Quantitative and Qualitative Research: A View for Clarity

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Abstract

This paper compares and contrasts two different approaches utilized in research on education: quantitative and qualitative research. A description of these two approaches is followed by a discussion of how the components of these two approaches differ. Philosophical assumptions, methods/types, purposes/goals, question/hypotheses, those being researched, those conducting the research, and data/data analysis are examined. In order to enhance the understanding of these different approaches, two service-learning research projects are discussed with a focus on these components. Finally, what is gained and lost with each approach is presented.

Keywords: Qualitative Research, Quantitative Research

1. Introduction

It might seem odd to see a professional football player catch a pass and turn to run up a basketball court to shoot a football in a basketball hoop. Likewise, it might seem odd for a professional basketball player to attempt to dribble a basketball down a football field and attempt to score a touchdown with the basketball. Basketball on a football field and football on a basketball court; neither scenario makes sense to most sports fans. You lose the essence of each game if you attempt to play it outside of its own defined arena. So, too, would the waters be muddied if boundaries were crossed while conducting educational research.

This paper begins by describing different approaches utilized in research on education. This is followed by a discussion of components upon which these two approaches to research on education differ. In order to enhance the understanding of these differences, two service-learning research projects are discussed with a focus on these components. Finally, what is gained and lost with each approach is presented.

2. Research Approaches

According to Shulman (1986), research on education has and will continue to produce growing bodies of knowledge. This knowledge growth does not naturally occur, rather, "It is produced through the inquiries of scholars - empiricists, theorists, practitioners - and is therefore a function of the kinds of questions asked, problems posed, and issues framed by those who do research." (p. 3). He explains that there are diverse communities involved in research on teaching and these communities can be divided into two general categories of study: quantitative research and qualitative research.

2.1 Two Approaches, Three Perspectives

While most in the field of education recognize the existence of these two general approaches for conducting educational research: quantitative and qualitative, there seems to be three perspectives as to how these different approaches are viewed and conducted. The first is *or*, the second is *either/or* and the third is *both*. Some researchers are exclusively affiliated with one *or* the other approach citing epistemological differences: quantitatively professing an objective truth and a single reality or qualitatively promoting a subjective truth and multiple realities. As with many philosophical debates, a tension arises as some proponents from both sides claim that their approach is most appropriate for educational research and they then mount arguments against the other side. While Hoepfl (1997), Neill (2007) and Firestone (1987) suggest that it is not necessary to pit one approach against the other, Siegle (2002) notes that each approach functions with different assumptions and "It is unfair to judge qualitative research by a quantitative research paradigm, just as it is unfair to judge quantitative research from the qualitative research paradigm." Each approach should be judged by its own standards. Gall, Borg, and Gall (1996) suggest that at an epistemological level it is not clear that one approach has a greater claim to truth than the other, rather it should be noted that both approaches have helped educational researchers make important discoveries.

A second group would not situate themselves so staunchly in one arena or the other. They may choose *either* one *or* the other approach depending on the type of information they are

seeking. Bogdan and Biklen (1998) explain that this *either/or* position is the most widely held among educational researchers who profess that there is no best method because the choice depends on what you are studying and what you want to find out.   Krathwohl (1998) and Howe & Eisenhart (1990), coming from the same perspective, suggest that the appropriate approach is determined by the research question.

Finally, some researchers seem quite comfortable with a "hybrid" model including both approaches in one study (Shulman, 1986). This hybrid model could almost be two separate studies, quantitative *and* qualitative, within one larger study with each approach enhancing and /or complementing the other in knowledge gained on the same research problem, while each remains true to its own identity (Salomon, 1991).   Shulman (1986) cautions that this mix of research approaches can be an exciting development in the study of teaching, but chaos can result if the researcher is not careful.   Bogdan and Biklen (1998) seem to share this reservation when they explain that it is possible, and maybe even desirable to use both qualitative and quantitative methods combined, but warn that it is very difficult to maintain the integrity of each approach when completing a comprehensive qualitative study while conducting a sophisticated quantitative study. Some researchers, particularly novices, "have a difficult time pulling it off, and rather than producing a superior hybrid, usually produce a piece of research that does not meet the criteria for good work in either approach" (p. 37).   Being aware of these three different perspectives of viewing and conducting quantitative and qualitative research will assist in the understanding of how these two approaches of research on education differ.

Shulman (1986), in his article, "Paradigm and Research Programs in the study of Teaching: A Contemporary Perspective", referred to quantitative and qualitative approaches as both research programs and paradigms.   He explained that paradigms are not theories, but ways of thinking that can lead to the development of theories.   To elaborate, he referred to Kuhn's (in Shulman, 1986) three criteria for describing   research paradigms: 1) clear, unvoiced & pervasive commitment by a community of scholars to a conceptual framework; 2) source of a method for asking questions; and 3) a network of shared assumptions and conceptions (p.4). He further explained that Kuhn wrote that in a mature science there can be only one paradigm dominant at a time.   In differing with this final idea, Shulman deviates from Kuhn's construct of a research paradigm by proposing his own "weaker sense of paradigm" as a research framework with proper goals, starting points, methods, and interpretive conceptions for investigations. He explains that the social sciences should be considered a mature science, and correspondingly, that research on teaching, due to the coexistence of competing schools of thought, should not claim a single dominant paradigm (p. 4).

By offering the previous discussion I have attempted to make sense of the labeling and identification of the larger categories of research on teaching: quantitative and qualitative approaches, programs, and/or paradigms. Also discussed was the perspective of the two approaches as *or*, *either/or*, and *both*. An analysis will now be presented on the different components of each of these two research approaches.

3. Methodology

In an attempt to address the differences between quantitative and qualitative research, many sources were reviewed and synthesized in a comparative study of the two approaches. Routio (2007) explains that in a comparative study, two or more objects or cases are examined. These two objects can be similar in some respects and different in others and the differences are usually the focus of the examination. Differences between quantitative and qualitative approaches to research on education were examined within a framework composed of the different components of educational research. Following is an analysis of these components.

4. Different Components of Research Approaches

In order to gain a better understanding of these two research approaches, a discussion will be offered on the components on which these two programs differ. These components include: philosophical perspectives and assumptions, methods/types of studies, purpose/goal of research, questions or hypothesis, those being researched, those conducting the research, data and data analysis.

4.1 Philosophical Perspectives and Assumptions

Quantitative and qualitative research programs claim different philosophical perspectives, and correspondingly, work with different underlying assumptions. Quantitative research identifies with positivism, which, presented by Gall, Borg, and Gall (1996), is the belief " that physical and social reality is independent of those who observe it" (p.18). Quantitative researchers are concerned with an objective reality that is "out there to be discovered" (Krathwohl, 1998) and the researcher is independent of that which is being researched (Creswell, 1994).

Accordingly, in qualitative research, the researcher identifies with postpositivism which offers "that social reality is constructed and it is constructed differently by different individuals" (Gall, et al., 1996, p.19). They would assume that social reality is constructed by the participants in it and that social reality is continuously constructed in local situations (Gall, Gall & Borg, 1999). Qualitative researchers are concerned with how individuals perceive their world (Krathwohl, 1998) and these researchers interact with that which is being researched (Creswell, 1994).

4.2 Different Methods/Types of Studies

Until about the middle of the 1970's the majority of research on teaching was conducted using a quantitative approach. More recently, qualitative research and hybrid studies have become more prevalent (McMillan, 2000). McMillan claims that quantitative and qualitative research each has its own research types or models. Quantitatively, a distinction is made between experimental and non-experimental research. In experimental research, researchers have control over one or more factors (variables). Three types of experimental research include: true experimental, random assignment of subjects; quasi-experimental, subjects not randomly assigned; and single-subject, focused on an individual or a few persons. Non-experimental research can be classified as: descriptive, simple information about frequency or amount; comparative, differences between groups on a variable; correlational relationships among two

or more variables; and causal comparative, or ex post facto, relationships between past and subsequent responses (McMillan, 2000).

Qualitative research is referred to as interpretive research by Erickson (1986) and he suggests that the term "qualitative" essentially carries the distinction of being non-quantitative. Denzin and Lincoln (1994) seem to agree as they explain that qualitative research can be viewed as a set of interpretive practices where no single practice has privilege over any other. They claim that qualitative research includes constructivism, cultural studies, feminism, Marxism, and ethnic studies. A few more recognized qualitative practices will be examined here. A phenomenological study is an attempt to fully understand the essence of some phenomenon (McMillan, 2000) while a case study, according to Stake (1994), is not a methodological choice, but a choice of object to be studied. The case studied can be simple or complex, a child, a classroom, or a group of professionals. It is one among others. He explains that case studies are of value in refining theory and suggesting complexities for further investigation. Ethnographic methods rely on participant observation to explore the nature of cultural or social phenomenon while working with unstructured data usually on a small number of cases involving explicit interpretation of the meanings of human actions (Atkinson & Hammersley, 1994; McMillan, 2000). Grounded theory is an inductive process of generating or discovering a theory or schema from coding and categorizing data (Strauss & Corbin, 1998; McMillan, 2000).

4.3 Purpose or Goal of Research

In trying to differentiate between these two research approaches, it may help to consider each program's goal for conducting research on teaching. From a quantitative aspect, the goal of research is "collecting 'facts' of human behavior, which when accumulated will provide verification and elaboration on a theory that will allow scientists to state causes and predict human behavior" (Bogdan & Biklen, 1998, p. 38). On the other hand, the goal of qualitative research is to "better understand human behavior and experience...grasp the processes by which people construct meaning and to describe what those meaning are" (Bogdan & Biklen, 1998, p. 38). In more succinct terms, the goal of quantitative research can be: to show relationships between variables, statistical description, establishing facts (Bogdan & Biklen, 1998), validation (Krathwohl, 1998), prediction and control (Gage, 1989), and testing hypotheses (Gall, et al., 1996). Conversely, the goal of qualitative research, depending on the conceptual framework of the study (cultural studies, feminism, post modernism, and critical theory), can be to develop understanding (Maxwell, 1996; Bogdan & Biklen,1998), describe multiple realities, develop grounded theory (Bogdan & Biklen, 1998), description (Krathwohl, 1998), generation of insight (Gall, et al., 1996), and giving voice and empowerment to the maginalized in society (Cherryholmes,1993). Krathwhol (1998) offers the perspective that all research falls along a continuum with quantitative research at one end and qualitative research at the other with survey research in the middle.

4.4 Questions or Hypothesis

In many quantitative studies, the research question or hypotheses usually follows the review of the literature. The researcher uses the theories, results, and findings of other studies in order

to form a hypothesis to test. A hypothesis is an informed guess or prediction that indicates what the researcher thinks the results will be before the study is carried out (McMillan, 2000). This type of inquiry usually produces a research design that is structured, formal, and specific, outlining a detailed plan of operation (Bogdan & Biklen, 1998). In qualitative studies there are two general positions on question/design matters depending on the researcher's view. The first is an emergent study where the design is somewhat open and loose and the researcher is immersed in the situations to see what emerges. This is an inductive process where the researcher relies on what is observed in the field to develop a grounded theory rather than imposing a particular framework on the study by reviewing the literature first (Krathwohl, 1998). The second position could be one of preparation. The researcher reviews the literature prior to entering the field as a mark of respect to the participant hosts and as Krathwohl (1998) credits Fetterman, the researcher "enters the field with an open mind, not an empty head" (p. 239). Considering either position, the question and design will be evolving, general, and flexible (Bogdan & Biklen, 1998).

4.5 Those Being Researched

In many quantitative research situations, it is not feasible to involve all members of the population being studied, so a subset of the population, a sample, is usually randomly selected (Jurs, 1998). The random selection is to ensure that the characteristics of the subjects in the study appear in the same proportion as they exist in the total population (Bogdan & Biklen, 1998). Those being researched in a qualitative study are selected in what Bogdan and Bicklin refer to as a purposeful sampling. Particular participants are chosen for a qualitative study because they are believed to facilitate the expansion of the developing theory.

4.6 Those Conducting the Research

Looking at the quantitative approach, Shulman (1986) speaks of the positivistic or etic (own point of view) perspective of the researcher as, "an outside observer attempting to discover a law of relationships among observable features" (p. 8). McMillan (2000) explains that the researcher has a neutral role where he or she remains detached, uninvolved, and distant. Erickson (1986) refers to quantitative research as process/product research where the role of the researcher, for example, is to look at causal links between teacher effectiveness, as measured on end of the year tests, and particular teaching practices.

From the qualitative, interpretive and emic (others' points of view) approach, according to Shulman (1986), the interpretive perspective focuses on "discovering the meanings constructed by the participants as they attempt to make sense of the circumstances they both encounter and create" (p. 8). The interpretive researcher's role is involved, trusting, intense and close to the participants (McMillan, 2000; Bogdan & Biklen, 1998). Erickson (1986) proposes that the task of the researcher is to "discover specific ways local and nonlocal social organizations and culture relate to activities of specific purpose in making choices and conducting social action together" (p. 131).

4.7 Data and Data Analysis

Data for a quantitative study are quantitative, quantifiable coding with counts and measures

and operationalized variables (Bogdan & Biklen, 1998). Preconceived concepts and theories are used to determine what data will be collected. Numerical data are generated to represent the social environment, and statistical methods and deductive reasoning are utilized to analyze data. Statistical inference procedures are used to generalize findings from a sample to a defined population. Impersonal, objective reports usually summarize quantitative research findings (Gall, et al., 1996).

Typically, three kinds of data collection are utilized with qualitative research: interviews, observations, and written documents (Patton, 1990). Most data comes from fieldwork where the researcher spends time in the setting under study. The researcher makes first-hand observations of activities and interactions, sometimes engaging personally in those activities as a "participant observer" (Patton, 1990, p. 10). Data analysis is an ongoing, inductive process where data are sorted, sifted through, read and reread. With some methods, codes are assigned to certain themes and patterns that emerge. Categories are formed and restructured until the relationships seem appropriately represented, and the story and interpretation can be written (Strauss & Corbin, 1998). See Table 1 for a synthesis of these components.

Table 1. Component comparison

Components of Research Approaches	Quantitative	Qualitative
Philosophical Assumptions	Positivist perspective, objective reality, researcher is independent of that which is researched	Postpositivist perspective, naturalistic, social, multiple & subjective reality where researcher interacts with that being researched
Method/Types of Research	Experimental, quasi-experimental, single subject and descriptive, comparative, correlational, ex post facto	Phenomenology, case study, ethnography, grounded theory, cultural studies
Purpose/Goal of Research	Generalizability, explanation, prediction	Understanding, insight, contextualization and interpretation
Questions or Hypothesis	Hypothesis is informed guess or prediction	Question is evolving, general and flexible
Those Being Researched	Randomly selected sample, proportionally representative of population	Usually a small number of non-representative cases
Those Conducting the Research	Etic (outsider's point of view); objective, neutral , detached and impartial	Emic (insider's point of view);personal involvement and partiality
Data	Questionnaires, surveys, tests, etc. in the form of numbers and statistics	Written documents from field work, interviews, pictures, observations, objects, etc.
Data Analysis	Deductive process, statistical procedures	Inductive process: codes, themes, patterns to theory

This table illustrates the differences between selected components of quantitative and qualitative research approaches.

5. Two Service-Learning Studies

In order to better understand the differences between quantitative and qualitative research, two studies of the practice known as "service-learning" will be discussed. The first will be a quantitative study while the second will be a qualitative study.

5.1 Quantitative Study

The quantitative study chosen to be reviewed is, "Comparing the Effects of Community Service and Service-Learning" by Vogelgesang and Astin (2000). Astin has conducted a number of studies on different aspects of higher education and in this particular study he and Vogelgesang focused on service in higher education. From the positivist perspective, these researchers remained objective and did not interact with the subjects being studied. They present an outsider's (etic) point of view. Different aspects of this study are discussed.

5.1.1 Purpose

The purpose of this study was to investigate whether engaging in service as part of an academic course has benefits over and above those of co-curricular community service. Vogelgesang & Astin (2000) are making a distinction here between engaging in service as part of an academic course (service-learning) and "generic" community service that is volunteer work. The purpose was to see if participating in service as part of an academic course has any effect on each of the eleven outcome measures beyond those of "generic" community service.

5.1.2 Method

Vogelgesang & Astin (2000) explain that they conducted a quantitative analysis that directly compared service-learning and community service. This was a longitudinal comparison of three student groups: service-learning participants, "generic" community service participants and non-service participants. As a source for most of the data students were given a questionnaire upon entering college and another questionnaire in their fourth year of college.

5.1.3 Those Being Researched: Subjects

Subjects included 22,236 students from 177 higher education institutions. A majority of subjects were from non-public institutions. 9.7% of subjects were from public universities while 5.6% were from public colleges. 17.5% were from private universities while 21.2% were from non-sectarian private colleges. Catholic colleges accounted for 21.2% and Protestant colleges 23.5%. Predominately black college were represented by .5% while.3 % were from public 2 year colleges and .4 % from private 2 year colleges.

5.1.4 Data and Data Analysis

Vogelgesang & Astin (2000) explained that the two independent variables were from a 1998 College Student Survey (CSS) instrument. They were "generic" community service and "course-based" service (service-learning).The eleven dependent variables were influenced by

existing research. They include three measures of "values and beliefs", three measures of academic skills, three measures of leadership, and two measures of future plans. The analysis involved a method of casual modeling which is a blocked, stepwise linear regression analysis that studies changes in partial regression coefficients for all variables for each step of the analysis.

5.1.5 Results

For the results, each of the four measures will be discussed. Vogelgesang & Astin (2000) found that for "values and beliefs" service-learning has an independent effect both on students'commitment to promoting racial understanding and activism. They indicate that this suggests service-learning provides a concrete means by which higher education institutions can educate students to become concerned and involved citizens. When considering academic outcomes, connecting service with academic course material does enhance the development of cognitive skills. Because of this, the investigators recognize that service-learning may have a place in the curriculum and should not be relegated to the status of co-curricular activity. Growth in leadership, the third measure, does not seem to benefit more from service-learning than from involvement in "generic" service. Interestingly enough, findings indicated that there was a dramatic shift in choice of career for a number of participants who completed service as part of an academic course. The investigators reason that career choice is a lifelong commitment, and there is no stronger expression of commitment to service than choosing a service based career.

In general the study concludes that course-based service (service-learning) has benefits over and above those of "generic" community service. Vogelgesang & Astin (2000) finish with the statement that service-learning has a significant effect on all eleven outcomes examined. The qualitative study on service-learning will now be discussed.

5.2 Qualitative Study

The qualitative study chosen to be reviewed here is, "Toward a Theory of Engagement: A Cognitive Mapping of Service-Learning Experiences" by Rockquemore and Schaffer (2000). From a postpositivist perspective, these researchers interacted with the participants as their professors and presented an insider's (emic) point of view. The different components of this qualitative study are presented.

5.2.1 Purpose and Questions

Rockquemore and Schaffer (2000) state that service-learning has two pedagogical goals: increase civic responsibility and facilitate academic objectives. While they cite studies that reinforce the idea that service-learning is an effective pedagogical technique for meeting these goals they explain that little is known about how this learning occurs. The purpose of this study was to gain an understanding of how learning occurred while participating in a service-learning course. The authors pose the questions: how do students learn while they are engaged in service-learning? what cognitive processing occurs between the pre-service and post-service assessment? and how is that process unique to service-learning experiences?

5.2.2 Method

Rockquemore and Schaffer (2000) explained that they used a grounded theory approach for their qualitative study.

5.2.3 Those Being Researched: Participants

The participants were students enrolled in "service-learning courses" at Pepperdine University. They were between 18 and 22 years of age and could be considered representative of the student population at Pepperdine University and of private Christian liberal arts colleges in the United States. Pepperdine students differ significantly from the general population of college students in that they are more racially homogeneous and higher in socio-economic status. 50 students were purposively sub-sampled from the original 120 participants.

5.2.4 Data and Data Analysis

Participants were required to keep a journal that addressed the following questions: 1) What happened today? and What did I do? 2) What were the effects of what I did? 3) How did my service today make me feel? 4) What relationships am I building? 5) How does what I am observing at my placement relate to the concepts and ideas we are currently learning in class? Students were required to write one journal entry for each day of service.

Rockquemore and Schaffer (2000) explained that they took a grounded theory approach when they performed a content analysis of the daily journals. They explained that this was an inductive approach where they immersed themselves in unstructured data from individual journals to identify common themes that seemed meaningful to students' accounts of their service-learning experiences. They employed McCracken's data analysis procedures: 1) sort important from unimportant; 2) examine for logical relationships; 3) perform a confirmatory review of initial data to assist in recognition of general properties of data; 4) describe themes and hierarchical organization of themes; and 5) synthesize existing themes into theses.

5.2.5 Findings

The data, according to Rockquemore and Schaffer (2000), suggest that among students in the sub-sample, individuals progressed through three distinct stages of development: shock, normalization, and engagement.

In stage 1, Shock, there was a variation in the level and articulation of the shock and disbelief expressed at the social and economic circumstances experienced by participants in their work placements. This stage seemed to reveal participants feeling of social isolation and their preconceived ideas about poverty. Researchers pointed out the significance of this shock stage because it provided a sharp emotional and psychological jolt to students' perceptions of reality. This resulted in the creation of an ideal state of cognitive openness toward the substantive course material.

During stage 2, Normalization, the shock seemed to wear off the second or third week of the service-learning experience. It seemed that students were quick to adapt to their new circumstances as they began to develop relationships with the staff and regular clients that were

based on common human bonds as opposed to pity. While students were shocked into questioning their own perceptions of reality in the first, "shock" stage of development, they also seemed to marginalize those they observed as fundamentally different from themselves. The researchers expressed that in the second stage, it was important to the learning process that students developed the capacity to see the poor as human beings, not unlike themselves, while recognizing their own preconceived stereotypes and negative perceptions. In stage 3, Engagement, students began to seek answers to their causal questions. People and situations they were studying in their course readings were not hypothetical examples, but real people with whom they had developed personal relationships. Rockquemore and Schaffer (2000) claim that answering these questions required students to make attributions: individual (internal) explanations attribute economic inequalities to personal characteristics of the poor (lack of talent, drive, effort, or loose morals) while structural attributions draw on social factors external to the individual (discrepancies in the economic system, lack of political power, educational inequalities, job discriminations). In this final stage, students were forced to reconcile the content of the course work, which heavily emphasized the size and scope of structural inequalities in American society, with their previous propensity toward individual attributions. These researchers found that if students perceived their clients as similar to themselves, then they began to consider structural attributions. If they viewed their clients as dissimilar, undesirable, or unpleasant, they tended to retain the individual level attributions that they brought with them to the course.

Rockquemore and Schaffer (2000) explain that they focused exclusively on the student as the unit of analysis for this study; and by placing the voices of the students at the center of their analysis, they were able to observe thought processes and identify common trends resulting in their cognitive developmental stage theory.

Denzin and Lincoln (1994), recognizing the differences between quantitative and qualitative approaches to research on teaching, credit Becker with the proposition that both research programs believe they know something about society worth sharing with others and they use a variety of means to share their ideas and findings (p. 4). The following discussion will focus on what is gained and lost when utilizing each approach to research.

6. Gains and Losses

When conducting research in the field of education there are gains and losses depending on the approach chosen for the study.

6.1 Gains and Losses for a Quantitative Approach

Conducting a quantitative study can result in the clarification of a cause and effect relationship. In the quantitative study discussed in this paper, Vogelgesang & Astin (2000) claim that their study added weight to the belief that course-based service (service-learning) has benefits over and above those of "generic" community service. They elaborated even further by offering that when considering academic outcomes; connecting service with academic course material does enhance the development of cognitive skills. Confirming that this cause had a positive effect can contribute to better understanding of how student learning takes place. Also,

Vogelgesang & Astin explained that some faculty were reluctant to go through the time and effort to include service-learning as a course component unless they had proof documenting its educational value. The results of this quantitative study can be considered positive evidence in support of the educational value of service learning.

A drawback to a quantitative study is the inability to infer meaning beyond the results achieved through statistical analysis. Vogelgesang & Astin (2000) conducted this study with over 22,000 subjects, but they have no way of assessing the quality of their service learning experiences. When considering some of the leadership variables in this study, there was no way to find out why growth in leadership did not appear to benefit more from service-learning than "generic" service. Could the quality of service-learning have been a factor? We can only guess. Bogdan and Biklen (1998) offer some problems that may arise when conducting a quantitative study. These include the problem of controlling variables that may adversely affect the validity of a statistical analysis of data and the difficulty of trying to quantify abstract ideas.

6.2 Gains and Losses for a Qualitative Approach

A qualitative study is usually conducted to gain an understanding of a situation. In the qualitative study conducted by Rockquemore and Schaffer (2000), we got a glimpse of the service-learning experienced by 50 participants through descriptions of their experiences. The researchers took these descriptions and situated them within a cognitive developmental stage theory. They explained that this was a racially homogeneous group (predominantly white) from mostly affluent backgrounds so their development of the cognitive stage theory might not evolve if the participants were a more diverse group. We cannot safely generalize a cause and effect relationship from this qualitative study, but we do gain an understanding of the participants' experiences with service-learning. Bogdan and Biklen (1998) explain that qualitative research can be rather time consuming and there may be problems with attempting to sort and reduce data. The procedures are not standardized and with a qualitative study it is difficult to study a large population.

7. Conclusion

This paper has presented an examination of the differences between quantitative and qualitative research approaches. Three perspectives of approaches to research, (or, either/or, & both) were discussed along with different components of a research study: philosophical assumptions, purpose/goal, methods/type, those being researched, those conducting the research, data and data analysis. Both a quantitative and qualitative study on service-learning were analyzed while referencing these components to further clarify the differences between the two approaches. Finally, the gains and losses of each approach were presented.

Shulman (1986) asserts that no single approach can capture the full set of educational events and implies that the insufficiencies of particular programs can be overcome through proper blending with the insufficiencies of other programs. It seems that maybe the results from a qualitative study can lead to the quantification of certain components in order to conduct a quantitative study for a better understanding and evaluation,, or a small component of a cause

and effect quantitative study can be qualitatively studied to result in a better understanding of the cause and effect results of a quantitative study. A quantitative study can be conducted along with a qualitative study, or qualitative with quantitative, but each approach should not be analyzed and judged by the criteria associated with the other approach. There can be basketball *or* football, or football *and* basketball, but not football on a basketball court, nor basketball on a football field. The essence of the game would be lost just like the essence of a research study would be compromised if it were to be conducted outside its own context.

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