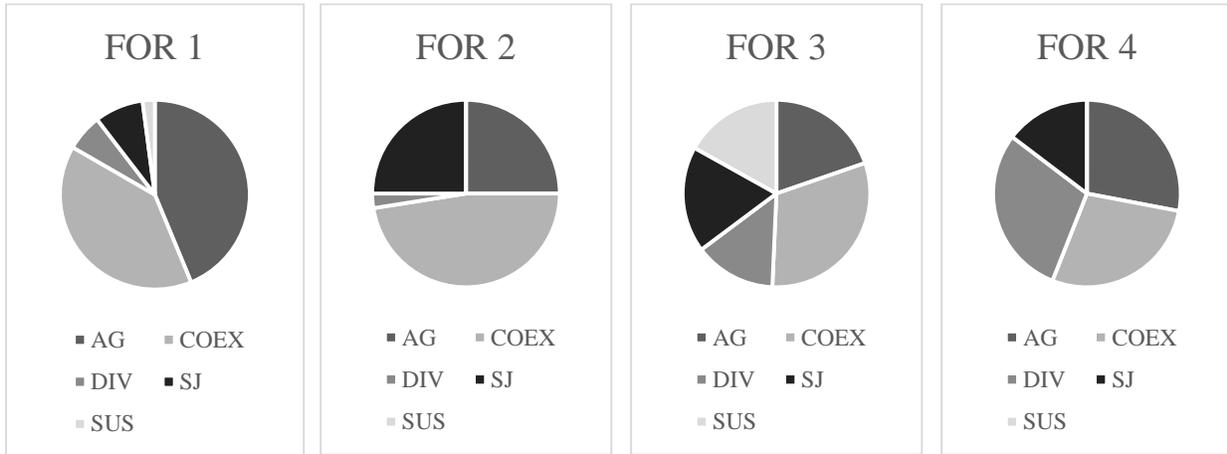
A final comparison of the average lens scores between Cohort 1 and Cohort 2 was completed. In Table 14, the average number of lenses per cohort, per formal, offline reflective assignment, is detailed. The number of lenses per the Oxfam rubric were greater overall for Cohort 2 students than Cohort 1 students. No Cohort 1 student incorporated more than 3 lenses in their reflections. Cohort 2 incorporated more lenses, with some students connecting all five themes in offline, formal reflection. Cohort 2's formal reflection scores for directionality in terms of individual global citizenship identity development were higher for formal, offline reflections 1, 3, and 4. Figure 16 displays the formal, offline directionality scores plotted for comparison over time from reflection 1 to reflection 4. It is observable in both the numerical data of Table 14 and in the visual display in Figure 16 that Cohort 2 peaked in their number of lenses in their fourth reflection.

Table 14. Directionality: Average number of lenses per formal, offline reflective assignment (Oxfam 1997, 2006)

	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	1.608696*	2.043478	1.826087	2.130435*

| Average Overall Score (Cohort 2) | 2.130435* | 1.826087 | 3.086957 | 3.26087* |

*Indicates significance at p<.05.

Fig 16. Directionality: Average scores per formal, offline reflective assignment
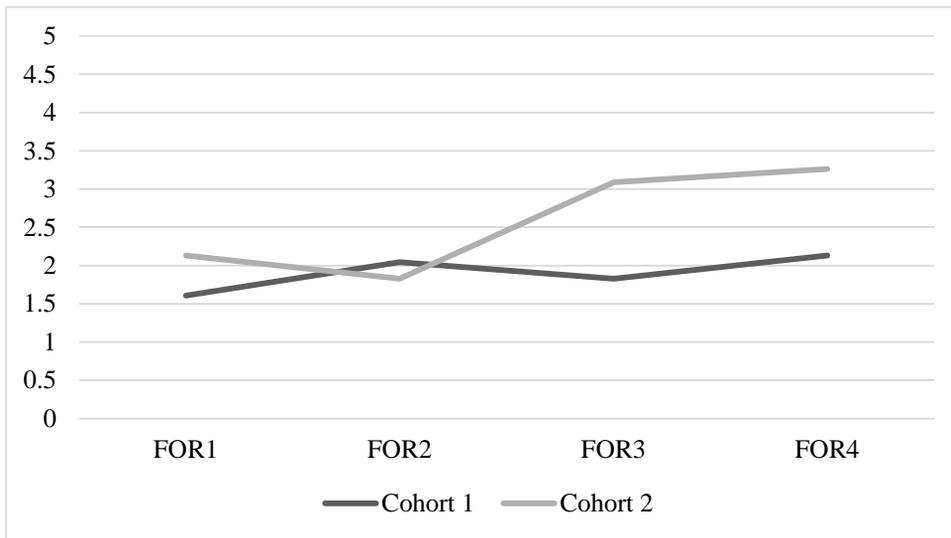
To summarize the findings for research question 1 in terms of directionality, Cohort 2 displayed more codes per the Oxfam (1997, 2006) rubric, as well as a wider variety of codes over time. Learners in Cohort 2 exhibited a higher tendency to use multiple lenses, and in some cases reached the peak of incorporating all 5 Oxfam global citizenship lenses in their formal, offline writing, whereas Cohort 1 did not. Cohort 1 never addressed or only rarely addressed sustainability.

Interdisciplinarity: Comparison of Formal Reflection between Cohorts 1 and 2

The second subsection of research question 1 compares across cohorts the formal reflection scores for interdisciplinary in terms of individual ability to bring their content knowledge across fields into their critical reflections. The Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric (see Appendix B) was applied to Cohort 1 and Cohort 2's formal, offline

reflection data. The qualitative codes provided by Mansilla, Duraisingh, Wolfe, and Haynes

(2009) range on a scale from naïve to mastery level. Thus, because they are on a scale, each

stage could be coded on a scale with naïve being coded as 1, novice coded as a 2, apprentice as a

3, and mastery at level 4. There is only one code per formal, offline assignment, totaling 92 per

cohort, as the entire reflective assignment is being scored for its level of interdisciplinary

thinking.

The data was first analyzed with no regard to time.   A calculation of the means of the

formal, offline assignments differed slightly between the two cohorts. Cohort 1's formal

reflections averaged overall a score of 2.02. For Cohort 2, the mean score for all formal, offline

reflection was 2.21. Furthermore, a raw count of the levels of interdisciplinary thinking revealed

that there were similarities and differences between Cohort 1 and Cohort 2. In Cohort 1, the

most frequent code was observed to be a novice (level 2) understanding of interdisciplinarity

(CO1 = 45), as was Cohort 2's (CO2 = 42). The second most frequent code for Cohort 1 was

naïve (level 1) interdisciplinarity (CO1 =24), while Cohort 2's was apprentice understanding

(CO2 = 27). Master level interdisciplinarity was the rarest of codes, with Cohort 1 having 3

examples and Cohort 2 presenting 5 examples of the code. Table 15 displays the raw count data

for both cohorts, as well as the percentage that each comprised of the total scoring.

Table 15. Interdisciplinarity: Breakdown of codes and percentages by cohort

	Cohort 1	Percentage	Cohort 2	Percentage
1 – Naïve	24	26.09%	18	19.57%
2 – Novice	45	48.91%	42	45.65%
3 – Apprentice	20	21.74%	27	29.35%
4 – Master	3	3.26%	5	5.43%
Total	92	-	92	-

Fig. 17. Interdisciplinarity: Distribution of Codes by Cohort
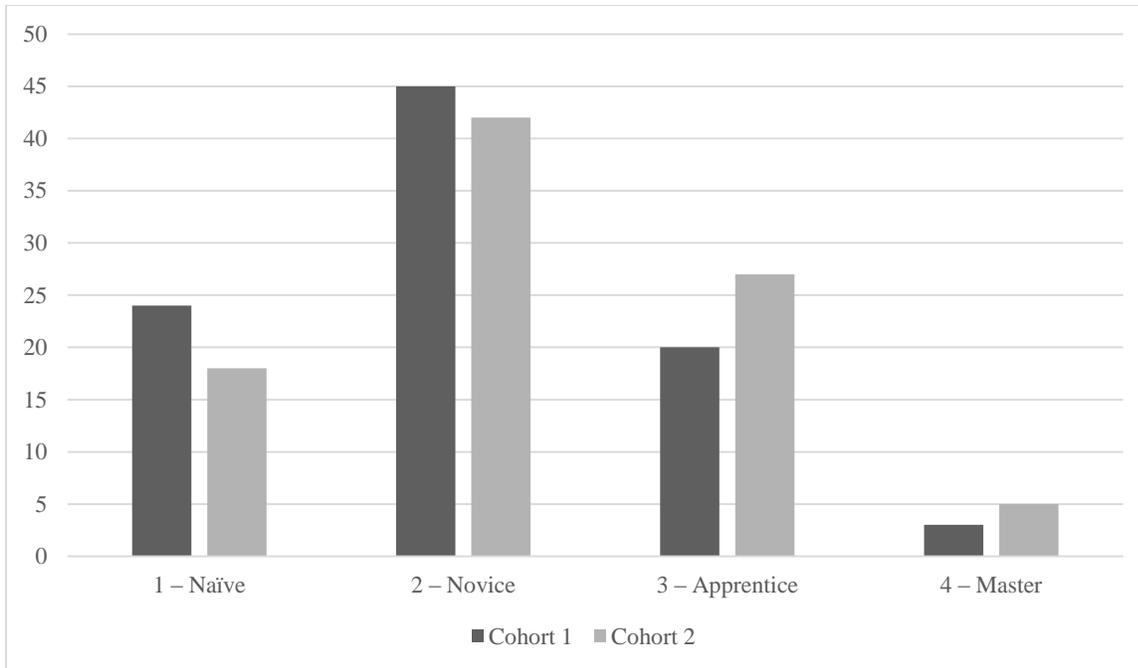
The second analysis was conducted with consideration to time. When parsing out the time over which the reflections took place, the following could be observed: the mode for Cohort 1's reflection was the novice category consistently, while the mode for Cohort 2 stayed in the novice category until formal, offline reflection 4. In that final reflection, the mode split between novice category and apprentice category. Table 16 shows the interdisciplinary codes assigned by cohort, by formal, offline writing assignment. The majority of student writing across both cohorts fell into the novice category.

Table 16. Interdisciplinarity coding by cohort, by assignment

Unit	Cohort 1, FOR 1	Cohort 2, FOR 1	Cohort 1, FOR 2	Cohort 2, FOR 2	Cohort 1, FOR 3	Cohort 2, FOR 3	Cohort 1, FOR 4	Cohort 2, FOR 4
1 – Naïve	6	2	5	6	5	8	8	2
2 – Novice	12	11	9	9	12	12	12	10
3 – Apprentice	5	9	7	6	5	2	3	10
4 – Master	0	1	2	2	1	1	0	1

Fig. 18. Interdisciplinarity: Codes by Assignment, Cohort 1

FOR 1	FOR 2	FOR 3	FOR 4
■ 1 - Naïve	■ 1 - Naïve	■ 1 - Naïve	■ 1 - Naïve
■ 2 - Novice	■ 2 - Novice	■ 2 - Novice	■ 2 - Novice
■ 3 - Apprentice	■ 3 - Apprentice	■ 3 - Apprentice	■ 3 - Apprentice
■ 4 - Master	■ 4 - Master	■ 4 - Master	■ 4 - Master

Fig. 19. Interdisciplinarity: Codes By Assignment, Cohort 2

FOR 1	FOR 2	FOR 3	FOR 4
■ 1 - Naïve	■ 1 - Naïve	■ 1 - Naïve	■ 1 - Naïve
■ 2 - Novice	■ 2 - Novice	■ 2 - Novice	■ 2 - Novice
■ 3 - Apprentice	■ 3 - Apprentice	■ 3 - Apprentice	■ 3 - Apprentice
■ 4 - Master	■ 4 - Master	■ 4 - Master	■ 4 - Master
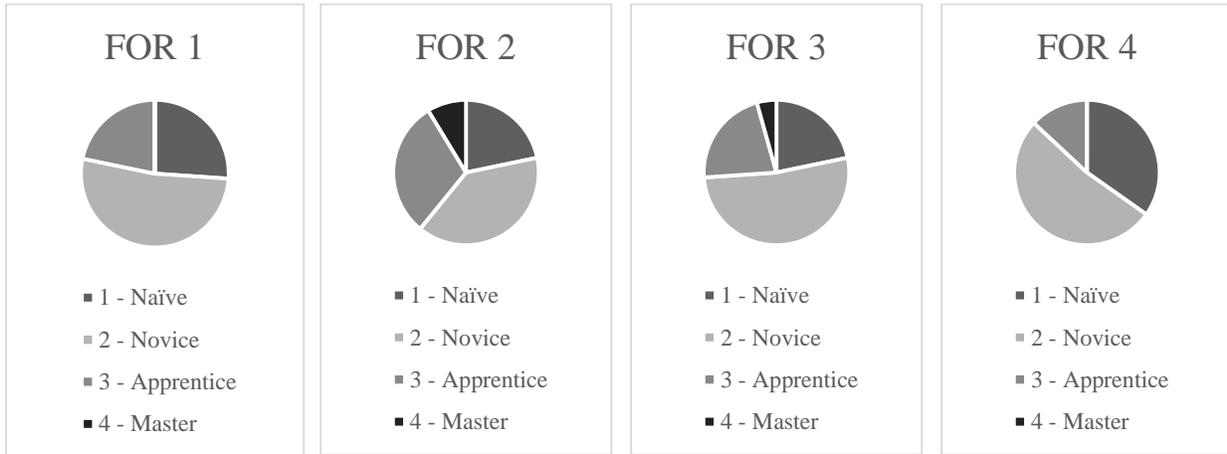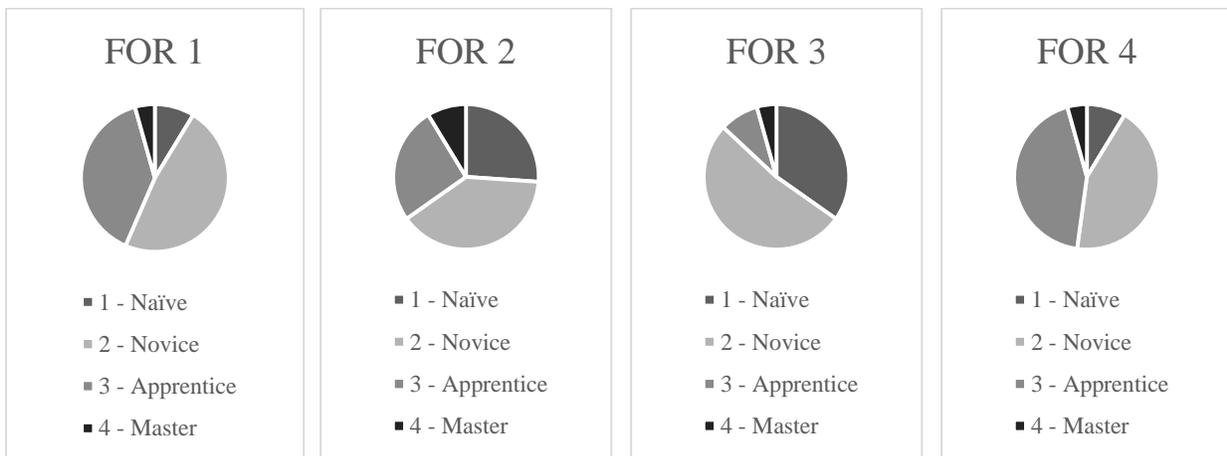
In Table 17, the average interdisciplinarity score per cohort, per formal, offline reflective assignment, is detailed. Two-tailed t-tests were conducted for each set of scores comparing the formal reflections between cohort 1 and cohort 2 based on their interdisciplinarity score. Significant differences between the scores for formal, offline reflection 1 ($t = .045$, df $= 44$, P $<.05$) and formal, offline reflection 4 ($t = .002$, df $= 44$, P $<.05$) were observed, while formal, offline reflections 2 ($t = .075$, df $= 44$, P $<.05$) and 3 ($t = .266$, df $= 44$, P $<.05$) were

insignificantly different. No distinct pattern emerged in the data to indicate a linear process of improvement over time.

Table 17. Interdisciplinarity: Comparison of average scores per formal, offline reflective assignment

	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	1.956521739*	2.260869565	2.086956522	1.782608696*
Average Overall Score (Cohort 2)	2.391304348*	2.173913043	1.826086957	2.434782609*

*Indicates significance at p<.05.

Fig 20. Interdisciplinarity: Comparison of average scores per formal, offline reflective assignment (Mansilla, Duraisingh, Wolfe, and Haynes, 2009)
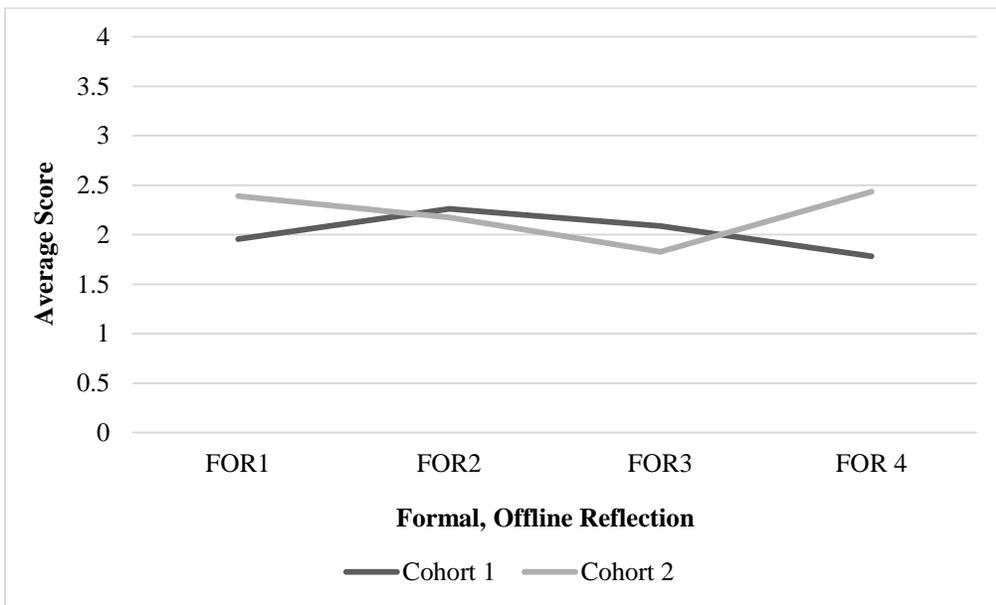
In summary, Cohort 2 showed significantly higher interdisciplinary understanding for formal, offline reflections 1 and 4, and peaked in the their final formal reflection with an average score of 2.43. Cohort 1 scored higher, but not significantly, on formal reflections 2 and 3, and exhibited a slight arc upward and then back down to finish at their lowest average.

Quality: Comparison of Formal Reflection between Cohorts 1 and 2

The fourth subsection of research question 1 compares Cohort 1 and 2's formal reflection scores for quality in terms of critical reflection as measured by the reflective judgment model. The data was analyzed for this question by applying the King and Kitchener (1994, 2004) rubric to assess quality of reflection. The data type for this question is a numerical scale from 1 to 7, with one being the lowest pre-reflective stage and 7 being the highest reflective stage. King and Kitchener's (2004) RJM codes can be divided into stages: a three-part continuum of reflective thinking that encompasses the 7 values of the RJM. Those stages are: pre-reflective (RJM 1-3), quasi-reflective (RJM 4-5), and reflective (RJM 6-7). As was outlined in Chapter 3, the collapsing of codes into these categories allows for clear sorting of the phases of reflective quality.

The first set of data analysis was done without factoring in time. A calculation of the means of the formal, offline assignments differed slightly between the two cohorts. Cohort 1's formal reflections averaged overall a score of 4.09. For Cohort 2, the mean score for all formal, offline reflection was 4.36. In Table 18, the count of codes by cohort is displayed. We see that the learners in Cohort 1 had more learners in the pre-reflective range than Cohort 2 (CO 1 = 50, CO2 = 32). In Cohort 2, there were more learners in the quasi-reflective range than Cohort 1 (CO1 = 20, CO2 = 39). The two cohorts had similar tallies of writing in the reflective range (CO1 = 24, CO2 = 21).

Table 18. Quality: Codes by cohort for formal, offline reflection

KK Code	Cohort 1	Cohort 2
Pre-Reflective (1-3)	48	32
Quasi-Reflective (4-5)	20	39
Reflective (6-7)	24	21

NOTE: The denominator equals 92.

Fig. 21. Quality: Count of codes by cohort for formal, offline reflections
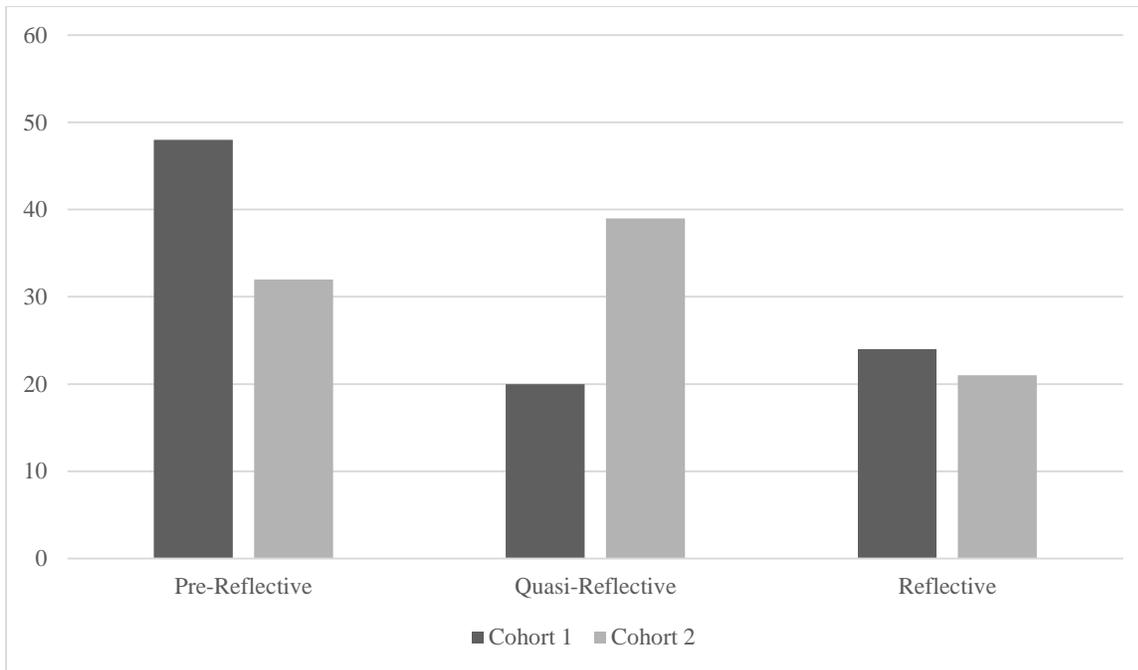
In the second analysis of the data for quality and with consideration of time, the data showed that learners over time did not exhibit a linear pattern of growth nor decline, nor was there an observable pattern in how the learners shifted in their scoring. The majority of reflections (52.17%) of Cohort 1 are categorized in the pre-reflective range, with 21.74% in the quasi-reflective range and 25% in the reflective range. For Cohort 2, the largest percentage of reflections fell into the quasi-reflective range (42.39%) with 34.78% in the pre-reflective range and 22.83% in the reflective range. Table 19 shows the count of King and Kitchener (1994, 2004) level codes by formal, offline reflection by cohort.

Table 19. Quality: Count of Codes by Cohort for Formal, Offline Reflections

RJM Level	Cohort 1, FOR 1	Cohort 2, FOR 1	Cohort 1, FOR 2	Cohort 2, FOR 2	Cohort 1, FOR 3	Cohort 2, FOR 3	Cohort 1, FOR 4	Cohort 2, FOR 4
Pre-Reflective 1-3	13	8	11	9	11	11	13	4
Quasi-Reflective (4-5)	4	11	2	8	7	10	7	10
Reflective (6-7)	5	4	10	6	5	2	3	9

Fig. 22. Quality: coding by assignment, Cohort 1
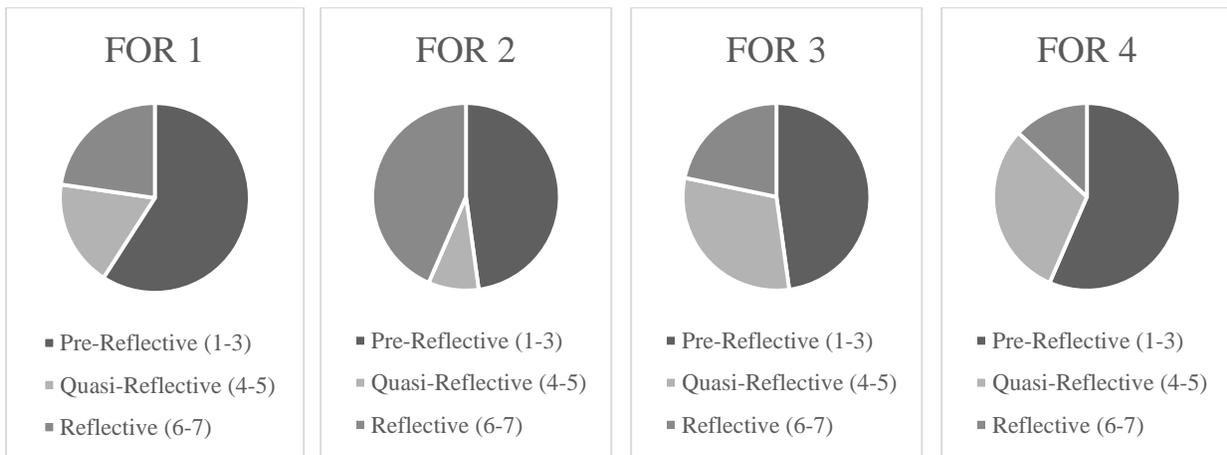
Fig. 23. Quality: coding by assignment, Cohort 2
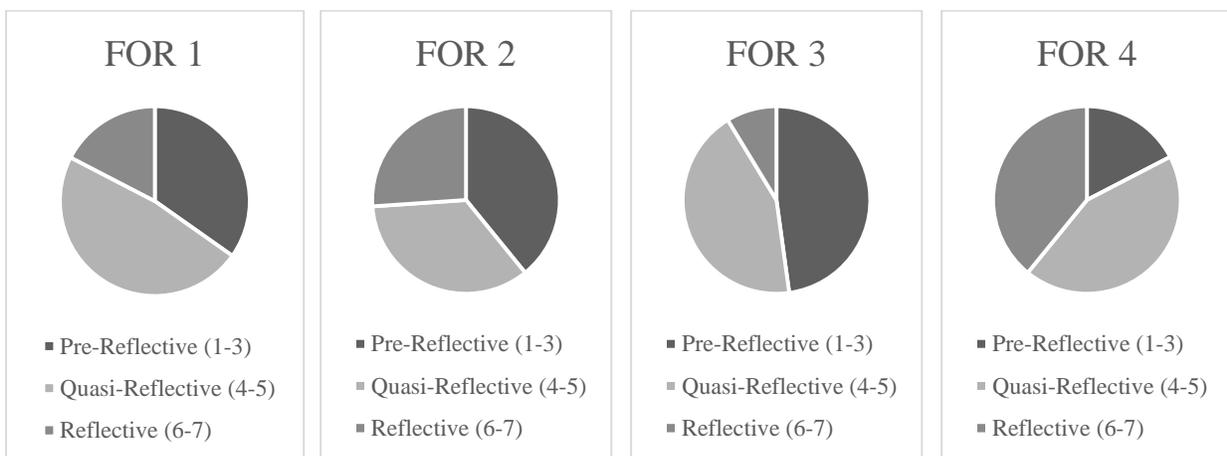
After scoring each formal, offline reflection per the King and Kitchener rubric, and

establishing the raw scores, averages were calculated for each cohort's performance by

assignment. T-tests were then conducted for Cohort 1 and Cohort 2's formal reflection to determine the significance of difference between scores for formal reflections for the same assignment (formal reflections 1, 2, 3, 4). Differences between the Cohort's performances on formal reflections 1, 2, and 3 were found to be insignificant. The fourth and final formal reflection, however, was significant, with the scores for Cohort 2 significantly higher than Cohort 1. In Table 19, the average quality score per cohort, per formal, offline reflective assignment, is detailed.

Table 20. Quality: Comparing average scores per formal, offline reflective assignment by Reflective Judgment Model score (King and Kitchener, 1994, 2004)

	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	3.913043478*	4.434782609	4.217391304	3.782608696*
Average Overall Score (Cohort 2)	4.304347826*	4.347826087	3.652173913	5.130434783*

*Indicates significance at p<.05.

Fig. 24. Quality: Comparing average scores per formal, offline reflective assignment by Reflective Judgment Model score (King and Kitchener, 1994, 2004)
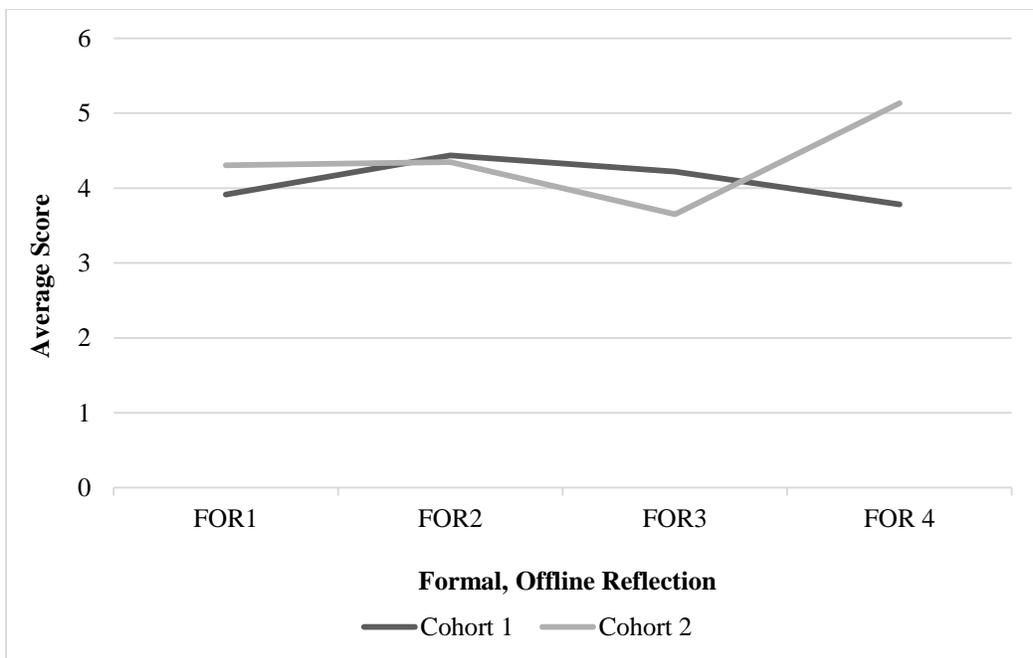
The variance of the Cohort 1 was much wider for the first formal, offline reflection (#1) ($\sigma^2 = 3.82$) that for Cohort 2 ($\sigma^2 = 2.30$). By the final formal, offline reflection, the variance of Cohort 2 ($\sigma^2 = 2.11$) was closer than Cohort 1 ($\sigma^2 = 2.87$). Significant differences were found between Cohort 1's formal, offline reflections 4, with the score for Cohort 2's formal, offline reflection 4 significantly higher than Cohort 1's formal, offline reflection 4.

Quality, interdisciplinarity, and directionality: Contextualizing patterns across cohorts

Looking across all rubric comparisons of average performance scores for cohorts 1 and 2, a pattern emerges in that Cohort 2 peaked in their formal, offline reflection 4 across all rubrics, with significantly higher averages registered for Cohort 2 on all measurements. Table 20 displays all of the averages of the measurements over time for each rubric as a side-by-side comparison.

Table 21. Comparison: Average scores on directionality, interdisciplinarity, and quality measures by cohort

Directionality, By Cohort				
	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	1.61*	2.04*	1.83*	2.13*
Average Overall Score (Cohort 2)	2.13*	1.83*	3.09*	3.26*
Interdisciplinarity, By Cohort				
	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	1.96*	2.26	2.09	1.78*
Average Overall Score (Cohort 2)	2.39*	2.17	1.83	2.44*
Quality, By Cohort				
	FOR1	FOR2	FOR3	FOR4
Average Overall Score (Cohort 1)	3.91	4.44	4.22	3.78*

Average Overall Score (Cohort 2)	4.30	4.35	3.65	5.13*

*Indicates significance at p<.05.

Within-Group Analysis of Undergraduate Student Informal, Online Writing and Formal, Offline Writing: Comparisons and Relationships

Research question 2 states: what comparisons and relationships can be observed in terms of directionality, quality, and interdisciplinarity between the informal, online and formal, offline writing? Formal, offline reflections took place at evenly spaced intervals throughout the semester, while informal, online reflections were a weekly occurrence. Prompts for formal reflections and informal reflections are found in Appendix C. To address this broader question, the following 4 sub-sections were created to guide the data analysis and break down the many nested aspects that were contained within those questions. The following 4 sub-sections explore the internal differences of Cohort 2 as they exercised reflective writing in offline, formal and online, informal contexts.

Directionality: Comparison of Online, Informal Reflection to Offline, Formal Reflection

The first sub-section of research question 2 addresses the differences between Cohort 2's informal, online and formal, offline reflective writing: how did cohort 2's informal, online writing compare to its formal, offline writing in terms of directionality? Differences between the two types of reflection in terms of directionality were measured by using the Oxfam (1997, 2006) rubric to assess the frequency and nature of global citizenship themes that were exhibited in the student's writing. The rubric was comprised of five thematic units – agency, coexistence, diversity, social justice, and sustainability – coded as AG, COEX, DIV, SJ, and SUS.

114

The first iteration of data analysis for this question was done without regard to time. The data from Cohort 2's formal, offline reflections revealed that the most frequent theme across all assignments was coexistence (39.61%), followed by: social justice (18.36%), diversity (17.39%), agency (17.39%), and sustainability (7.25%). In contrast, the informal, online reflections revealed the following breakdown of codes across all reflections: agency (43.81%), coexistence (15.46%), diversity (22.94%), social justice (16.49%), and sustainability (1.03%). As a general trend, the online, informal writing had fewer lenses than the offline, formal writings.

Table 22. Directionality: Frequency of code type per the Oxfam curriculum in Cohort 2's formal, offline reflection compared to the informal, online reflection

Unit	Code Frequency Formal, Offline	Code Frequency Informal, Online
AG	17.39%	43.81%
COEX	39.61%	15.46%
DIV	17.39%	22.94%
SJ	18.36%	16.49%
SUS	7.25%	1.03%

Fig. 25. Directionality: Lens distribution by assignment: Offline, formal and online, informal
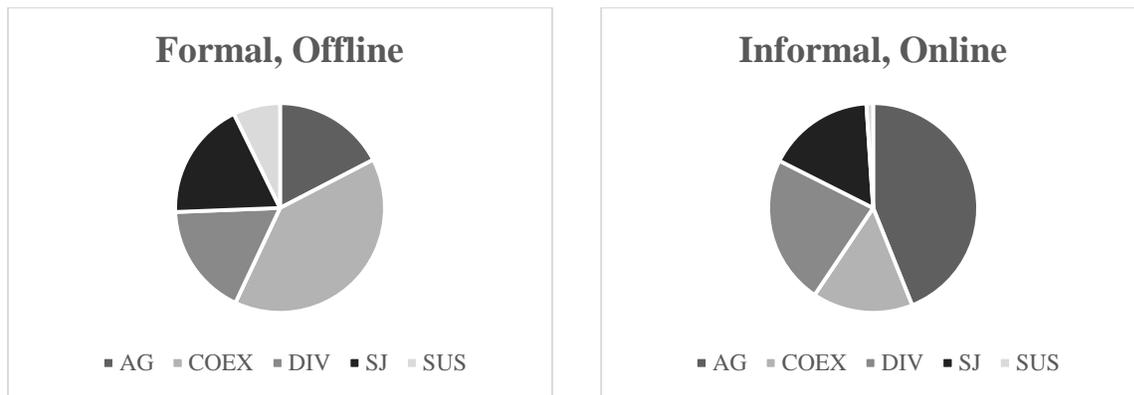
NOTE: The above charts show a difference between lens type which students connected with in their critical reflections. Learners in Cohort 2 incorporated all lenses in their formal, offline reflections, and the distribution of codes shows a different breakdown in themes, but with coexistence being the most frequent lens applied in reflective writing.

Another pattern that emerged in the data from Cohort 2's formal, offline reflection was the number of lenses were much greater than informal, online reflections. For the formal, offline reflections, learners incorporated 2 lenses most frequently (40.22%) with 3 lenses as the second-most utilized framework (32.61%). The remaining breakdown of formal, offline lens numbers were 4 at 13.04%, 1 at 10.86%, and 5 at 3.26%. In contrast, the informal, online reflections were overwhelmingly one-lensed (74.27%) with 2 lenses being the second most utilized framework at 24.76%. A mere 0.98% of informal, online reflections incorporated 3 lenses, with no reflections exhibiting 4 and 5 lenses. Thus, as a general trend, the online, informal writing had fewer lenses than the offline, formal writings. Table 22 shows the full breakdown of percentages between formal, offline and informal, online reflections for Cohort 2.

Table 23. Directionality: Percentage breakdown of number of lenses in formal, offline compared to informal, online reflections in Cohort 2

Number of Lenses	Formal, Offline	Informal, Online
1	10.86%	74.27%
2	40.22%	24.76%
3	32.61%	.98%
4	13.04%	0%
5	3.26%	0%

Fig 26. Directionality: Number of lenses incorporated in Cohort 2's formal & informal reflective writing

	1 Lens	2 Lens	3 Lens	4 Lens	5 Lens
■ Formal, Offline	10.86%	40.22%	32.61%	13.04%	3.26%
■ Informal, Online	74.27%	24.76%	0.98%	0.00%	0.00%

■ Formal, Offline   ■ Informal, Online
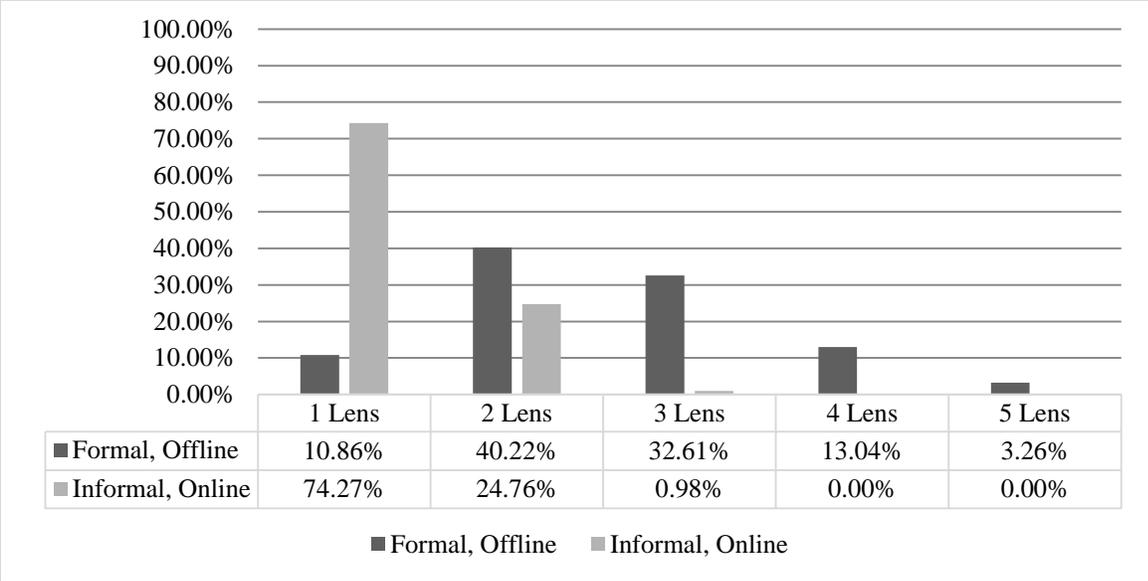
NOTE: For Cohort 2's formal, offline reflections (4), the total number of lenses was 207. For their informal, online reflections (14) the total number of lenses for 387.

Considering this data with the frame of time now included once again, one can observe patterns in the data in the space between formal, offline reflections and the informal, online reflections that take place concurrently. Over time, the number of Oxfam lenses increased between in their formal, offline writing for students in Cohort 2. However, in their informal, online writing, the learners' reflections did not establish a pattern of growth, but rather a trend that kept them almost wholly in the 1-2 lens range. Table 24 shows the breakdown of number of lenses in formal, offline reflections as compared to informal, online reflections. Figure 27 visually displays the information contained in Table 24 to visualize the trend over time. Note that for formal reflections 3 and 4, Cohort 2 exhibited a pattern of lenses in the 3-5 range, whereas earlier reflections were concentrated in the 1-2 lens range.

Table 24. Directionality: Number of lenses of formal, offline reflections

Number of Lenses	Cohort 2, FOR 1	Cohort 2, FOR 2	Cohort 2, FOR 3	Cohort 2, FOR 4
1	2	7	1	0

2	17	13	6	1
3	3	3	9	15
4	1	0	4	7
5	0	0	3	0

Fig 27. Directionality: Percentages of lens of formal, offline reflection, Cohort 2

FOR 1 · 1 Lens · 2 Lenses · 3 Lenses · 4 Lenses · 5 Lenses

FOR 2 · 1 Lens · 2 Lenses · 3 Lenses · 4 Lenses · 5 Lenses

FOR 2 · 1 Lens · 2 Lenses · 3 Lenses · 4 Lenses · 5 Lenses

FOR 4 · 1 Lens · 2 Lenses · 3 Lenses · 4 Lenses · 5 Lenses
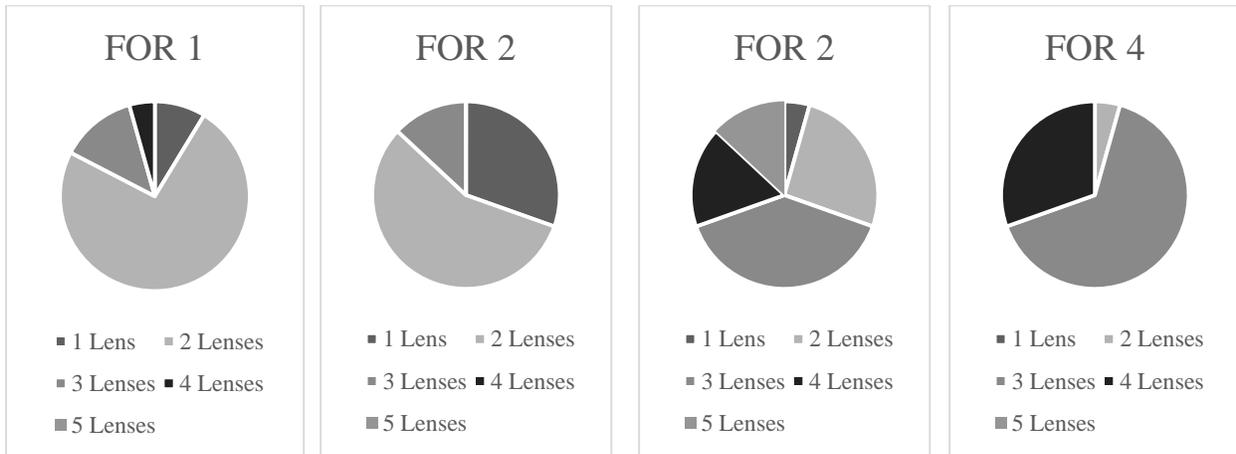
Table 25. Directionality: Number of lenses by informal, online reflections

#	IOR 1	IOR 2	IOR 3	IOR 4	IOR 5	IOR 6	IOR 7	IOR 8	IOR 9	IOR 10	IOR 11	IOR 12	IOR 13	IOR 14
1	17	10	12	19	20	14	18	15	23	13	18	18	15	16
2	6	12	8	1	3	7	5	6	0	7	4	5	6	6
3	0	1	0	0	0	0	0	0	0	1	1	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 26. Directionality: Frequency of type of lens for informal, online reflection

Type	IOR 1	IOR 2	IOR 3	IOR 4	IOR 5	IOR 6	IOR 7	IOR 8	IOR 9	IOR 10	IOR 11	IOR 12	IOR 13	IOR 14
AG	7	22	15	20	20	11	2	20	23	9	4	8	15	4
COEX	5	2	1	0	2	14	1	0	0	8	13	3	9	9
DIV	23	5	10	1	3	3	6	1	0	1	6	7	10	14
SJ	0	6	2	0	1	0	19	9	0	11	5	10	0	1
SUS	0	2	0	0	0	1	0	0	0	1	1	0	0	0

Table 27. Directionality: Average lenses in informal, online reflections, Cohort 2

	IOR 1	IOR 2	IOR 3	IOR 4	IOR 5	IOR 6	IOR 7	IOR 8	IOR 9	IOR 10	IOR 11	IOR 12	IOR 13	IOR 14
Average Overall Score (Cohort)	1.26	1.61	1.4	1.05	1.13	1.33	1.22	1.29	1	1.43	1.26	1.22	1.29	1.27

In summary, the informal, online reflections of Cohort 2 has less lenses incorporated as compared to formal, offline reflections. Informal, online reflections were largely focused on agency, while the formal, offline reflections were most focused on coexistence and social justice (?). Finally, a trend was established when comparing the two types of writing in terms of number of lenses. In Cohort 2's informal, online reflections, learners wrote with a perspective of one lens overwhelmingly (74.24%) and never reached the 4 or 5 lens level. However, in their formal, offline reflections, learners had a more evenly distributed lens integration, and did reach the 4 and 5 lens level.

Interdisciplinarity: Comparison of online, informal reflection to offline, formal reflection

The second subsection of research question 2 addresses the differences between Cohort 2's informal, online and formal, offline reflective writing: how did cohort 2's informal, online writing compare to its formal, offline writing in terms of interdisciplinarity?

The first analysis on the data for interdisciplinarity scores between formal, offline reflections and informal, online reflections did not take into consideration time. Table 28 displays the count of codes and percentages for formal, offline reflections as compared to informal, online reflections in terms of interdisciplinarity. As is shown in the table, learners differed in their proficiency in interdisciplinarity, but still exhibited interdisciplinarity in the lower phases of the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric. The mode for formal, offline reflections was the novice level (Mode = 42, 45.65%), while the mode for the informal, online reflections was in the lowest, naïve level (Mode = 155, 48.59%), which

indicates a low level of interdisciplinary incorporation and understanding in the learner's writings.

Table 28. Interdisciplinarity: Comparison between formal, offline reflection and informal, online reflection

Code	Formal, Offline Reflection	Percentage	Informal, Online Reflection	Percentage
1 – Naïve	18	19.57%	155	50.65%
2 – Novice	42	45.65%	134	43.79%
3 – Apprentice	27	29.35%	21	6.86%
4 – Master	5	5.43%	0	0%

NOTE: In calculating the percentage code breakdown, the denominator for the formal, offline reflections is 92. For the informal, online reflections, the denominator is 306.

In the second analysis of the data, time was considered. In this analysis, the learner's reflections did not improve linearly over time. The cohort did peak in formal, offline reflections falling into the apprentice category by the last reflection. However, the same amount of individuals reflected in the novice category as the apprentice category.

Table 29. Interdisciplinarity coding for formal, offline reflections, Cohort 2

Code	Cohort 2, FOR 1	Cohort 2, FOR 2	Cohort 2, FOR 3	Cohort 2, FOR 4
1 – Naïve	2	6	8	2
2 – Novice	11	9	12	10
3 – Apprentice	9	6	2	10
4 – Master	1	2	1	1

Table 29 outlines the average cohort-wide score by informal, online assignment (weekly) throughout the semester. In informal, online writing, learners stayed within the naïve range, cresting over into the novice range only in informal, online reflection 4. This shows that

throughout the informal, online reflections, learners did not work in a higher-level of interdisciplinarity in their writing.

Table 30. Interdisciplinarity: Average score for informal, online reflections, Cohort 2

	IOR 1	IOR 2	IOR 3	IOR 4	IOR 5	IOR 6	IOR 7	IOR 8	IOR 9	IOR 10	IOR 11	IOR 12	IOR 13	IOR 14
Average Overall Score (Cohort)	1.83	1.35	1.65	2.05	1.78	1.52	1.35	1.48	1.30	1.67	1.52	1.26	1.61	1.64

In summary, low scores in interdisciplinarity were widely observed in the informal, online reflections and the formal, offline reflections. Learners stayed largely in the naïve/novice categories across all reflections, with some apprentice and mastery moments within the formal, offline reflections.

Quality: Comparison of online, informal reflection to offline, formal reflection

The third subset of research question 2 addresses the differences between Cohort 2's informal, online and formal, offline reflective writing: how did cohort 2's informal, online writing compare to its formal, offline writing in terms of quality? By comparing the data from the differing assignments, one can see that the quality of the formal, offline reflections is much higher than that of the informal, online reflections.

There is a notable difference between the distribution of quality codes in the formal, offline reflection and informal, online reflection. Table 31 displays the breakdown of quality categories between the formal, offline reflections and the informal, online reflections. In the formal, offline reflection, the bulk of writing can be categorized as quasi-reflective (42.49%), with pre-reflective writing (34.78%) and reflective writing (22.83%) comprising the remainder of the reflections. In the case of the informal, online reflections, pre-reflective writing was the clear majority (60.46%), with quasi-reflective (33.01%) and reflective (6.86%) writing in the

remainder. The data reveals that the informal, online reflections exhibited less reflective depth than the formal, offline reflections.

Table 31. Quality: Count of codes for formal, offline reflection, Cohort 2

Code	Formal, Offline Reflection	Percentage	Informal, Online Reflection	Percentage
Pre-Reflective (1-3)	32	34.78%	184	60.46%
Quasi-Reflective (4-5)	39	42.49%	101	33.01%
Reflective (6-7)	21	22.83%	21	6.86%

NOTE: In calculating the percentage code breakdown, the denominator for the formal, offline reflections is 92. For the informal, online reflections, the denominator is 306.

Fig. 28. Quality: Count of codes for formal, offline reflection, Cohort 2
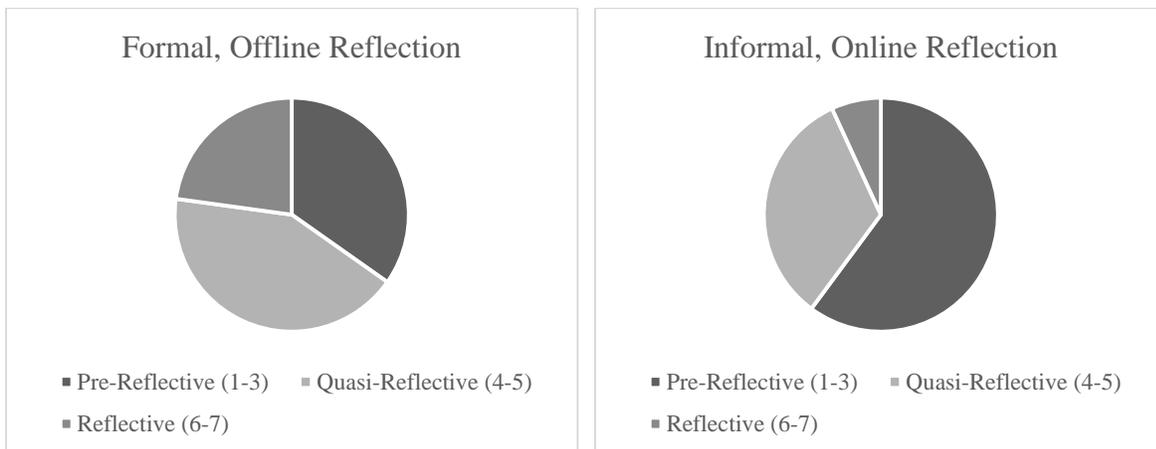
Considering time in this analysis, significant differences were not found between average scores of informal, online reflection leading up to the formal, offline reflections. The data did not show an observable pattern or trend that would lead to inferences about causation or relationships. In Table 32, each individual Cohort 2 learner's progress over time is displayed. As is displayed in the table, there is no correspondence between the scores before their formal reflections and the preceding online, informal reflection scores for quality. Students' informal,

online reflections tended to be much lower than their formal, offline reflections, even in regard to assignments that were due at the same time.

Table 32. Quality: Count of codes for formal, offline reflection over time, Cohort 2

RJM Level	Cohort 2, FOR 1	Cohort 2, FOR 2	Cohort 2, FOR 3	Cohort 2, FOR 4
Pre-Reflective 1-3	8	9	11	4
Quasi-Reflective (4-5)	11	8	10	10
Reflective (6-7)	4	6	2	9

Evidence of Transformative Change

In the final analysis of data, the attention shifted from comparison of cohorts and reflective writing types to establishing patterns and observations that cut across all data types and contexts. In order to understand the relationship between the many rubrics and variables used to assess learner reflection, a third research question was devised. Research question 3 asks: Through emergent coding both across cohorts and across reflection formats, what patterns, themes, and/or relationships can be observed as evidence of transformative change?

Directionality, Interdisciplinarity, and Quality

The first analysis built upon the work of the previous two questions, examining students' work across the formal, offline reflections for directionality (via the Oxfam rubric), interdisciplinarity (via Mansilla, Duraisingh, Wolfe, and Haynes, 2009) and quality (via the rubric for the King and Kitchener (1994, 2004) Reflective Judgment Model). Students were rank-ordered within categories (e.g., high average directionality to low average directionality) and also across categories (e.g., looking for students who consistently scored at the top or bottom of directionality, interdisicplinarity, and/or quality). However, no trend emerged—no single

student demonstrated a consistent trend across rubric scores, even when considering time (e.g., patterns of growth in directionality, interdisciplinarity, and/or quality) and when working across formal and informal reflective writing for Cohort 2. Full reporting of this analysis is provided in Appendix G.

Disorientation and Critical Reflection: An Analysis

While the rubric data did not point to clear trends or patterns worthy of asserting causality, the open-coding record suggested a different path. As described in Chapter 3, students' reflective writing was coded for emergent patterns, trends, and frequent terms at the same time as *a priori* rubric coding took place, as is consistent with the concurrent transformative design model (Creswell, Plano Clark, Gutmann, & Hanson, 2003). While the rubrics used addressed specific aspects of undergraduate student writing that were hypothesized to have a connection to global citizenship identity development, it was essential to run a parallel process of constant comparative analysis to capture issues of importance not evident in the rubric coding. Students' cognitive of disorientation provided the strongest theme to follow in addressing this final research question. Disorientation, per Mezirow's Cognitive Rational Approach (1981, 1985), is the essential first step of transformation, and can be exhibited as a disequilibrium that occurs as a result of experience and/or by confronting information designed to shift learners' meaning perspective.

As discussed in Chapter 2, disorientation is a component of Mezirow's Cognitive Rational Approach, the first step of four in transforming a learner's perspective. Disorientation occurs as a result of experience and/or by confronting information that can shift learners' meaning perspective (e.g. intercultural education, etc.). In this case, the information is the experiences, knowledge, and interactions that challenged students' meaning perspective, causing

them to reconsider their held beliefs and knowledge to reimagine the way in which they view the world (Mezirow, 1985; Taylor, 1994, 2001). Learners in both cohorts exhibited disorientation in their written work. The majority of disorientation moments were seen in the final formal reflection for both cohorts, and frequently throughout the informal, online reflections for Cohort 2. The frequency of disorientation moments in informal, online writing was much higher than the formal, offline writing exercises.

In terms of evidence of metacognition and meaning perspective shift, there was evidence in the formal, offline reflections, as well. Such disorientation was evidenced by such student reflection as the following examples:

> Before then, I had never really thought to stop and examine our most treasured holiday from an outside, objective perspective. It truly opened my eyes to how strange our own traditions can seem even though we have always accepted them to be completely normal. [739, FOR1, CO1]

Such disorientation was also evidenced in online, informal reflection. Take for example the following quote from one student to another:

> Jim, being born in America to American parents, I am often at fault for taking citizenship for granted. Thank you for sharing a personal anecdote about your mom because I had no idea how complicated the process was. Visisting [sic] the USCIS gave me a greater appreciation for people like your mother because she had to go through so much to earn the citizenship status that was just given to me. I also agree that it was enjoyable to learn that organizations, such as the ACSU [sic], are working to protect our constitutional rights. [886, IOR7, CO2]

Disorientation: Comparison of Cohort 1 and Cohort 2's Offline, Formal Reflection

Upon finishing the emergent coding process, disorientation was observed to be a theme that necessitated further analysis. The first set of data analysis for disorientation took place without regard to time. There was an observable trend based on sheer count of disorientation moments over the same number of formal, offline reflections. In Table 33, the number of

disorientation moments by cohort for all formal, offline writing is displayed. In the formal, offline reflections, Cohort 2 had almost double the number of disorientation moments displayed by Cohort 1 in the same amount of reflections.

Table 33. Disorientation: Number of moments by formal, offline reflection by cohort

	Cohort 1	Cohort 2
Total Count	25	44

A second analysis of the data, this time taking into consideration the issue of time, revealed the following observations. Cohort 1 and 2 both had similar distributions of disorientation moments over time, with the majority of disorientation moments coming in formal, offline reflection number 4 that took place at the very end of the semester. Despite that same pattern, it is notable that Cohort 2 exhibited more disorientation in their formal, offline reflections than Cohort 1. Table 33 shows the amount of disorientation within each cohort's reflections, by formal reflection over time. It shows the significantly larger percentage of the Cohort 2 experiencing disorientation as compared to Cohort 1.

Table 34. Disorientation: Demonstration of disorientation in formal, offline reflections by cohort

	Cohort 1	Percentage	Cohort 2	Percentage
FOR 1	5	21.74%	9	39.13%
FOR 2	7	30.43%	13	56.52%
FOR 3	3	13.04%	7	30.43%
FOR 4	10	43.48%	15	65.22%
Total	25	-	44	-

NOTE: Percentage is the percentage of disorientation within the cohort, using a denominator of 23 students per cohort.

Fig 29. Disorientation: Comparing count of disorientation moments per formal, offline reflective assignment over time
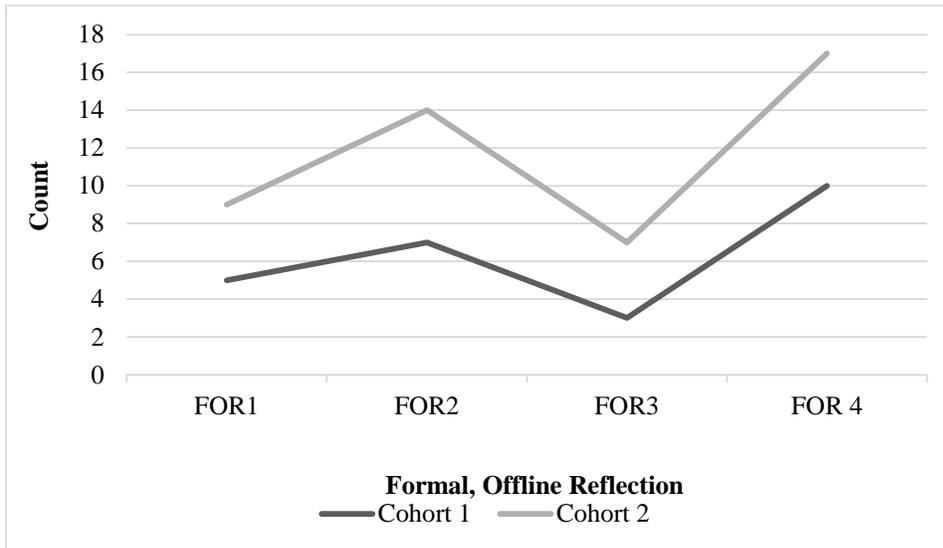
Disorientation: Comparison of Online, Informal Reflection to Offline, Formal Reflection

After comparing cohorts' formal, offline reflection, the attention then shifted to the within group comparison of informal, online assignments to formal, offline assignments for Cohort 2. The first analysis, completed without regard to time, revealed a much higher number of disorientations overall in the informal, online reflection (n=44) than the formal, offline reflection (n=164).

Table 35. Disorientation: Number of moments by reflection type – formal, offline and informal, online – in Cohort 2

	Formal, Offline	Informal, Online
Total Count	44	164

A second analysis of the data, this time taking into consideration the issue of time, revealed the following observations. There was not trend over time of the informal, online reflections building to a high point or low point, with variability in the disorientation moments throughout. That being said, the time with most disorientation observed was the very first reflection of the semester, informal, online reflection 1. Table 35 displays all the data over time for the informal, online reflections.

Table 36. Disorientation: Number of moments by informal, offline reflection, Cohort 2

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
Instances of Disorientation Observed	18	10	14	13	15	11	14	12	4	16	8	11	10	8

When comparing the types of reflection – formal, offline and informal, online – another pattern emerged. The informal, online reflections displayed significantly more disorientation moments than the formal, offline reflections. Table 37 shows the comparison in the same time periods for formal, offline reflection as compared to informal, online reflection over the semester.

Table 37. Disorientation: Comparison of formal, offline and informal, online reflections within the same time frames

	Formal	Informal
Time 1	9	42
Time 2	13	53
Time 3	7	32
Time 4	15	37

NOTE: The time periods with the closest proximity to the formal reflections were gathered in the windows of times 1-4 for informal, online reflection. Time 1 is comprised of informal, online reflections 1-3. Time 2 includes 4-7. Time 3 includes 8-10. Time 4 includes 11-14.

Fig. 30. Disorientation: Comparison of formal, offline and informal, online reflections within the same time frames
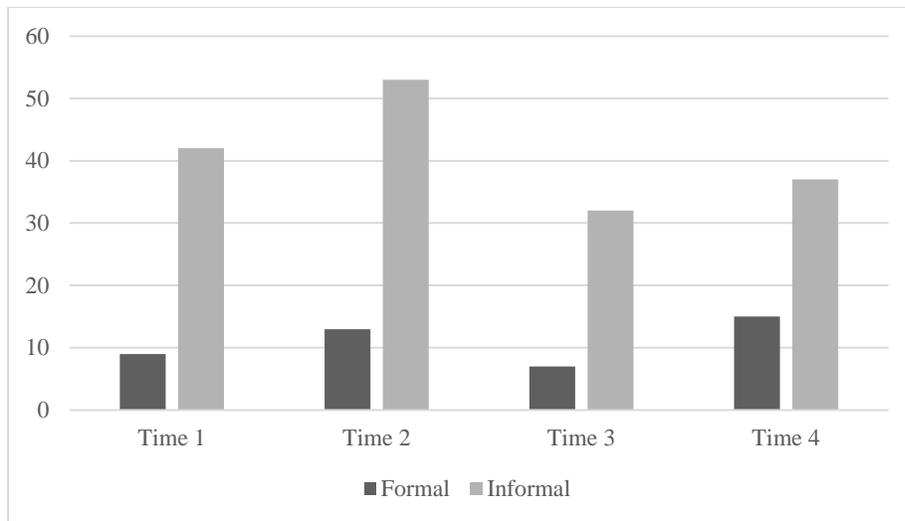
A strong tie existed between the type of assignment and the number of disorientation moments the students exhibited in their writing. As noted above in Table 34, 44 disorientation moments were observable in Cohort 2's formal, offline writing. In the informal, online reflections of Cohort 2, learners had more opportunities to experience disorientation, as they were reflecting weekly and also having dialogue with fellow learners who might have been introducing more disorienting forces into the interactions. Table 35 shows the number of disorientation moments by informal, online reflection. Total number of disorientation moments in informal, online reflections totaled 164.

Emergent themes and patterns in disorientation

The disorientation that was observed through constant comparative analysis of the data revealed that such disorientation could be separated into the following themes: intercultural, new information, emotional discomfort, and taking for granted/reevaluating prior knowledge. Table 39 outlines the ways in which learners made explicit in their writing the types of disorientation they were experiencing, and the four main themes in which those reflections were grouped: intercultural, new information, emotional discomfort, taking for granted/held belief reevaluation. While these themes felt clear through an emergent coding process, this observation could be the

basis for a completely new study to test the applicability and veracity of these themes. The

following table (Table 38) outlines each type of disorientation as was exhibited in learner

reflections. The sections that follow the table explore further the themes of intercultural

exchanges and otherness, peer learning and knowledge construction/reevaluation, and the role of

peer learning in disorienting through emotional discomfort. The influence of new information is

fairly self-explanatory, as new information came from sources ranging from experiential to class

readings to peer disclosures.

Table 38. Four main types of disorientation exhibited in online, informal writing and

illustrative examples

Disorientation Type	Example
Intercultural and Otherness	"This was a worthwhile experience because it demonstrated the challenges in connecting across cultures and language barriers, it offered cohort 9 a realistic view into the challenges that immigrants face in communication and how we need to make sure that we make immigrants feel as comfortable and welcomed as possible. Our interview with Hebib was good practice for our future immersion trips and learning to how to communication across language barriers." [787, INF14, CO2]
New Information	"The biggest shock for me was that such extreme poverty and adversity could exist in our own country. The multitude of Navajos on the reservation had little food and water, malnutrition, poor education, ramshackle homes and a dangerous environment to live in. We were told by many that drug lords control much of the reservation, as violence and crime are prevalent amongst the community: for this reason, we ended our work at 5pm everyday, because when the sun starts to go down, that is when the area becomes unsafe. Even though I have travelled to the same place twice now, I still feel as if I have gone abroad: I never would have thought that such living conditions still existed in the United States." [268, INF2, CO2]
Emotional Discomfort	"A disdainful, 'Oh, you're American' was a phrase I often heard as I traveled throughout the country [Israel]. Growing up in America I was taught America the Beautiful, America the Brave, and almost force fed the idea that everyone venerated us. This new idea was a hard one to swallow." [857, INF1, CO2]

Taking for Granted/Reevaluation of Prior Knowledge	Regarding selecting a quote that resonates with the student: "I think that this quote encompasses a lot of areas that need improvement in this world. Here in America, we are fortunate enough to have many things that we take for granted, that other people around the world work their whole lives form (voting rights, education, etc.). This is a strongly worded, straight to the point quote which emphasizes that we must help those who need our help." [955, INF11, CO2]

* These are pseudonyms.

Intercultural Exchanges and Otherness. In the informal, online reflections of Cohort 2, their grappling with otherness and appreciation for diversity was observable in a number of examples. For instance, in one forum reflection, a learner expressed disbelief and frustration with stereotypes they encounter:

> I am simply surprised by how tolerable stereotypes have not just become prevalent in my high school, but also in so many other parts of society. I believe that this is detrimental to all those around us because it creates false impressions of many people of all different gender, races, cultures and ethnicities. As global citizens, I think that it is our duty to avoid and rectify these types of stereotypes amongst our peers and ourselves and to embrace the differences of those around us and use them to build bonds that will last. [268, INF1, CO2]

It also must be noted that disorientation experienced in the online reflections around otherness were discussed in learner's formal, offline reflections as well. For example, the informal, online forum posting where students responded to a TED Talk from Chimamanda Adichie made frequent appearances in the student's formal, offline reflections:

> To conclude, I think it is important to understand Chimamanda Adichie's simple yet powerful lesson, that as individuals, each of our stories are different. With this in mind, I feel that after tearing down the walls of citizenship that separate us, and looking at the bigger picture, that lesson is subject to change. We actually share only one story. And that is the story of the human life. You are just one character in the story of the world. Life is a single story, and as much as your character plays a part, you are still a part of the audience. There are times to be active and involved, and there are times to be passive and engaged. We are united by a single truth; every life has a story to tell. It's time to start telling. [597, FOR 4, CO2]

Peer learning and the social construction of knowledge. This following excerpt from

a student online, informal writing shows the power of a more knowledgeable others (Student 1)

effect on another student's (Student 2) understanding of a component of global citizenship

education and a reconsideration of their meaning perspective. Student 1 discussed the process of

immigration through a personal reflection:

> As an immigrant to the United States, my mother and I have had to go through numerous processes just to attain the initial documentation (the Green Card) in order to receive a few more opportunites [sic] in the country. After visiting the United States Citizenship and Immigration Office, I definitely got a sense of how restrictive the laws are in regards to new citizens getting some sort of paperwork in order to obtain citizenship. I definitely understand the perspective from which the government agents as well as the representative from Senator Toomey's office and the importance of how they realize the broken system in immigration. However, the innability [sic] of these powerful individuals to modify the laws is obscurred [sic]. Although the United States has set regulations on who is being deported, specifically those who are just "severe offenders of crime in the past year", but currently a large majority of immigrants are being deported. I just don't understand how individuals could get citizenship properly in a different country or getting something more than just a visa to America. [875, INF7, CO2]

After the aforementioned student 1 helped the student 2 to reconsider their held beliefs

and understanding, this shift in perspective was then observable through evidence in Student 2's

reflective writing:

> Jim, being born in America to American parents, I am often at fault for taking citizenship for granted. Thank you for sharing a personal anecdote about your mom because I had no idea how complicated the process was. Visisting [sic] the USCIS gave me a greater appreciation for people like your mother because she had to go through so much to earn the citizenship status that was just given to me. I also agree that it was enjoyable to learn that organizations, such as the ACSU, are working to protect our constitutional rights. [886, INF7, CO2]

Another example of such interaction shows the response of a student considering new

information on a fellow student's life experiences and extrapolating that information out to

connect to avoiding stereotypes in meeting new people and appreciating otherness.

132

Your life sounds so interesting! The more experiences I hear, the more I realize how unique and ungenerizable everyone is. I especially agree with your point that although we need to accept that we will always try to generalize and categorize people, we need to also be aware that we do so and try to not let it affect our actions or opinions of others. This is a hard task to do, because it is hard to accept that we naturally do something that can cause harm and create conflict. But, we need to do so in order to be conscious of and responsible for our actions. [595, INF1, CO 2]

Peer learning and emotional discomfort. This following excerpt from a student online, informal writing shows the power of a more knowledgeable other's effect on their understanding of a component of global citizenship education and a reconsideration of their meaning perspective, while also showing the growth that can come from emotional discomfort. After the student 2 helped the student 1 to reconsider their held beliefs and understanding, this shift in perspective was then observable through evidence in Student 1's reflective writing:

> In high school I was always known as the smart kid. Fellow students agreed with whatever I said and did not question my opinion in class discussions. In Global Citizenship though, my days of always being right ended when Marina* and I debated about the visa lottery. Prior to the Philadelphia trip, I had never heard of the visa lottery. Therefore, after I read that it was a method for terrorists to enter the country, I did not think twice about posting it. When I read that Marina's* family entered the United States through the visa lottery and felt like I had offended her, I experienced emotions of great remorse. I had never meant to hurt her and wished that I could go back in time to change my post. However, after several failed attempts to make a flux capacitor and obtain a DeLorean, I realized that the only action I could take was to explain myself and apologize. While I discovered it after the fact, I think this encounter was the most life changing experience I gained from Global Citizenship. As I enter group conversations and think about the practice of global citizenship, I try to think of how my opinion could hurt or offend others. An example I would like to cite that represents my personal growth was our class conversation on cultural relativity [886, FOR4 (Citing Informal, Online Forum Discussion), CO2].

Disorientation and Directionality, Interdisciplinarity, and Quality

Upon discovering the trend in disorientation, the next step was to compare the data to the rubric data for patterns and themes. The comparison showed that disorientation tended to happen in learner reflections that were pre- and quasi-reflective in quality – only 2 of the total

disorientation moments happened in a "reflective" stage per the RJM coding – (King and Kitchener 1994, 2004), no more sophisticated than novice on interdisciplinarity (Mansilla, Duraisingh, Wolfe, and Haynes, 2009), but did not show an established pattern across the Oxfam (1997, 2006) data in terms of number of lenses or type of lens.

Another observation related to disorientation and certainty is the use of words like "unquestionably", "undoubtedly", "simply", etc. corresponded with low scores on the King and Kitchener (1994, 2004) rubric. Approximately 15% of the reflections that exhibited disorientation used such verbiage, which is not a majority but enough to make it an observable trend. It is interesting to note when a student was certain without anecdotal backing, using such words as highlighted above, they were not reflecting in a deep manner beyond the pre-reflective stage. This also makes sense in regard to the correspondence between the informal, online reflections being the most frequent disorientation spots, as the learners have not developed a fully formed, critical sense of the new information or emotions they encounter. Learners in the informal, online space interact each week, and new information is constantly being introduced. Thus, learners are continually trying to refit those new pieces of information into meaning perspectives. That is a process that can be messy, non-linear, and need time to develop into a more critically reflective, deeper RJM-scoring reflection.

There were certain students who exhibited a higher amount of disorientation than their colleagues. These students emerged mainly from Cohort 2, and quality and interdisciplinarity were in the low ranges. Average quality for all high-disorientation students did not exceed the quasi-reflective phase. Average interdisciplinarity for these learners were in the naïve range, with one student cresting into the novice range. Finally, the directionality scores for the students shows that students were incorporating 2 to 3 lenses into their reflective writing.

Table 39. Disorientation: Student cases with high disorientation

CO	#	Sex	College	Major	Nat'l	SEE	AT	KK FOR	KKI	MFOR	MINF	Oxfam
1	739	F	CAS	Global Studies	D	-.90	1	3	N/A	1.5	N/A	2
2	268	M	CBE	Business	D	.35	0	1.75	2.29	1.75	1.43	2
2	787	F	CAS	International Relations	D	-	-	4.25	2.5	1.5	1.64	2.5
2	857	F	CAS	Neuroscience	D	-.58	-3	2.5	2.72	1.5	1.18	2.25
2	886	M	RCEAS	Materials Science	D	.81	1	4.75	3	2.25	1.5	3.25
2	955	M	CBE	Business	D	-.29	-1	2.75	2.29	1	1	2

Summary

In summary, learners exhibited differing levels of quality, directionality, and interdisciplinarity when also citing disorientation moments in their reflections. More frequent disorientation moments were observed in the students' informal, online reflections, and many came in relation to other students' introducing information, experiences, and perspectives into the conversation that diverged with held beliefs and prior knowledge.

In the next chapter, the results of the mixed methods analysis of that rich dataset will be further contextualized and explained in relation to the larger body of literature, as well as establishing future directions for research from this initial study.

CHAPTER 5. DISCUSSION, IMPLICATIONS, AND SUGGESTIONS FOR FUTURE

RESEARCH

The purpose of this study was to explore the role of reflection in processing and capturing global citizenship identity development in undergraduate learners. The previous chapter detailed the findings for 3 main research questions and detailed sub-questions. In this chapter, I address the connections between the qualitative and quantitative findings and connect those findings and observations to the larger body of literature. I specifically address the two tracks of implications and discussion that come from this study: the first, the implications for practitioners of global citizenship education and other fields where transformative learning is at the core, and second, the implications for research on transformative learning via the cognitive rational approach, critical reflection, and global citizenship education. Emergent themes in the data include learner agency, disorientation and meaning perspective shift, and the role of informal, online critical reflection as an essential space for processing of learner identity development. I conclude by providing future directions for this research based on the analysis of the data and areas of future growth or current shortcomings that could be strengthened in the future.

Implications for Teaching

This study originated with the idea that reflective writing, in different formats, has the potential to capture and impact the identity development of undergraduate students in the realm of global citizenship. Yet, the type of empirical study to understand that impact in a transformative capacity has been limited. The investigation of first-year citizenship students' reflective writing surfaced themes that have direct impact on instruction in global citizenship, in relation to transformative learning, and applicable to teaching in other fields. The different implications for teaching are explored in depth in the following section.

136

Capturing disorientation in informal, online reflection and dialogue. Disorientation was observed in much of the reflective writing, but more so in the informal reflections. An assumption at the outset implicit in this study was that critical reflection can be done in online, short, informal posts. This assumption held true as students exhibited disorientation, renegotiation of meaning perspectives, and metacognition in their posts. Disorientation moments came in a variety of ways, and matched the disorientation framework that was first proposed by Mezirow (1981; 1991). Table 34 in Chapter 4 highlights the vast difference in disorientation moments for learners in the informal, online discussion forum setting versus the formal, offline setting with students exhibiting 44 moments in all of their formal, offline reflections and 164 disorientation moments in their informal, online reflections. As Mezirow (1991) outlined in his Cognitive Rational Approach, disorientation occurs in learners in a variety of ways, which can be captured through the process of, and evidence within, critical reflection of the learner. To refresh, the figure below (which first appeared in Chapter 2) outlines the stages of the Cognitive Rational Approach as it applies to internal transformative process in a learner.

Fig. 31. Internal transformative process (learner) Via Mezirow's (1991) Cognitive Rational Approach

Disorientation (Step 1)	Critical Reflection on Assumptions (Step 2)	Dialogue (Step 3)	Action (Step 4)

Disequilibrium occurs as a result of experience and/or by confronting information designed to shift learners' meaning perspective (e.g. intercultural education, etc.).	Learners process disequilibrium via critical reflection and through creation of artifacts. Critical reflection includes confronting attitudes, behaviors, and beliefs, as well as challenging assumptions. Learners make meaning or fit information into their prior schema.	Learners engage in peer learning and social construction of knowledge through discussion, discourse, and collaboration on projects (e.g. a lesson plan for a community workshop) or artifacts (e.g. op-ed on a social justice issue). Learners continue to make meaning or fit information into their prior schema.	Learners exhibit evidence of a meaning perspective shift. This shift includes transformed attitudes, skills, and knowledge through action/behavior.

The departure from the Mezirow model, however, is the concurrence of critical reflection and dialogue. From the qualitative analysis of the learner data, a pattern emerged of students citing transformative/disorienting experiences frequently in their online forum postings. They also critically reflected on the forum posts in their formal reflections in ways that conveyed the information was meaningful for them and caused them to shift or reconsider held beliefs. Large amounts of new information was shared between students. These information sharing moments spanned from cultural perspective (international students sharing home perspectives) to name meanings to personal anecdotes showing a new side to held conceptions of their peers.

A more appropriate diagram would display this process as non-linear and cyclical. As the online, informal reflection space allowed, learners were critically reflecting in discourse/dialogue with their peers in a way that was transformative. Disorientation was frequently processed and exhibited in that online, discursive space. Figure 32 shows the reimagined internal transformative process via Mezirow's (1991) Cognitive Rational Approach in its multi-faceted, concurrent, and non-linear process.

Fig. 32. Reimagined internal transformative process (learner) Via Mezirow's (1991)

Cognitive Rational Approach

- Disequilibrium occurs as a result of experience and/or by confronting information designed to shift learners' meaning perspective (e.g. intercultural education, etc.).

- Learners process disequilibrium via critical reflection and through creation of artifacts.

Disorientation

Critical Reflection

Action

Reflective Dialogue

- Learners exhibit evidence of a meaning perspective shift. This shift includes transformed attitudes, skills, and knowledge through action/behavior.

- Learners engage in peer learning and social construction of knowledge through discussion, discourse, and collaboration. Learners continue to make meaning or fit information into their prior schema.

The re-working of Mezirow's concept brings the CRA in alignment with the literature on

transformative learning as a process that is enhanced by dialogue and critical reflection,

sometimes simultaneously. For example, Brookfield (2005) affirms, among other positive

learner development points, that discussion is a medium by which learners can develop skills of

intercultural and social connection, capacity-building, communication, and critical reflection. As

Brookfield's focus in on citizenship education and critical reflection, the applicability to this

139

setting is clear and appropriate. Cohort 2 embodied the hypothesis that reflection in an online forum capacity is persistent, frequent, and challenging, as well as a process by which different constructs can be challenged in a more immediate and socially constructed format (DeWitt, Alias, Siraj, & Zakaria, 2014; Kanuka & Anderson, 2007; Loncar, Barrett, & Liu, 2014). The frequency of disorientation moments in online, informal writing, as well as the prevalence of the agency lens per the Oxfam (1997, 2006) rubric shows that learners where both experiencing that transformative process and seeing themselves as an active participant in that development.

The data clearly showed that learners shared information and experienced disorientation in different ways per the variety of media for reflection. Thus, in modifying Mezirow's Cognitive Rational Approach (1985), I assert that reflection with a dialogue component as a tool that enriches learner development and transformation in conjunction with, and at times integrating, critical reflection, not a detached process of critical reflection and dialogue as mutually exclusive pieces of a model.

Critical reflection and discussion: Peer learning in online forums. Critical reflection in the informal, online setting was a space that met the needs of learners from a social constructivist viewpoint and enhanced their critical reflection practice. In the Vygotskyian tradition of zones of proximal development (ZPD's), student colleagues shared information in informal, online postings sometimes served as a bridge to new understanding of a situation or concept and that next level of depth for a peer (Vygotsky, 1980). Learners in the online, informal setting often shared information that ended up being disorienting either by clashing with learner's held beliefs or introducing wholly new information never considered before for the learners. These types of interactions were only possible through a medium that blended critical reflection and dialogue in a social learning community.

140

As was evidenced in the reflection data shared in Chapter 4, the role of the online, informal reflections for the Cohort 2 students serve as a medium for meaningful exchanges around difficult topics – such as immigration and human rights. The space also allowed learners to share personal experiences and perspectives that enhanced the learning of their peers and the engagement of the whole class.

Technology's advantages as a space for transformation. The aspect of technology as the mediator of learner processing can be crucial to the transformative experience of the students and their individual development. Echoing Palloff and Pratt (2007), the online space can be one that is transformative, if the instructor makes space for meaning perspective consideration and disorientation to take place. Specifically, Palloff and Pratt (2007) state that the online, reflective space is one that if properly structured, can facilitate deep critical reflection and transformative learning. This study has shown evidence that students do engage in that process of critical disorientation and meaning making/remaking that is central to the transformative framework. This is evidenced by the emergence of the disorientation construct in the writings of students in the informal, online capacity, as well as the greater incidence of disorientation in the online, informal setting. Furthermore, the mode of reflective writing in an online setting – the discussion forum – gives the learners a space to discuss and confront difficult issues regardless of their level of shyness or inhibition in speaking in class (Lapadat, 2002; Suler, 2004). Thus, the willingness to share moments of disorientation or grappling in the informal, online space could be indicative of that phenomenon of online disinhibition.

Take, for instance, a discussion between students regarding the process of the visa lottery through the United States Citizenship and Immigration Service (USCIS). After an experiential trip to the USCIS headquarters, students discussed on the forums information they had learned

141

during their visit. One student exhibited confusion about the rules of the visa lottery, and affirmed that such a lottery could, in fact, result in a loophole for terrorists to enter the country. Another student, whose family had immigrated to the United States through such a lottery, shared their experience and understanding of how the rules and regulations applied to their circumstance. In this example, one student had the comfort to share their truth and understanding of a situation, relayed that perspective in the forums, and was met by another student who had more information, serving as the more knowledgeable other in the situation but also being in a space that was safe for students to air their views without the immediacy and embarrassment of such a misunderstanding happening in a face-to-face setting (Hollenbaugh & Everett, 2013; Suler, 2004; Vygotsky, 1980). This interaction lead the first student to another depth of understanding, and reinforced the second student's ability to respectfully and clearly state their perspective.

Through the space of the informal, online reflections, learners of all levels of social comfort can share and stay engaged in discussion. Mishra and Kotecha (2015) found that computer-mediated engagement for undergraduate students is particularly useful as digital natives tend to be more jaded about traditional student engagement practices, as well as allowing them to focus their particular perspectives in a way that is productive and communal. Harkening back to Senge's (2014) learning community, as well as the work of Lave and Wenger (1991) and Palloff and Pratt (2007), the transformative space of online learning communities is evident. It allows for socialization with more knowledgeable others and construction of knowledge through interaction, and does so in a manner that can be persistent, synchronous, and asynchronous.

Teaching Global Citizenship: Encouraging Disorientation and Processing Meaning Perspective Shift

Informal, online reflection and global citizenship. Through the online forums, learners had opportunity to frequently reflect on their experiences and information through the global citizenship coursework, rather than a once-per-month formal paper. For a practitioner planning reflective experiences, the ideal would be to incorporate multiple reflective components to elicit differing perspectives both from individual students and within the different frameworks of an individual student's mind. The data from this study shows that the informal, online reflection captures frequently the disorientation experienced by learners throughout the semester, while the formal, offline reflection displays their ability connect the disorientation and learnings to broader themes of global citizenship education (as evidenced by the multiplicity of lenses in formal, offline reflections). Further study could isolate the difference between formal and informal writing – comparing offline to offline, and online to online – in an effort to further clarify which has a greater effect, the formality or the public nature of the work.

A central feature of quality global citizenship education is the space, time, and ability to grapple with the undefined, amorphous nature of global citizenship, its tenets, and the characteristics of a good global citizen (Heater, 2004; Ibrahim, 2005). Thus, for our participants, the reflective writing was such a space to grapple and reconstruct identities. This process did manifest itself in different ways between the formal, offline reflections and the informal, online reflections. In the informal, online reflections for Cohort 2, an interesting pattern in the breakdown of the lens type was observed. For the formal, reflections, the largest percentage of lens type was coexistence (39.61%) with agency tied for third most observed at 17.39%. In Cohort 2's informal, online reflections, agency was observed most frequently (43.93%). This

143

could indicate that the informal, online reflections were a space for students to engage in that process of identity development in a more immediate, personal, processing way than the formal, offline reflections.

Another important aspect of the first-year experience is that students are struggling to move from high school to college writing. Thus, they are learning when the use of "I" is appropriate, how to write beyond the five-paragraph essay, and honing more sophisticated writing skills (Downs & Wardle, 2007; Tang & John, 1999). Including a space in the course to not be graded for punctuation and grammar, where students are encouraged to share freely and honestly, is a benefit to aid in this process of identity development and creation (Kajder, Bull, & Van Noy, 2004). The online forums provided learners a space to share without fear of being graded, thus creating a space of processing without penalty.

Global citizenship and critical reflection: Revealing citizen agency and developing the civic self. A theme that emerged through constant comparative analysis and through the Oxfam (1997; 2006) rubric coding was citizenship education as an engaged, active process. Students incorporated into their reflections anecdotes and observations on citizenship as a verb to be done rather than a noun to be understood. This is an important observation as much of the literature in the field of service learning, civic engagement, and citizenship studies are finding that while these experiences are transformative and compelling for the students, they often do not translate into individual identity development as a lifelong citizen (Battistoni, 2000; Saltmarsh, 2005).

Through critical reflection and dialogue – two steps within Mezirow's Cognitive Rational Approach (1981, 1985) – learners in the global citizenship classroom develop their learner identity while practicing these necessary tenets of democratic, engaged citizenship. Through

Cohort 1 and 2's reflective writing, the process by which students were creating that identity and bringing lenses of global citizenship education into their work and writing was observable. In formal, offline reflections, learners frequently used the lens of social justice and coexistence. While social justice and coexistence are socially and morally acceptable frameworks that are easily understood, the real "work" to operationalize those ideals are difficult and problematic (Furman & Shields, 2005). Thus, the frequency of a code that indicates the "work" aspect of global citizenship – agency – is an interesting insight into the way in which learners express their grasp of the individual level of citizenship development. Agency was more frequently exhibited in the informal, online writing of the Cohort 2 students. Thus, it is observed that learners were more frequently grappling with issues of their own identity and activity through themes of agency through the informal, online reflections. It could then be observed that the online forums that aided in critical reflection and dialogue were a space for identity processing in a way that the formal, offline reflections were not.

Rhoads (2000) ties the issues of service learning (a central component of global citizenship education), otherness, and citizenship education to the creation of the "caring self", a state in which learners are fully-embedded, active citizens exercising respect, dedication to coexistence, and empathy. As Saltmarsh (2005) attests, service and community-based learning has been a beneficial pedagogical tool and transformative experience for students, yet largely the promise of civic engagement has not been fulfilled. Learners who have experienced these high impact, community-engaged experiences do not necessarily develop an identity as a political being, thus remaining equally detached from political life in their adulthood as those who had no community-engaged experiences. They also can sometimes simply "miss the point" of the experiential, service, or intercultural learning moment and instead focus it inward as a singular

event for their own benefit (Kahne & Westheimer, 1996; O'Grady, 2014; Said, Ahmad, Hassan, & Awang, 2015). Students do not, as educators had hoped, develop a strong identity as a civic or political being through service alone.

Research has indicated that citizenship education with a reflective component, however, does hold more potential for long-term civic engagement and learner development as an active citizen (Battistoni, 2014; Colby, 2007; Saltmarsh, 1996). The prompting of the reflection is key, as it specifically asks students to envision themselves as advocates, taxpayers, voters, and, of course, citizens. Farmer, Yue and Brooks (2008) discovered that if not properly guided or prompted, undergraduate students' written reflections were informal, non-academic, and shallow. Ash and Clayton (2004, 2009) established in their creation and research of their DEAL Model that learners have deeper, generative learning experiences that are evidenced in their reflection when guided to articulate their learnings. By using structured reflective practices, learners can develop a stronger civic-political identity that translates into active citizenship – local and global.

Global citizenship and otherness as disorientation. In turn, for undergraduates pursuing global citizenship education, the course of study or experiences planned in such a curriculum should provide ample opportunities to experience disorientation, as well as process those new meaning perspectives in ways that develop their sense of civic self. Otherness and the appreciation for diverse voices is another benefit to the use of online, informal reflections in the global citizenship education sphere, as learners are confronted with otherness within their peer group via the forum dialogue.

Mead (1932) puts forth the sociological theory of otherness as it relates to constructed social identity in relation to the society at large. In the construct of global citizenship education, educators are intending for students to undergo such a change to appreciate otherness in the

146

forms of critical media literacy, intercultural communication, and appreciating multiple voices. As Palmer (2010) asserts, appreciation of otherness and the holding of tension between diverse voices is an essential component to active citizenship and healthy democracies. For the global citizenship learners, having a vehicle by which they can interact with, value, and understand otherness is an essential component to their individual identity growth as lifelong citizens.

As a global citizenship educator, the value of the informal, online reflections and discussion was as a mediating tool for becoming aware of otherness, appreciating otherness, and then rebuilding identity based on the interface with otherness. The impact of the story of otherness and multiplicity of perspectives was clear on the students. In the Adichie piece, she shares a story of her own disorientation around held stereotypes and assumptions. In the companion online forum, students explored their reaction to her story and their own experiences of stereotyping in their lives. This lead to some crucial reassessments, perspective shifts, and, in the case of learner 597, a reaffirmation of the unified "human" story but a recognition of one's role as a character in a large cast that is the world.

Teaching in fields beyond global citizenship: Facilitating identity development

The ability to use this framework to understand identity development in other educational fields that is centered on transforming the person, not mere content knowledge memorization and mastery. Thus, any post-secondary, adult learning endeavor that aims to transform an individual's identity as much as relay content could benefit from these lessons of critical reflection and transformative process. Those studying to enter into professions that have a strong identity component such as doctors, nurses, and teachers might find similar benefit to prompted critical reflection. As a more general lesson to be extrapolated, Cravens, Svetina Nabergoj,

147

Ulibarri, Cornelius and Royalty (2014) found that similar repetitive, critical reflection for

doctoral students helped develop identity and creative confidence in doctoral students.

Stoszkowski and Collins (2014) found that the online community of practices in athletic

leadership development that include a discussion forum element allowed for processing of

leadership skills and stronger mentoring towards a coach identity for learners.

Implications for Research

The following section will outline the repercussions of this study on research methods for

future exploration of global citizenship, transformative learning, and related study of post-

secondary learner identity development.

Appropriateness of Study Design

As was mentioned in Chapter 3, Janesick (2011) cites the process of qualitative

researchers' inference-making, intuition, and unexpected information will emerge throughout the

process that will in turn lead to a "richer and more powerful" explanation of the connections,

causality, and context of findings (p.148). Through the combination of qualitative and

quantitative data, with a heavy emphasis on the qualitative, a story emerged that helped situate

the data as it relates undergraduate identity development. The quantitative information gathered

gave context to understanding the starting points of our study participants, and ensure that they

were, indeed, comparable.

As a natural quasi-experiment, the collection of data from many points of development

for the leaners, as well as a variety of assignment types lead to a robust set of information to

analyze for patterns, themes, and learnings. Ryan and Bernard (2003) state themes should be

found in the data by looking for repetition of ideas, terms, examples, and emotions conveyed by

participants, as well as notable omissions that the researcher would expect but not observe.

148

Packer (2011) does caution researchers that themes, while they exist in the data, are still the product of interpretation by the researcher and must be consciously guarded from one's biases and subjective lenses. With this in mind, the thematic analysis of the data was done with a framework in place to let the data speak, without overly processing or reaching for conclusions that were not definitive. The following section will explore those perceived themes clearly, and with voice to both the evidence presented in their work, and honest assessment of alternate explanations, if they exist.

Instrumentation: Measurements and Rubrics

After completing the analysis of student data to observe patterns, trends, and themes, it became apparent that the different rubrics were effective in different measure. The following section will delve into each metric's efficacy and usefulness to the study as it pertains to global citizenship identity development.

Directionality. Oxfam (1997, 2006) was a highly effective measure to understand the ways in which the learners were connecting with and understanding the knowledge, skills, and attitudes of global citizenship. A notable observation, however, that will be detailed further in this chapter is the distance and detachment that might not be observable through the Oxfam rubric alone. Students exhibited different patterns of lens usage between formal and informal reflections, and in different ways between Cohort 1 and Cohort 2. While coexistence was a prominent focus in the formal, offline writing for both Cohort 1 and Cohort 2, the overall breakdown of lens themes differed between the two cohorts.

While direct causality cannot be stated, the observed pattern of a greater number of multiple lenses for the formal, offline reflections of Cohort 2 than Cohort 1 might indicate a relationship between the informal, online reflective practice with the formal, offline reflections.

In addition, the number of lenses applied to Cohort 2's formal, offline reflection exceeded the number of lenses in their informal, online reflection. This could be explained either by the length of assignment or less quality of reflective practice in the short-form reflections. Overall, the Oxfam rubric was a robust measure that did give an indication of differences in global citizenship lens development. Learners exhibited differing levels of lens incorporation, as well as different types of lenses, between their formal, offline and informal, online reflections, thus providing different insight into their global citizenship identity development.

Interdisciplinarity. The interdisciplinarity rubric from Mansilla, Duraisingh, Wolfe, and Haynes (2009) proved to be a thin measure that did not uncover connections between learner reflections, both formal, offline or informal, online. There was no correspondence with time, nor did it provide a clear understanding of how students were building their interdisciplinary skill set based on this rubric alone.

For the purposes of this study, the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric was not the best use of metric to assess the critical reflection. Interdisciplinary was theorized to appear frequently and meaningfully in learner's reflections, yet that was not the case. Learners hovered in the low end of the Mansilla, Duraisingh, Wolfe, and Haynes (2009) measurement, and the students largely did not connect themes from varied disciplines. If there is any benefit to the online, informal treatment for interdisciplinarity, it either does not show up in this measurement or the process of informal, online reflection must be refined to specifically target interdisciplinary growth. Another hypothesis is that interdisciplinarity can be seen as a habit of mind that might take much longer to cultivate than could be observed over one semester. While there were times when students exhibited apprentice or mastery level interdisciplinary writing, this was not observed frequently in the first year writing

150

With Cohort 2 peaking at the end of semester, in every rubric, the data did establish a pattern of growth or trend of upward mobility. It could be argued that over time, as with the other measurements, Cohort 2 established a burgeoning pattern of mind that more deeply considered issues more critically over time, ending in a peak in formal, offline reflections. However, the gain was so slight and this pattern did not match the informal, online reflections, that a true conclusion cannot be drawn. I recommend not using the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric for this particular context – first year, one semester reflective writing – and instead use it for longitudinal or multi-level (e.g. sophomores vs. seniors, etc.) writing comparisons.

Quality. The Reflective Judgment Model of King and Kitchener (1994, 2004) was successful in capturing quality of reflection in the writing of the undergraduate student participants. The rubric effectively measured the depths at which learners were considering their experiences, content, and new meaning perspectives. However, this was not a complete enough measure to fully capture the disorienting experiences and process by which learners grappled with in the reflections. The scoring for this rubric varied widely across cohorts and even within individual learner, but despite those variable scores, learners exhibited disorientation and that struggle with discomfort caused by new or conflicting experiences or knowledge acquisition. For instance, despite a low score on the RJM (King & Kitchener, 1994; 2004), students still exhibited disorientation that was meaningful and showed a transformative meaning perspective shift. Finally, it is important to note that the use of the three overarching categories of reflection type – pre-reflective, quasi-reflective, and reflective – are a much more clearly defined framework than the full 7 level model, as it delineated phases of learner depth concretely. King and Kitchener (2004) reworked the model to emphasize those three phases, and conceptualizing

the data in that way was much more useful than the full 7 levels that were too nuanced to effectively separate and code.

Disorientation. For the students in both Cohort 1 and Cohort 2, disorientation came in the form of new information from other students or content delivery, realizations of connections not previously made, and/or emotional discomfort experienced as a result of experiential learning. The disorientation that was observed through the informal, online reflections in some ways matched the cognitive rational approach disorientation framework given by Mezirow (1991), yet it also diverges as the critical reflection and dialogue stages were found to overlap and compliment learner processing.

Observable patterns in the disorientation were also evident as constant comparative analysis took place. Students articulated well when they were realizing they were "taking for granted" an experience, tradition, process, or perspective as solitary or infallible. Mezirow (1990) affirmed that no orientations were simply a result of individuals "taking for granted" information. Rather, he states, "Our habits of expectation are not merely taken-for-granted actions or reactions that tend to repeat themselves. They are dispositions and capabilities that make up our everyday involvement within situations that "make sense." John Dewey saw habit as a structure of experience that enables one to make sense of a situation and consciousness itself as a possibility occasioned by our acquired habits of involvement. "Phenomenologically, the meaningfulness of present experience is an activity of habit, a 'tension' between habitual grooves of sensitivity and the world, through which self and environment are simultaneously trans-formed" (Ostrow, 1987, p. 214-216). Believing, valuing, perceiving, thinking, and feeling are all affected by these patterns of sensibility and stylistic preference with which we interpret the meaning of objects and events.

152

Observing "transformation" in critical reflections: The benefit to short, frequent reflections

Another qualitative theme that emerged from the constant comparative analysis was the more immediate processing of experiences and information based on the concurrent running of online forums along with the curriculum. As students experienced new inputs directly through the course, they had the opportunity to show growth weekly and in direct relation to the material they were given. Thus, a difference in the short, frequent versus long, widely-spaced reflection formats was observed from the view of a researcher. These frequent reflections allowed an abundance of data to be generated, and with that large amount of data, the ability to truly

Beyond the specific measurement on each of the rubrics, the critical reflection done in the capacity of informal, online forums did capture moments of disorientation, growth, and the processing of those moments. It is fitting that the students vacillated between stages and phases, as they were being continuously fed new information, experiences, and opportunities for disorientation. Taylor (2000) affirms that the outcome of transformative learning is a result developmental shifts not a definite endpoint, but a continuum where learners can progress and revert, and with that gain the metacognitive awareness to accept that process as transient. Learners are in a constant state of remaking and refitting information to understand their relationship to the world.

Observations on reflection: Guided reflections and evidence of learner growth

Students having guidance on expectations for reflections, while having the agency and freedom that comes with self-directed learning, are essential to eliciting critical reflections that are an accurate depiction of learner growth and observable processing of new understandings. Sargent's (2014) cross-disciplinary study found that guided reflection by skilled facilitators

yielded observable results in terms of learner engagement, and that learner stage (as measured by college experience/credit hours) was not a predictor of critical reflection. In Ash and Clayton's (2004, 2009) work on critical reflection, they affirm that guided reflection, and in particular prompting learners to articulate their learning, promotes an iterative habit of the mind that deepens learner experience but also provides observable proof of articulate learning and development. Cisero (2006) found that reflective journal writing, a repeat exercise akin to the online, informal writing practice, affected course performance positively for undergraduates.

Different types of reflection can elicit varying degrees of reflective thought. Students reveal different levels of sensitive information in the informal, public format versus the formal, private format. However, it is important to note that depth of reflection in informal settings is not indicative of the "disorientation" moments they shared within those posts. Learners who scored low on King and Kitchener's (1994, 2004) rubric frequently disclosed they were grappling with disorientation in their informal, online reflections.

Furthermore, the psychometric survey data did not reveal a correspondence that directly connected growth on the scales with their reflective writing. Learners who scored high in their initial ethnocultural empathy pre-survey (Wang et al., 2003) did not significantly gain and sometimes back-slid in their scores in the post-test, despite insightful, quality reflections. This could be explained by learners developing on continuum (e.g. identity development as a non-linear process) and grappling with issues that could test and reorient their meaning perspective (e.g. disorientation based on new information or experiences). This raises a question about self-selection of student participation in such programming such as global citizenship and an already strong sense of ethnocultural that might predetermine a student's willingness to participate. Finally, a global citizen can be highly critical of their own identity and that can manifest in their

reflections and their survey scores. Per Senge (2014), learners who have the capacity to engage fully in a learning community develop on a continuum and exercise critical self-reflection that results in gains and backslides in individual learner characteristics. Such reconceptualization of identity in the transformative sense takes place in that dialogue/reflection stage per the cognitive rational approach, as learners relate to the larger group, reflect inward, and reform their identity (Mezirow, 1981; 1991).

Suggestions for Future Research

Rubrics to assess/identify disorientation in critical reflection

The King and Kitchener (1994, 2004) rubric did not capture disorienting experiences as was predicted before undertaking the coding process. Disorienting or transformative experiences did not directly correlate with a more qualitative, deep critical thinking level as per the framework of King and Kitchener. Often times grappling with new or observed concrete information, the students would think deeply about how the new information fit into their free morning but did not go to a level of understanding where the information is coming from.

For example, Learner 886 exhibited many examples of understanding the information on the level of RJM5 or RJM6. Within those RJM 5 and 6 paragraphs in their formal reflections, the learner did not exhibit periods of disorientation. It was when the learner displayed an understanding of the information at an RJM1 or 2 level that disorientation happened. In learner 886's reflection from week 2, they state "I would tell myself that I could make a difference until I possess the knowledge to make large changes. However the "tour to cure" race changed my perspective." The learner then goes into how when presented by concrete information they struggled to reframe their meaning perspective on personal agency and change.

155

In instances where the learner displayed understanding of the material at and RJM5 or 6 level, there was a tone of certainty and/or understanding of the knowledge possessed that was more definite, inclusive, and reflective. Consider the example of learner 886. In their reflection number three in response to another student, the learner states "it makes me think that listening may be the very essence of human existence because the ideas we hear shape the opinions we have in the future."

Per King and Kitchener's (1994, 2004) rubric guidance, RJM1 as embodying the statement "I know what I have observed", it makes sense that the RJM1-level thinking, direct experiences, are the triggers for disorientation. That is, learners are taking information or experiences at their face value and being forced to reconsider or learn based on that new input. An example of this can be seen in learner 268's informal, online reflection from week 2:

> "The biggest shock for me was that such extreme poverty and adversity could exist in our own country. The multitude of Navajos on the reservation had little food and water, malnutrition, poor education, ramshackle homes and a dangerous environment to live in. We were told by many that drug lords control much of the reservation, as violence and crime are prevalent amongst the community: for this reason, we ended our work at 5pm everyday [sic], because when the sun starts to go down, that is when the area becomes unsafe. Even though I have travelled to the same place twice now, I still feel as if I have gone abroad: I never would have thought that such living conditions still existed in the United States."

While conducting this research, other avenues for research opportunities became apparent as the researcher grappled with new questions that emerged. For instance, throughout the coding process, what became clear was the importance of capturing moments of disorientation that were not captured through the process of coding for the three rubrics - interdisciplinarity, directionality, and quality. While the use of those rubrics gave appropriate insight for the questions of measurement and ability to analyze reflective writing, the transformative process of disorientation and other issues of identity development could be captured in different ways.

156

Thus, in future experimentation with the data collected the researcher plans to formulate a transformative rubric that could in fact capture such experiences and disorientation

This does not mean that the experiment was not correct, nor was it the wrong choice of instrumentation to address the research questions. While the King and Kitchener (1994, 2004) qualitative rubric gave a clear indication of the quality of reflective writing, it did not capture the disorientation and transformative nature of individual reflective writing that was revealed through a constant-comparative coding of the work.

High-Impact Practices and Varied Critical Reflection

Another area to further explore would be the specific ways in which embedded high-impact practices could be influential in the transformative development and meaning perspective shift for learners. Hatch (2012) emphasized the need for more research to be done on the connections between high-impact practices and learner outcomes. Future directions for this research would more explicitly address the high-impact components of the global citizenship experience and their moderation through critical reflection and writing.

Civic Identity of GC Alumni and Critical Reflection

Another direction for this research to explore is the relationship between discussion and student outcomes around civic engagement. As cited above, the promise of high-impact, community-based practices has not necessarily translated into long-term citizen identities. A future direction could entail surveying students in these cohorts, as well as the 8 cohorts prior to them, and assess longitudinally how they have maintained a civic presence.

Otherness in Critical Reflection and Democratic Citizenship

Another aspect of this research that could be explored in the future is the role of otherness in student writing and how students appreciate and acknowledge otherness. Mead (1932) found

157

that social identities are created through interactions with others and then the reflective process of orienting one's self in the larger social fabric. Otherness, and the introduction of differing forms of information – either conflicting information, new intercultural experiences, alternative voices – is akin to the disorientation that is the catalyst for transformative learning (Mezirow, 1981, 1985). While otherness was observed in the writing of the students, a specific, intentional study of the modalities of writing and expression of otherness, as well as a more structured comparison to the scales of empathy that are available could be an interesting exploration in future.

Focusing on Social Constructivist Aspects

During the analysis of the informal, online reflections for Cohort II, an interesting pattern emerged that gave rise to a correlation opportunity, but was not within the scope of this study. It was informally observed that some students would repeatedly interact or comment on the same students' posts, whereas others commented on a wide variety of postings. In addition, timestamps indicated that the forum postings were a mix of continuous conversation and the last-minute "three post" students.

Ambiguity tolerance, an important component of the global citizenship puzzle, is about being able to handle new experiences, new voices, and uncertain situations. It would stand to reason that such an uncertain situation would be interacting with someone different without being sure what they will say. Thus, the next step would be testing that hypothesis by correlating frequency of new interactions with scores from the AT-20. This was not part of the research questions, but could be an interesting perspective to explore in a future study.

Final Thoughts

158

Higher education stands at a crossroad as educators, administrators, and learners debate modes of delivery, purpose, and the value proposition (Sander, 2013). As these debates have raged, an increasing number of institutions are weaving into their purpose narrative the essential experiential and international experiences for students, as well as the mission to develop the individual identities of students. We find ourselves in a time where political forces question the role of the academy and its relationship to the wider world. Initiatives like global citizenship education make more robust, relative, and rounded the higher education endeavor for students living in an increasingly global world. Furthermore, transformative learning in global citizenship education develops learners' civic identity, agency, and meaning perspective as engaged citizens.

Critical reflection, in all of its varied forms and modes, can be leveraged as a powerful tool to support the development and capture data for assessment on student growth across disciplinary fields and high-impact practices. This study has added more credence to the perspective that critical reflection is both a necessary tool for processing and a rich dataset for learner development. It also showed that learners benefit from varied types of reflection and dialogue, and the leveraging of both of those processing tools can lead to more observable disorientation and identity development in undergraduate learners. Thus, the role of critical reflection in higher education, and beyond, remains an essential component for learner development as they make sense of their lives and their relationship to the wider world.

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161

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Appendix A. Quantitative Instrument Descriptions

Ambiguity tolerence: MacDonald, A. P. (1970). Revised scale for ambiguity tolerance: Reliability and validity. *Psychological Reports*, *26*(3), 791-798.

The AT-20 (MacDonald, 1970) is a survey instrument that gauges the ability of participants to handle ambiguity.   The participants for MacDonald's study were male and female undergraduates at a private, liberal arts college in the eastern United States (N=789). The questions posed are hypothetical scenarios where the respondent should give their preferences on situations of uncertainty, qualifying each experience as either preferable or not preferable. The scale is a modification of 16-item Rydell-Rosen (1966) ambiguity tolerance scale. After adding the four items to this AT-20 scale, the reliability was increased from .64 to .86. The scale has demonstrated strong reliability (r =.86, p < .01) and a retest reliability of .63 for a 6-month interval.

The AT-20 has been used in a wide variety of empirical research and continues to be a useful instrument in research in the fields of psychology, business, and education both in the US and around the world (Furnham & Marks, 2013). Van Hiel, Onraet, and De Pauw (2010) conducted a meta-analysis on a large dataset (n=29,209) using the AT-20 as the ambiguity tolerance measure to compare outcomes for rigidity, cognitive style, and political beliefs. The scale has been used to survey ambiguity tolerance in business students and found that those who had high ambiguity tolerance were more conscious of future consequences, but also more prone to unethical behavior (Ferriera, Pinto, Santos, 2013). Triki, Nicholls, Wegener, Bay, and Cook (2012) used the AT-20 to survey accounting students and found that low ambiguity tolerance could negatively impact students' performance in traditional accounting education.

Ethnocultural Empathy: Wang, Y.W., Davidson, M. M., Yakushko, O. F., Savoy, H. B., Tan, J. A., & Bleier, J. K. (2003) The scale of ethnocultural empathy: Development, validation, and reliability. *Journal of Counseling Psychology, 50*(2), 221-234.

The Scale of Ethnocultural Empathy (SEE) is a survey instrument that is used to analyze individuals' attitudes towards cultural differences (Wang et al., 2003). The reliability of the SEE has been tested with undergraduates at Midwestern universities (n=373) at ranges between r = .73 to r = .91, p < .01 and has a retest reliability of .76. The SEE also has subscales built in to the measurement for more detailed understanding of which realms subjects gain or lose aptitude. The subscales within the SEE are emphatic feeling and expression, emphatic perspective-taking, acceptance of cultural differences, and emphatic awareness. Validity was established through confirmatory factor analysis (Wang et al., 2003).

In order to assess retest-reliability of this scale, the study was rerun twice by the researchers. Reliability and internal consistency for the SEE was measured by alpha coefficients for the overall scale and each subscale. The results of the reliability tests for the total survey and subscales are outlined in the table below.

Rasoal, Jungert, Hau, and Andersson (2011) developed and established a Swedish translation of the scale, which was tested on a sample of participants (N=788) and found strong internal

consistency. Özdikmenli-Demir & Demir (2014) also developed and tested a version in Turkish with 328 undergraduate students in Turkish universities. The researchers report high internal consistency and test–retest reliability scores. A comparison of translated versions and their scores for internal consistency (Cronbach's α) are captured in table A below. Le, Lai, and Wallen (2009) used the SEE to test attitudes of ethnic minority and immigrant youth (N=338). They found that the SEE is a reliable predictor of acceptance of multiculturalism and that psychological growth and flourishing could be facilitated by multicultural school settings.

Table A. Reliability and internal consistency for the SEE (Wang et al., 2003) in translated versions

	Original	Turkish	Swedish
Scale	Cronbach's α (Wang et al., 2003)	Cronbach's α (Özdikmenli-Demir & Demir, 2014)	Cronbach's α (Rasoal, Jungert, Hau, & Andersson, 2011)
SEE	.91	.93	.88
EFE (subscale)	.89	.87	.94
EPT (subscale)	.75	.85	.76
AC (subscale)	.73	.85	.62
EA(subscale)	.76	.81	.71

Appendix B. Qualitative Instrument Descriptions

Interdisciplinarity Rubric: Mansilla, V. B., Duraisingh, E. D., Wolfe, C. R., & Haynes, C. (2009). Targeted assessment rubric: An empirically grounded rubric for interdisciplinary writing. *The Journal of Higher Education, 80*(3), 334-353.

The rubric created by Mansilla, Duraisingh, Wolfe, and Haynes (2009) is used to systematically analyze student writing in courses which are inherently interdisciplinary. The rubric is designed both as a tool for instructors' grading (when assessing work that crosses disciplines) and as an instrument for researchers' investigation (when seeking to identify qualities of the writing that exhibit interdisciplinarity and the level at which students are in understanding and processing interdisciplinary material: naïve, novice, apprentice, and master).

The authors described their validation process occurring in three phases. First, they drew a convenience sample of essays (n=84) across first year, sophomore, and senior interdisciplinary coursework. Second, they segmented the data, drawing a stratified random sample (n=40) representing all three levels of students. Independent scorers from two different institutions used the rubric to assess the first set of essays. The rubric was then calibrated based on disagreements between reviewers and discrepancies settled by consensus. Finally, the remaining 44 essays were independently scored by reviewers from one institution, and inter-rater reliability (IRR) was then calculated based on the number of judgments in agreement divided by total number of judgments (IRR = 83.5%). The researchers conducted Four 4x1 ANOVAs for each dimension of the rubric to test for construct validity and instrument sensitivity. Seniors were found to score significantly higher than freshman and sophomore learners, as was hypothesized by the researchers.

Mansilla, Duraisingh, Wolfe, and Haynes' (2009) rubric has been cited by 89 peer-reviewed publications. Of those 89 publications, there are a number that used the rubric for empirical research to test hypothesis and further validate the rubric. McKenney, O'Brien, Naasz, Teska (2011) used the rubric to assess the integration of interdisciplinary concepts in an environmental studies capstone. The rubric has also been used to understand the integration of arts into curriculum with interdisciplinary connections between as drama, dance, and music (Overby, Glassman, Haislip, Luzier, Schotz, & Thomas, 2013). Borrego and Newswander (2010) applied the rubric to proposals written by participants in the National Science Foundation's Integrative Graduate Education and Research Traineeship (IGERT) program (n=59) to assess depth, interdisciplinary thinking, and skills integration.

Reflective Judgment Rubric: King, P. M., & Kitchener, K. S. (1994). *Developing reflective judgment*. San Francisco: Jossey-Bass.

King and Kitchener (1994) developed a rubric to assess the development of reasoning and reflective thinking in learners of adolescent through adult stages. Dewey (1933) described reflective thinking as a necessary tool for learners when complex problems without certainty present themselves. King and Kitchener's (1994) model breaks down reflective judgment into seven distinct stages, or epistemological assumptions. The three overarching categories of this model include pre-reflective reasoning (knowledge created by an outside authority figure, taken

as rote), to quasi-reflective reasoning (acknowledging and grappling with uncertainty about learned knowledge), and reflective reasoning (ability to make judgments despite uncertain knowledge, but constructing assertions based on the best and most valid data).

In terms of validity and reliability, the rubric has emerged from a 30- year grounded-theory development validated by applying their rubric to hundreds (maybe thousands) of pieces of writing. In 1981, they developed the named model – the Reflective Judgment Model – and it has been empirically tested in studies first in King & Kitchener (1981) and in numerous studies since. King & Kitchener (1981) studied high school, college, and graduate school students (N=60) and found significant differences (p < .001) between the age groups in their quality and depth of reflective writing. In King, Kitchener, Davison, Parker, and Wood (1983), researchers validated the model with a two-year longitudinal study of undergraduates (n=59) that empirically tested and verified that the stages and sequence of the reflective judgment model was supported for the seven epistemic assumption shifts.

Global Citizenship Knowledge, Skills, and Attitudes Rubric: Oxfam, A. (1997). *A curriculum for global citizenship*. London: Oxfam GB.

Oxfam (1997, 2006) has created a preeminent, frequently cited curriculum outlining global citizenship knowledge, skills, and attitudes. The curriculum emphasizes content knowledge such as social justice and equity, skills such as critical thinking, and attitudes such as respect for diversity. The table below (table 3 in the proposal, table B below) outlines these KSAs and the attributes one would seek in the reflective writing of individual learners. Inclusion or absence, as well as frequency, of such KSAs would be indicative of GC learner growth.

Table B. Knowledge, Skills and Attitudes for Global Citizenship Competency

Knowledge and Understanding	Skills	Attitudes and Values
Social justice and equity	Critical thinking	Sense of identity and self-esteem Empathy
Diversity	Ability to argue effectively	
Globalisation and interdependence	Ability to challenge injustice and inequalities	Commitment to social justice and equity
Sustainable development	Respect for people and things	Value and respect for diversity
Peace and conflict	Co-operation and conflict resolution	Concern for the environment and commitment to sustainable development
		Belief that people can make a difference

(Oxfam, 1997, 2006)

The validity of the Oxfam (1997, 2006) rubric within this research context is categorical: they form the basis of a widely accepted, frequently cited global citizenship curriculum. The Oxfam guidelines have been and continue to be used for global citizenship curriculum development and

198

is cited repeatedly in other studies as the gold standard (see: Ibrahim, 2005; Zahabioun, Yousefy, Yarmohammadian, & Keshtiaray, 2012; Landwehr Brown & Gibson, 2012). In terms of the reliability and authority of the guiding measures, the Oxfam guidelines have been developed over decades of work and best practices in GC and development work. Their qualifier in the 2006 rewrite of the curriculum states that, "Oxfam's Curriculum for Global Citizenship is based on years of experience in development education and on Oxfam's core beliefs." It is a type of curricular validity that parallels the work of Wiggins & McTighe (2005) and their Understanding by Design (UbD) model. The guidelines set forth by Oxfam (1997, 2006) are the knowledge, skills, and attitudes that the UbD approach would reveal to be the goals of global citizenship education for student development and knowledge creation. This study uses the curricular guide and resulting KSAs that are outlined by Oxfam to assess how the students are exhibiting these traits in writing, whereas dozens of other scholars have used the guideline to show that this is the curriculum that should guide GC classrooms.

Appendix C. Reflection Prompts and Reflection Schedule

Assignment Dates

The following table (Table C1) outlines the full schedule of assignment dates for both formal, offline and informal, online reflection. The dates were spaced in the same intervals between both cohorts for the formal, offline reflection.

Table C1. Dates of assignments for Cohort 1 and Cohort 2

Cohort 1&2 (Formal)	Cohort 1	Cohort 2	Cohort 2 (Informal)
FOR1	9/25/2011	9/23/2012	9/4/2012 9/9/2012 9/18/2012
FOR2	10/24/2011	10/28/2012	9/26/2012 10/1/2012 10/10/2012 10/21/2012
FOR3	11/20/2011	11/18/2012	10/30/2012 11/11/2012 11/20/2012
FOR4	12/16/2011	12/14/2012	11/20/2012 11/27/2012 12/02/2012 12/14/2012

Reflection Prompts, Formal, Offline Reflection (Both Cohorts)

Paper #1: Global Citizenship: A Grassroots Movement or Top-Down Ideology?
Paper prompt: Based on the readings done so far and on your own personal experience, do you think that "global citizenship" is best exercised at the grassroots level or at the higher, governmental level? Or are both dimensions equally important? If so, why, and if not, why not? Do formulate your thesis clearly and make sure you support it with strong arguments and compelling examples.

Paper #2: Comparing and Contrasting Views of Citizenship
Throughout history, some have claimed that the concept of "citizenship" should be based on rigid territorial boundaries. Others maintain that the idea of a boundless and flexible "global citizenship" is a viable one. Compare and contrast the opposing views from class discussion, readings, and your own experience and research. Elaborate arguments in favor or against them. Make sure you formulate and defend your own personal view on the issue as an arguable, evidence-supported thesis.

Paper #3: Transnational Issues and Global Citizenship

Transnational issues are problems that go beyond the scope of a country's borders, affecting the larger global landscape. Choose a current event or global problem that is affecting the world today and unpack it in your essay. Explain why it is a global problem, give an overview of how it affects other nations or the larger global system, and identify solutions (grassroots, governmental, or a combination) that would mitigate this problem. You have a wide variety from which to choose, whether it is environmental sustainability or the violence in Syria and beyond. Choose something of interest that has global repercussions and be thorough with your explanation and supporting evidence. Do not just limit yourself to stating your opinion, but support it with strong arguments and good examples.

Paper #4: Practicing Global Citizenship
One of the main goals of your experiential projects and service learning that engaged you for the semester was to offer you an opportunity to reflect on how local action and day-to-day behaviors can impact the global community. Based on the experiences you gained through these projects, and relying upon the readings and the class discussions done throughout the semester, explain what the learning outcomes of these experiences have been for you and how you think they have contributed to enhance your "global citizenship" skills.

Reflection Prompts, Informal, Online Reflection: Writing to Learn 2012 (Cohort 2 Treatment)

WtL #1: The Danger of a Single Story

In the TED Talk we watched in class, the presenter Chimamanda Adichie states: "The single story creates stereotypes, and the problem with stereotypes is not that they are untrue, but that they are incomplete. They make one story become the only story."

Think about the relationship between how we deal with each other interpersonally versus on a macro level as groups. What role do stereotypes play in affecting group dynamics?

Think about a time in your own life where a stereotype has affected you or someone that you know. How does that support/refute Adichie's point of the danger of a single story? As a result of watching this talk, do you think your behavior will change in any way to incorporate multiple voices?

Link to TED Talk:
http://www.ted.com/talks/chimamanda_adichie_the_danger_of_a_single_story.htm

WtL #2: Global Citizenship and Service
Think of a time when you have performed service (either individually or through school/organizations).

- What was your motivation for participating in that service?
- Did you meet people you did not know serving?
- How does service fit into your view of Global Citizenship?
- Would you participate in service in the future if you were not mandated?

WtL #3: Bearing Witness and Speaking Up
Winston Churchill once said, "Courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen."

- What did Churchill mean by this?
- Which do you find more powerful a tool - listening or speaking? What evidence do you have of this? Cite examples from your own life experience or current events.

WtL #4: Writing to Learn… Global Citizenship?
In class yesterday, David stated that when you are writing, you are learning how to think. What did he mean by that?

Also, a lot of what we have talked about in class thus far has been about individual action. How might writing make you a better global citizen?

WtL #5: Citizenship and Moral Character
In class today, we talked about the rights and responsibilities of citizenship. One of the requirements outlined by the USCIS for citizenship is the exhibition of "good moral character". What do you think is meant by "good moral character"? What are the hallmarks? How would you measure such a requirement?

WtL #6: Effective Interview Questions
In class on Wednesday, we discussed the importance of qualitative interview as a tool for information gathering, historical documentation, and, for our purpose, as a service to capture an oral history of someone's life.

1. Because we are working with a vulnerable population, what ways you would make the interviewee feel comfortable? What would make you feel comfortable?

2. Think of one question you would ask the refugees/immigrants.   Why did you choose that question? Try your best to think of authentic, unique questions that do not duplicate your fellow students.

WtL #7: Citizenship in Action
During our trip to Philadelphia on Friday, we had the opportunity to meet with people who are influencing or protecting citizenship and rights in the United States.

Did any of the information presented to you change your mind or reinforce your stance on citizenship and/or immigration? Howso? What information was surprising to learn and why?

WtL #8: Corporate Social Responsibility and Citizenship
This week, our collegue Brishty brought to our attention a news article on how a company's CEO emailed its staff telling them they would be laid off if President Obama was re-elected. The Koch Brothers issued a similar statement this week.

Please read over the article and answer the following: Should private companies be allowed to send such emails to their employees? Is this an example of corporate social irresponsibility or an exercise of the right of a private organization?

Article link: http://newsbusters.org/blogs/noel-sheppard/2012/10/09/ceo-threatens-fire-employees-if-obama-reelected-and-raises-taxes

WtL #9: e-Portfolios and Global Citizenship
What is the purpose of a portfolio? Why do you think we are creating an electronic portfolio for this course? How does it capture your global citizenship experience?

WtL #10: Why do we "care" for Cambodia?
This week, we discussed transnational issues and also, at the same time, ran a school supplies drive for Caring for Cambodia. What linkages do you see between global, transnational problems and our work with Caring for Cambodia? How does the work that CfC and the schools undertake affect progress for the MDGs?

WtL #11: Human Rights, Dignity, and the United Nations
"In the 21st century, I believe the mission of the United Nations will be defined by a new, more profound awareness of the sanctity and dignity of every human life, regardless of race or religion." - Kofi Annan

Consider this quotation from former UN Secretary General Kofi Annan. Create your OWN quote on dignity and/or human rights and share it here. Explain what you mean by your quote and what inspired you.

WtL #12: Thankful for our human rights
As it is Thanksgiving, I have been thinking about the rights for which I am thankful. Read through the Universal Declaration of Human Rights (available: http://www.un.org/en/documents/udhr/). Choose one right that particularly speaks to you and tell us why you are thankful.

WtL #13: Is "global citizenship" inherently liberal?
At the recent NCSS (National Council for the Social Studies) Conference I attended in Seattle, we talked a good deal about the mission of social studies education and the values that come with that education. This stemmed from ongoing work by a group of professors who ask the question: "Is teaching open-mindedness pushing a liberal agenda?"

I am interested to hear your perspectives.

WtL #14: Bearing Witness to Stories from "New Americans"
You have all been assigned interesting interviewees with a variety of backgrounds (Refugees, Immigrants; Colombians, Eritreans; PhDs, GEDs). You have had the chance to sit down with them and have a conversation about their backgrounds, challenges, and successes as a "new American".

Use this space to:

1. Describe a bit about who you interviewed, their background, and current status.
2. From your perspective, how did the interview go? What were some particular challenges and successes that you felt as you spoke with your interviewee?
3. As you conducted the interview, what experiences or information shared by your interviewee connected to your experience this semester in GC?
4. What surprised you to learn about your interviewee?
5. Was this a worthwhile experience for you? What about for the interviewee?

Appendix D. Directionality: All Learner Data, Sorted by Average

Table D1. Directionality: Lowest Performers

Cohort	Number	Sex	College	Major	Nat'l	Δ SEE	FOR1	FOR2	FOR3	FOR4	AVG
1	780	M	CAS	Global Studies	D	0.77	1	1	1	2	1.25
1	109	F	CAS	MLL	I	-0.23	1	1	2	2	1.5
1	269	F	CBE	Business Admin.	D	0	1	2	1	2	1.5
2	394	F	CBE	Supply Chain Management	D	-	1	1	1	3	1.5
1	277	M	RCEAS	Chemical Engineering	D	-	1	2	2	2	1.75
1	574	F	CAS	Global Studies	D	0.07	2	2	1	2	1.75
1	759	M	CAS	Political Science	D	-0.07	1	2	2	2	1.75
1	988	M	CBE	Business	I	-0.55	1	2	2	2	1.75
2	978	M	RCEAS	ISE	D	1	2	1	2	2	1.75

Table D2. Directionality: Middle Performers

Cohort	Number	Sex	College	Major	Nat'l	Δ SEE	FOR1	FOR2	FOR3	FOR4	AVG
1	134	F	CAS	Global Studies	D	0.58	1	3	2	2	2
1	213	F	CAS	English	D	-0.68	2	3	2	1	2
1	255	F	CBE/ CAS	Business/ International Relations	I	0.10	3	2	2	1	2
1	330	F	RCEAS	Bioengineering	D	0.29	1	2	2	3	2
1	422	M	CBE	Business Admin.	D	-	1	2	3	2	2
1	536	F	CAS	Global Studies	D	0.39	2	2	2	2	2
1	602	F	CBE	Finance	D	0.58	2	2	2	2	2
1	613	F	RCEAS	ISE	D	-0.10	2	2	2	2	2
1	630	F	CAS	International Relations	D	-	1	2	2	3	2
1	739	F	CAS	Global Studies	D	-0.90	2	2	2	2	2
1	741	F	RCEAS/ CBE	Engineering/ Business	D	-0.42	2	2	1	3	2
1	943	F	CAS	Global Studies	D	0.19	2	2	1	3	2
1	969	F	CAS	Anthropology	D	0.61	2	2	2	2	2
1	971	M	RCEAS/ CBE	Computer Science/Business	I	-	2	2	2	2	2
2	268	M	CBE	Business	D	0.36	1	1	3	3	2
2	384	F	CBE	Business	D	0.07	2	1	2	3	2
2	597	M	CAS/ CBE	Cognitive Science Business	D	-0.29	2	1	2	3	2

2	955	M	CBE	Business	D	-0.29	2	1	2	3	2
1	157	F	CBE	Economics	D	-0.68	2	2	2	3	2.25
1	669	F	CAS	Global Studies	D	-0.36	2	3	2	2	2.25
2	857	F	CAS	Neuroscience	D	-0.58	2	2	2	3	2.25
2	486	F	CAS/CBE	Marketing and Africana Studies	D	0	2	2	3	3	2.5
2	595	F	CAS	International Relations	D	0.16	2	2	3	3	2.5
2	737	F	CAS	Political Science	D	-0.19	2	1	4	3	2.5
2	787	F	CAS	International Relations	D	-	2	2	2	4	2.5
2	936	F	RCEAS	Electrical Engineering	I	-	2	2	3	3	2.5
2	434	F	CBE	Business	D	0	2	2	3	4	2.75
2	436	F	CAS	Religion	D	-0.16	3	2	3	3	2.75
2	665	F	CAS	International Relations	I	-	2	2	4	3	2.75
2	892	F	CBE	Business Info. Systems	D	0.16	2	2	3	4	2.75

Table D3. Directionality: Top Performers

Cohort	Number	Sex	College	Major	Nat'l	Δ SEE	FOR1	FOR2	FOR3	FOR4	AVG
2	642	M	RCEAS/ CAS	IDEAS	D	0.81	2	3	4	3	3
2	645	M	RCEAS	Civil and Environmental Engineering	I	-	2	2	5	3	3
2	835	F	RCEAS	IBE/ ISE	I	0.16	2	2	4	4	3
2	875	F	RCEAS/ CAS	IDEAS	I	0.13	3	2	3	4	3
2	548	F	RCEAS	Bioengineering	D	0.23	2	3	5	3	3.25
2	886	M	RCEAS	Materials Science	D	0.81	3	3	3	4	3.25
2	544	F	RCEAS	Chemical Engineering	D	-	4	2	5	4	3.75

Appendix E. Interdisciplinarity: All Learner Data, Sorted by Average

Table E1. Interdisciplinarity: Lowest Performers (Naïve Stage)

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	F1	F2	F3	F4	AV
2	955	M	CBE	Business	D	-0.29	-1	1	1	1	1	1
1	269	F	CBE	Business Admin.	D	0	-1	1	2	1	2	1.5
1	157	F	CBE	Economics	D	-0.68	1	2	1	2	1	1.5
1	739	F	CAS	Global Studies	D	-0.90	1	2	1	2	1	1.5
1	741	F	RCEAS/ CBE	Engineering/ Business	D	-0.42	0	1	1	2	2	1.5
1	969	F	CAS	Anthropology	D	0.61	-3	1	2	2	1	1.5
1	277	M	RCEAS	Chemical Engineering	D	-	-	2	1	2	1	1.5
1	759	M	CAS	Political Science	D	-0.07	4	1	1	2	2	1.5
1	780	M	CAS	Global Studies	D	0.77	0	1	2	2	1	1.5
2	787	F	CAS	International Relations	D	-	-	2	1	1	2	1.5
2	394	F	CBE	Supply Chain Management	D	-	-	2	1	1	2	1.5
2	857	F	CAS	Neuroscience	D	-0.58	-3	2	1	1	2	1.5
1	109	F	CAS	MLL	I	-0.23	1	2	3	1	1	1.75
1	536	F	CAS	Global Studies	D	0.39	2	1	3	1	2	1.75
1	422	M	CBE	Business Admin.	D	-		2	2	1	2	1.75
2	486	F	CAS/CBE	Marketing and Africana Studies	D	0	-5	1	2	1	3	1.75
2	268	M	CBE	Business	D	0.36	0	2	2	1	2	1.75

Table E2. Interdisciplinarity: Middle Performers (Novice Stage)

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	MF1	MF2	MF3	MF4	AVG
1	943	F	CAS	Global Studies	D	0.19	-1	2	3	2	1	2
1	574	F	CAS	Global Studies	D	0.07	5	2	2	2	2	2
2	835	F	RCEAS	IBE/ ISE	I	0.16	1	2	2	2	2	2
2	645	M	RCEAS	Civil and Environmental Engineering	I	-	-	2	2	2	2	2
2	434	F	CBE	Business	D	0	-1	2	1	2	3	2
2	936	F	RCEAS	Electrical Engineering	I	-	-	2	3	1	2	2
2	665	F	CAS	International Relations	I	-	-	3	1	2	2	2

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	MF1	MF2	MF3	MF4	AVG
1	630	F	CAS	International Relations	D	-	-	2	2	3	2	2.25
1	971	M	RCEAS/CBE	Computer Science/Business	I	-	-	3	3	2	1	2.25
1	330	F	RCEAS	Bioengineering	D	0.29	3	2	3	1	3	2.25
1	613	F	RCEAS	ISE	D	-0.10	1	2	2	2	3	2.25
2	886	M	RCEAS	Materials Science	D	0.81	1	3	2	1	3	2.25
2	544	F	RCEAS	Chemical Engineering	D	-	-	2	2	3	2	2.25
2	737	F	CAS	Political Science	D	-0.19	-2	2	2	2	3	2.25
2	978	M	RCEAS	ISE	D	1	0	2	2	2	3	2.25
1	669	F	CAS	Global Studies	D	-0.36	0	3	2	3	2	2.5
1	988	M	CBE	Business	I	-0.55	-5	3	3	2	2	2.5
1	255	F	CBE/CAS	Business/ International Relations	I	0.10	-1	3	2	3	2	2.5
2	595	F	CAS	International Relations	D	0.16	-1	3	4	2	1	2.5
2	875	F	RCEAS/CAS	IDEAS	I	0.13	1	3	2	2	3	2.5
1	602	F	CBE	Finance	D	0.58	0	2	4	3	2	2.75
2	548	F	RCEAS	Bioengineering	D	0.23	-1	3	3	2	3	2.75
2	642	M	RCEAS/CAS	IDEAS	D	0.8065	1	3	3	3	2	2.75

Table E3. Interdisciplinarity: Top Performers (Apprentice Stage)

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	MF1	MF2	MF3	MF4	AVG
1	213	F	CAS	English	D	-0.68	-2	2	4	4	2	3
1	134	F	CAS	Global Studies	D	0.58	4	3	3	3	3	3
2	597	M	CAS/CBE	Cognitive Science Business	D	-0.29	-1	3	4	2	3	3
2	436	F	CAS	Religion	D	-0.16	1	4	3	2	3	3
2	384	F	CBE	Business	D	0.07	-1	3	3	2	4	3
2	892	F	CBE	Business Info. Systems	D	0.16	2	3	3	4	3	3.25

Appendix F. Quality: All Learner Data, Sorted by Average

Table F1. Quality: Lowest Performers (Pre-Reflective Stage)

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	F1	F2	F3	F4	AVG
1	780	M	CAS	Global Studies	D	0.77	0	2	2	2	1	1.75
2	268	M	CBE	Business	D	0.35	0	2	2	2	1	1.75
1	277	M	RCEAS	Chemical Engineering	D	-	-	2	2	2	3	2.25
1	613	F	RCEAS	ISE	D	-0.10	1	2	3	2	2	2.25
1	759	M	CAS	Political Science	D	-0.07	4	2	2	3	2	2.25
1	741	F	RCEAS/ CBE	Engineering/ Business	D	-0.42	0	2	2	3	3	2.5
1	969	F	CAS	Anthropology	D	0.61	-3	2	3	2	3	2.5
2	857	F	CAS	Neuroscience	D	-0.58	-3	2	2	1	5	2.5
1	422	M	CBE	Business Admin.	D	-		3	3	2	3	2.75
2	955	M	CBE	Business	D	-0.29	-1	2	3	3	3	2.75
1	157	F	CBE	Economics	D	-0.68	1	3	3	3	3	3
1	739	F	CAS	Global Studies	D	-0.90	1	2	2	5	3	3
2	486	F	CAS/CBE	Marketing and Africana Studies	D	0	-5	2	2	2	7	3.25
2	978	M	RCEAS	ISE	D	1	0	3	3	2	5	3.25
2	665	F	CAS	International Relations	I	-	-	5	2	2	5	3.5
1	269	F	CBE	Business Admin.	D	0	-1	2	5	3	5	3.75
2	936	F	RCEAS	Electrical Engineering	I	-	-	5	5	2	3	3.75
2	394	F	CBE	Supply Chain Management	D	-	-	3	4	3	5	3.75

Table F2. Quality: Middle Performers (Quasi-Reflective Stage)

CO	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	F1	F2	F3	F4	AVG
2	394	F	CBE	Supply Chain Management	D	-	-	3	5	3	5	4
1	536	F	CAS	Global Studies	D	0.39	2	3	3	5	5	4
1	574	F	CAS	Global Studies	D	0.06	5	5	2	2	7	4
2	434	F	CBE	Business	D	0	-1	2	7	3	5	4.25
1	330	F	RCEAS	Bioengineering	D	0.29	3	3	4	5	5	4.25
2	737	F	CAS	Political Science	D	-0.19	-2	5	2	5	5	4.25
2	544	F	RCEAS	Chemical Engineering	D	-	-	6	3	3	5	4.25
2	787	F	CAS	International Relations	D	-	-	6	6	5	1	4.5
1	109	F	CAS	MLL	I	-0.23	1	5	6	5	2	4.5
1	971	M	RCEAS/ CBE	Computer Science/Business	I	-	-	2	5	5	6	4.5
2	645	M	RCEAS	Civil and Environmental Engineering	I	-	-	5	5	2	7	4.75
2	886	M	RCEAS	Materials Science	D	0.81	1	5	5	4	5	4.75
2	835	F	RCEAS	IBE/ ISE	I	0.16	1	5	6	6	3	5
1	134	F	CAS	Global Studies	D	0.58	4	5	7	5	3	5
2	595	F	CAS	International Relations	D	0.16	-1	5	5	4	6	5
2	875	F	RCEAS/ CAS	IDEAS	I	0.13	1	5	5	5	6	5.25
2	384	F	CBE	Business	D	0.07	-1	7	7	5	3	5.5
1	602	F	CBE	Finance	D	0.58	0	6	6	5	5	5.5
1	943	F	CAS	Global Studies	D	0.19	-1	6	7	4	5	5.5
2	436	F	CAS	Religion	D	-0.16	1	5	7	5	5	5.5
2	642	M	RCEAS/ CAS	IDEAS	D	0.81	1	7	2	7	7	5.75
1	255	F	CBE/ CAS	Business/ International Relations	I	0.10	-1	3	5	3	5	4

Table F3. Quality: Top Performers (Reflective Stage)

COH	#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	F1	F2	F3	F4	AVG
1	213	F	CAS	English	D	-0.68	-2	5	7	7	5	6
1	630	F	CAS	International Relations	D	-	-	5	7	7	5	6
2	597	M	CAS/ CBE	Cognitive Science Business	D	-0.29	-1	6	7	5	6	6
2	892	F	CBE	Business Info. Systems	D	0.16	2	5	6	7	6	6
1	669	F	CAS	Global Studies	D	-0.36	0	7	6	7	6	6.5
1	988	M	CBE	Business	I	-0.55	-5	7	7	5	7	6.5
2	548	F	RCEAS	Bioengineering	D	0.23	-1	7	7	6	7	6.75

Appendix G. Interactions observed among directionality, interdisciplinarity, and quality: A non-story

Upon completion of analysis between and within groups for comparison, the attention was then focused on seeking trends among the different rubrics and student writing attributes. There was no correspondence between scoring on all three rubrics: quality, directionality, and interdisciplinarity for learners across cohorts. Learners who scored high on the King and Kitchener (1994, 2004) and Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubrics did not necessarily incorporate multiple, or a high multiple, number of lenses on the Oxfam (1997, 2006) rubric. For example, consistent top scorers across the scales for interdisciplinarity and quality were learners 213, 597, and 892. Interestingly, these learners were not top, nor even high, scorers on the Oxfam scale. For the Oxfam scale, the highest "achievers" were learners 544, 548, 645. Each of these learners incorporated all Oxfam (1997, 2006) lenses in a formal reflection, and all were from Cohort 2. However, their scoring in interdisciplinarity and quality was high, but not in the top performer level. One learner, 548, is a high performer in directionality and quality, but not interdisciplinarity.

If the data is sorted by the average score on the King and Kitchener (1994, 2004) for quality across all cohorts, there is no correspondence observed between demographic or psychometric scores, nor does it break down clearly between cohorts. Cohort 2 seems to be starting higher in their formal, offline reflection scores for all three measurements by rubric (directionality, interdisciplinarity, and quality). They also have 3 informal, online reflections submitted before their first formal, offline reflection is due. There was no correspondence between scoring on all three rubrics: quality, directionality, and interdisciplinarity for learners between formal, offline and informal, online writing.

Finally, there existed no strong patterns between the scores on the Scale of Ethnocultural Empathy (SEE) or the AT-20 for ambiguity tolerance as compared to performance on reflective writing. There also were not patterns that emerged regarding gender identification, major distribution, nationality, or other demographic data as it pertained to student performance on their reflective writing.

Consistency and patterns within categories: Directionality, Interdisciplinarity, and Quality

Directionality. In terms of directionality, a few different patterns could be observed. Learners in Cohort 2 tended to incorporate more lenses into their formal, offline reflections than did Cohort 1. All 7 highest-scoring leaners (averaging 3 or more lenses in their formal, offline writing) were from Cohort 1. All but 2 of the bottom 9 learners were from Cohort 1. Data did not connect, however, to individual demographic information or the scores on the AT-20 or SEE. A pattern did not emerge in this data that was meaningful enough to report, but the data broken down by score is outlined in the space below for transparency. Overwhelmingly, the top performers in regards to number of Oxfam (1997, 2006) lenses incorporated into reflective writing were from Cohort 2. The full set of data is provided in Appendix D for transparency in reporting.

Interdisciplinarity. For the rubric of Mansilla, Duraisingh, Wolfe, and Haynes (2009), there was not a trend among the top ending scorers in terms of majors, genders, colleges, or cohort differences. An observation of note is that three of the students who scored the highest in interdisciplinarity were majors in interdisciplinary field, and averaged in the apprentice phase of the Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric. However, the other three students where in single-discipline majors. For the lowest scoring Mansilla, Duraisingh, Wolfe, and Haynes (2009) rubric learners, there were 12 that fell into the natural break between an average

213

of 1-1.5. Of those 12 learners, 8 were in Cohort 1. For the 4 who were in Cohort 1, they either

started low and stayed low, or ended at a higher interdisciplinary rate than they started.

Appendix E has the complete collection of data related to interdisciplinarity, divided by low,

middle, and high performance by individual student across both cohorts for formal, offline

reflections.

      Quality. In terms of quality, learners who exhibited the most quality, reflective thinking

in their formal, offline reflections did not fit a specific trend or significant sortable details. When

sorting by score on King and Kitchener (1994; 2004), learners who made up the top, reflective

group of writers were nearly equal from Cohort 1 (4) and Cohort 2 (3) and were comprised of a

variety of majors and representation from all undergraduate colleges. Table G3 displays the

highest scoring learners who averaged in the reflective range in their scores. These data displays

do not reveal patterns of note. The complete data for all individuals, sorted by performance in

quality, is provided in Appendix F for transparency in reporting.

      When analyzing the online, informal data, it shows that no learners in Cohort 2 averaged

above the quasi-reflective stage of King and Kitchener's model, however; there were reflections

that scored in the reflective range. The learners in this highest set of scorers on quality for

informal, online reflections varied widely throughout their 15-week course. The student data

displayed in Tables G3 show the learners who scored highest in quality in their informal, online

reflections, all of whom stayed in the quasi-reflective range. Table G2 shows the top learner

performance on interdisciplinarity for informal, online reflections, and Table G1 displays the top

learners in terms of number of lenses of directionality captured in their writing. Note that there

was only one student who was a consistent high scorer between the formal, offline and informal,

online reflections in quality. That student was number 548, who also was a high-scorer in

directionality and interdisciplinarity in their informal, online reflections. This is the only

instance of a student who was consistently a top performer across all rubrics, in the informal,

online reflections.

Table G1. Directionality: Top performers on informal, online reflections

#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	AVG
665	F	CAS	International Relations	I	-	-	1.58
548	F	RCEAS	Bioengineering	D	0.23	-1	1. 57
645	M	RCEAS	Civil and Environmental Engineering	I	-	-	1.43

Table G2. Interdisciplinarity: Top performers on informal, online reflections

#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	AVG
548	F	RCEAS	Bioengineering	D	0.23	-1	2.21
595	F	CAS	International Relations	D	0.16	-1	2.07
436	F	CAS	Religion	D	-0.16	1	2.07

Table G3. Quality: Top performers on informal, online reflections

#	Sex	College	Major	Nat'l	Δ SEE	Δ AT	AVG
436	F	CAS	Religion	D	-0.16	1	5
548	F	RCEAS	Bioengineering	D	0.23	-1	5
595	F	CAS	International Relations	D	0.16	-1	4.64
875	F	RCEAS/ CAS	IDEAS	I	0.13	1	4.29

Individual Level: Profiles in Reflective Writing Excellence

Choosing particular cases of students who scored exceptionally in the three rubrics, one

can see that there were consistent performance across rubrics, but not necessarily a trend by

cohort, demographics, or other qualitatively observable characteristics that give particular insight. For example, learners 548, 669, and 988 are students who scored high on their reflective writing, and stayed in the reflective range throughout all four of their formal, offline assignments. Each student comes from a different college, with all three undergraduate colleges at the university being represented, and no pattern is evident based on their demographic variables. Learner 548 is a domestic student who is female and majors in bioengineering from Cohort 2. Learner 669 is a female global studies major domestic student in Cohort 1. Learner 988 is a male business major and international student in Cohort 1. The distribution of colleges, majors, demographic information, and high-scoring quality reflection does not lend itself to a trend or inference based on the data.

Individual Level: Profiles in Transition, Quasi-Reflective to Reflective Writing

One important consideration when addressing quality in reflective writing is to evaluate is the different stages in which the King and Kitchener (1994, 2004) rubric is divided. King and Kitchener (2004) suggest that there is a three-part continuum of reflective thinking that encompasses the 7 values of the RJM. Those stages are: pre-reflective (RJM 1-3), quasi-reflective (RJM 4-5), and reflective (RJM 6-7) and they group students' ability to dive deeply within the 7 stages of the model.

The question to ask is not only how did the students fare, but also look at how many students started in reflective, quasi-reflective, or pre-reflective stages and moved into another staging. For instance one student could have scored low and middle scores throughout however their score movement could indicate a transition between stages of thinking to a higher order. One example that can be evaluated further is that of Student 892, who moved from the quasi-

reflective to reflective stage. Table 39 shows the progress of specific, individual learners who are examples of linear improvement over time. Each of these learners exhibited minimal growth in their AT-20 and SEE scores, again showing that there was no correspondence between the students' psychometric scores and their reflective writing.

Table G4. Phase movement for highly improved learners

Phase Movement	Learner	FOR1	FOR2	FOR3	FOR4
Pre-Reflective → Quasi-Reflective	574	P	P	Q	Q
	978	P	P	P	Q
Quasi → Reflective	875	Q	Q	Q	R
	384	Q	Q	Q	R
Pre-Reflective → Reflective	486	P	P	P	R
Pre-Reflective → Quasi-Reflective → Reflective	645	P	Q	Q	R

Anomalies in the lowest group of King and Kitchener scores include student number 857, 486, and 978. For learner 486, they established a pattern of low, pre-reflective learning three assignments in a row and ended at the very highest reflective stage. Learner number 978 established a similar pattern with three low pre-reflective scores followed by a final quasi-reflective score.