A MODEL FOR DETERMINING TEACHING EFFICACY THROUGH THE USE OF QUALITATIVE SINGLE SUBJECT DESIGN, STUDENT LEARNING OUTCOMES AND ASSOCIATIVE STATISTICS

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ABSTRACT

Many universities and colleges are increasingly concerned about enhancing the comprehension and knowledge of their students, particularly in the classroom. One of the method to enhancing student success is teaching effectiveness. The objective of this research paper is to propose a novel research model which examines the relationship between teaching effectiveness and student learning outcomes qualitatively. This new model will use a unique and in–depth qualitative case study methodology especially designed for the instructional setting. The anticipated qualitative data collecting techniques will include, but not limited to the following: observations, personal interviews, qualitative survey questionnaires, research field notes, document review, etc. The proposed Model used assumed data and applied statistical Cross–Tabulation and Chi–Square Tests, including a theoretical analysis of the open–ended responses and field notes recorded from participants (a sample of 32 students presently enrolled in a Semester–long English ENG 1200–01 course at a public university in North Carolina). The associative statistical findings found a positive relationship between the teaching effectiveness and student learning. The outcomes of the study will increase the current lack of information on the use of qualitative research designs by determining teaching efficacy and its effects on student achievement. This new model expands the existing measures by providing new measures to examine the teaching effectiveness and its effect on student learning.

Keywords: Case Study Design, Student Ratings of Instruction, Validity, Reliability, Cross–Tabulation, Chi–Square, Field Notes, Qualitative Data Analysis Software.

INTRODUCTION

Many universities in the United States, are stubbornly concerned about enhancing the comprehension and knowledge of their students, particularly in the classroom. As a result, some universities continue to create policies, like teacher–student counseling, that would support the enrichment of student success, in addition to the recurring examination of measures that would endorse teaching effectiveness and student learning. Furthermore, several universities are using Distinctive Quantitative Student Survey Methods and other techniques, to assess teaching effectiveness and student learning outcomes (Dodeen, 2013; Galbraith et al., 2012; Kozub, 2010). Martinez, Perez, Suero, and Pardo (2013), examined the effectiveness of learning physics in engineering degrees by utilizing post–test as an assessment tool.

Certainly, the current evaluation techniques explain the association between teaching effectiveness and student learning. The quantitative student ratings are the most expansively used in several universities in general (Agbetsiafa, 2010), and have been in operation since the middle of 1920s, (Donnon et al., 2010; Safavi, Bakar, Tarmizi, & Alwi, 2012). However, despite the supposition, numerous academics may hold that, student ratings though are reliable systems, there is no accord among them for concerning their complete validity and reliability with regards to the degree in which the rating devise correctly evaluates the teaching effectiveness, or exhibit an inclusive rating of the course or instructor (Agbetsiafa, 2010; Beran & Rokosh, 2009; Clayson, 2009). Evidently, even though some academics have argued there is scarcely an evidence of a connection between student

ratings and teaching effectiveness (Madden, Dillon, & Leak, 2012; Pounder, 2007), others have considered the ratings to be a noteworthy evaluation of teaching effectiveness and student achievement (Schrodt et al., 2008; Zhao & Gallant, 2012). In addition, student ratings may only allow the examination of the connection between teaching effectiveness and student learning through a single lens. This means the quantitative student ratings alone cannot effectively improve the teaching efficiency and student learning across universities and colleges are not withstanding its recognition (Beran&Rokosh, 2009; El Hassan, 2009; Haladyna & Amrein–Beardsley, 2009). Indeed, Beran and Rokosh (2009) also inherently professed that the instructors did not contemplate the student ratings to be a truthful design for teaching proficiency. This is in contrast to the case study approach, whose objectives support an inclusive study of the student–teacher association, through different facets so that the true observational fact of how and why the association occurs is predictable (Creswell, 2013; Laragy & Ottmann, 2011; Yin, 2013). The case study also has the influence to investigate the facets of a content whose explanations depend on the perception engendered by a situation (Flyvbjerg, 2006). Indeed, it is the background of inconsistency within the academic world, concerning the validity and reliability of the quantitative student ratings that the research model directly addresses.

Rationale for the Proposed Qualitative Single Subject Case Study Research Model

The proposed research model seeks to determine the association between teaching effectiveness and student learning outcomes, using a qualitative case study approach in a designed classroom situation. Teaching effectiveness is the degree to which a teacher creates the possibility of student awareness of educational objectives, even when there is no particular explicit knowledge of effective teaching (McKeachie, 1979 & 1997). Barclay, Herlich, and Sacks (2010). On the other hand, attached effective teaching to effective teaching stratagems, involves the set–up of better–quality literacy instruction that teach students to read and write. All the same, an obvious apparent prerequisite of teaching proficiency is student

perception (Marsh & Roche, 2000; Svinivki & Mckeachie, 2010). Surely, teaching effectiveness and student learning outcomes may not be uncharacteristic to the academics, as a number of studies on teaching effectiveness to the purpose strategies of student learning outcomes have previously been realized (Galbraith, Merrill, & Kline, 2012; Hunsaker, Nielsen, & Bartlett, 2010; Keeley, Furr, & Buskist, 2010)

However, the majority of the studies on teaching effectiveness and student learning are quantitative and involve the application of student rating designs with large samples, to examine the connection between teaching effectiveness and student learning outcomes. In reality, a procedure that is prevalent in several universities and colleges in the United States, is the exploit of student ratings to evaluate teaching effectiveness and student learning achievement (Donnon, Delver, & Beran, 2010; Stowell, Addison, & Smith, 2012). Indeed, the use of student ratings of faculty in colleges and universities is the submission of a practical narrative to academics for teaching improvement, as well as an exterior assessment of instructional effectiveness for personnel or administrative decisions (Marsh & Roche, 2000). However, the salient objective of the study is to determine the association between teaching effectiveness and student learning effects by focusing on the teaching approach and communication models between the instructor and their students. In addition to that, the objective will also include an examination of how the teacher–student relationship and the student–student interface influence learning outcomes, in a planned classroom situation.

Deploying External Qualitative Methods in Current Face to Face Instruction

The current impasse in employing quantitative rating designs, to examine the relationship between teaching effectiveness and student accomplishment may only permit evaluation to be investigated through a single lens, as well as the divergence among scholars about their efficacy in enhancing teaching effectiveness and student knowledge in universities (Agbetsiafa, 2010; Beran and Rokosh, 2009; Clayson, 2009). Beran and Rokosh (2009) and Madden et al. (2012) perceived this intrinsic

inconsistency, when they noted there was no relationship between quantitative student ratings and teaching effectiveness. And also, some significant connections have been perceived between quantitative student ratings and teaching effectiveness (Agbetsiafa, 2010; Zhao & Gallant, 2012). Therefore, this essential variation shows that, the quantitative student ratings independently cannot sufficiently enhance the teaching effectiveness and student learning across colleges, irrespective of its recognition (Beran & Rokosh,2009; El Hassan, 2009; Haladyna & Amrein–Beardsley, 2009). Beran and Rokosh (2009) also noted that, instructors did not consider the student ratings to be an ingenious design for determining teaching effectiveness. A better more in–depth research model is most definitely needed.

Student ratings will not recognize the exact apparent information on how and why the relationship between the students and the teacher happens, and facts about the inclusive element may be absent. Thus, the research problem this study focused on, was to examine the relationship between teaching effectiveness and student learning. By exploring the relationship between teachers and students through several facets, the researchers seek to show the true observational detail of how and why the association between teacher and student yields rich content knowledge, and how student aptitude improves and teaching efficacy is increased. The knowledge gained in this study will help to improve the current limited qualitative information base for determining teaching effectiveness and student achievement (Maclellan, 2008; Wright & Grenier, 2009). The research outcomes will also create a new perception in regards to the teacher student interactions of instructional setting, and expand the existing measures currently in place and used to examine the overall teaching effectiveness and student learning. Thus, this research model addresses the lack of alternative research qualitative methods that can be used to determine teaching efficacy as an alternative to the more traditional and purely quantitative student ratings of instruction assessments.

Describing the Qualitative Research Model

The typical application of the single subject research design is to investigate a lengthy event or activity. In this case, a Qualitative Single Subject Case Study Research Model was used to analyze the class activity of Freshmen students enrolled in a college level English one semester course (ENG 1200–01).The model uses a range of data collection procedures over a definitive period of time (one academic semester: 5 months). The objective of the Qualitative Case Study Model is to provide additional knowledge about student–teacher interaction in the classroom, and how such in–depth instructional interaction as an teaching methodology ultimately affects student aptitude in terms of the course–based subject matter. The expectation is that, the results of the research can provide future support for similar research regarding the perception of instructional based teacher student interactions for similar instructional settings.

Additionally, an exhaustive search in the body of educational research literature found that, there are not many journals attempting to apply a qualitative case study procedure (and its corresponding research methodology) to determine the association between student–teacher and student–student interactions. But a research model is needed to explain how these interactions effectively improve and to enhance the teaching and student learning outcomes. The Model used in this study allows the researcher to observe students and teachers within their natural settings (the classroom setting) and longitudinally gain information on the overall effectiveness of the instructor's teaching methodology. At this point, the Qualitative Single Subject Case Study Research Model is one of the few studies that applies a instructional environment qualitative case study design (to examine the association between teaching effectiveness and student achievement in a live classroom setting).

The Purpose of the Qualitative Single Subject Case Study Research Model

The purpose of this qualitative case study is to examine the relationship between teaching effectiveness and student learning outcomes, using classroom observation, interviews (personal and survey questionnaires), documents (articles), audiovisual materials, and student test scores, for the definitive epoch of the research. In a

broad–spectrum, the objective of the research is the examination of the relationship by investigating the association through several facets, so that the true observational datum of how and why the association happens is fully expected. In addition to that, the objective is to examine the student–student interaction and its consequence on learning outcomes. The examination will involve contrasting the outcomes from the student–teacher relationship with that of the student–student relationship. Additionally, the objective will also involve the examination for internal consistency as a way of establishing the validity and reliability of the qualitative case study technique applied in examining teaching effectiveness and student learning outcomes.

The study sample include the complete register of students in English1200–01, as well as the teacher. The data–gathering stage will include the use of classroom observations in the planned setting, audiovisual materials, field notes, articles, and student test scores, and the interviewing of participants in the English class. Similarly, the administration of studies in qualitative 'Likert scale' with open–ended questions will certainly be a part of the data gathering design. This notwithstanding, the non–participation observational method seemed the preferred observational data–gathering technique. Indeed, non–participant observation necessitates the researcher to observe and document the happening on the spot (Nurani, 2008). The investigation will make use of field notes, recorders, cameras, and other fitting devices, to detail and record all observations of the student–teacher interface in the classroom without any participation from the researcher. At the end of the data gathering, the analysis will also comprise a comparison of the findings of the study with the students' end–of–semester grades in a qualitative approach, to determine the relationship between teaching effectiveness and student learning outcomes. The application of the Chi–square test also seemed the preferred approach in analyzing the qualitative responses from the student survey, to establish the existence of an association between teaching effectiveness and student achievement. At the same time, the value of the open–ended answers from the study, including the field notes and other information obtained

during the investigation are noteworthy, to help resolve how and why the student–teacher relationship arises. As well, the use of the ATLAS (Padgett, 2004), a Qualitative Data Analysis, is noteworthy in the research, to assist in analyzing images, audio and video files, as well as text data collected during the investigation. The results will generate a new perception into the use of case study to determine the association between teaching effectiveness and student learning outcomes.

The Qualitative Single Subject Model Research Questions

The research questions that are relevant in the analysis of the data collected during the investigation phase of the research study of the English1200–01 freshmen class, are given as follows,.

1. How does the teaching strategy of the instructor (for example, the use of instructional approaches like discussions, lectures, demonstration, audiovisuals, computer programming, fieldwork etc) help to enhance the student learning outcomes in the class?

2. How does the interaction (in and out of the classroom) existing between the instructor and the students (for example, faculty–student office hours, advising, and one–on–one mentoring), including feedback from tests and exams enhance the student comprehension of the course?

3. How does the teaching curriculum (for example, course outlines, texts, assignments, tests, examinations), and stated goals and objectives of the course aid in promoting teaching effectiveness and student learning outcomes?

4. How do the teaching style, passion, and student concern of the instructor create students' interest and motivation for the course?

5. How well does the instructor's feedback from test and exams help to enhance the students' comprehension of the subject?

Research Methodology Model

This qualitative case study is a model for the examination of the viability of a relationship between teaching effectiveness and student learning outcomes using the following research tools such as, a.) classroom observation,

b.) interviews (personal and survey questionnaires), c.) documents (articles), and d.) audiovisual materials. As a part of the model research methodology, a college instructor and 32 freshmen enrolled in English1200–01 (a university undergraduate course in a North Carolina institution of higher learning)were under analysis during the 2014 spring semester (as a convenient single case sample).The data–gathering stage of the research design included the use of classroom observations in the planned setting, audiovisual materials, field notes, articles, and student test scores, and the interviewing of participants in the English class. The administration of surveys in qualitative Likert scale with open–ended questions were a detailed part of the data gathering design.

Examination of the Research Literature

There is a growing list of literature on the association between teaching effectiveness and student learning (Galbraith et al., 2012; Hunsaker et al., 2010; Keeley et al., 2010; Stehle, Spinath, & Kadmon, 2012). A more number of journals are appling distinct research designs, to determine the relationship between teaching effectiveness and student achievement. Some academics applied quantitative designs, to examine the connection between teaching effectiveness and student learning (Agbetsiafa, 2010; Clayson, 2009; Donnon et.al., 2010; El Hassan, 2009). Others saw the need for a qualitative design (Galbraith, 2012; Goorha & Mohan, 2010; Smart, Witt, & Scott, 2012), or the mixed method approach (Bouta, Retalis, & Paraskeva, 2012;Taras et al., 2013; Webb, De Lange, & O'Connell, 2009) in the determination of the connection between teaching effectiveness and student achievement.

Certainly, the diverse quantitative designs are available to examine the teaching effectiveness and student learning, by the student ratings of instruction used in several universities collectively. Overall, there have been some agreements that, students' ratings seem adequate to assess what they seek to determine, teaching effectiveness, student satisfaction, educational experience, and program curriculum (Agbetsiafa, 2010; Skowronek, Friesen, & Masonjones, 2011; Zhao & Gallant, 2012). Agbestsiafa (2010) also noted that, student ratings

suggest a planned, systematic, and effective means of acquiring feedback on students' responses to instructors and courses (Bakar, Tarmizi, & Alwi, 2011; Wright, as cited in Gravestock & Gregor–Greenleaf, 2008). The faculty exploits student ratings to attain a student response about their courses and record development in their instruction parts and accountabilities (Donnon et al., 2010), which may have an imperative effect on their professions (Sprinkle, 2008). Titus (2008) also said that, besides securing teaching achievements to desired outcomes, questioning students about their knowledge underpins the obligation of classroom endeavors and events. In addition, the utility of the student ratings is also to express the knowledge to students and to establish the administrative decisions, such as giving life–term tenure and advancement (Marsh, 2007; McKeachie, 2007). Indeed, the majority of the quantitative student rating method ascertain the association between teaching effectiveness and student success centered on the validity of the instrument itself. In all–purpose the validity of student ratings signifies the level, which student evaluations of faculty instruction effectively evaluate what they are planned to assess (Zhao & Gallant, 2012). Agbetsiafa (2010), utilized the factorial analysis to ascertain the validity of the rating tool in determining the association between effective teaching and student ratings in college level courses, at the University of Indiana. Using (n=1300) sampled students, the result of the Kaiser–Meyer–Olkin (KMO) statistics on the rating scale was .912, demonstrating the suitability of the application factor analysis to the data. In addition, the Bartlett's for the existence of interaction among the variables was significant at $p < .0001$. The results found positive associations between student knowledge of teaching effectiveness, education support, effective communication, and clarity of course components, and course evaluation and feedback, thus confirming the construct validity of the rating tool. However, in spite of the recognition of the student ratings in exploring teaching effectiveness and student learning outcomes, some studies have suggested that, the ratings may be susceptible to elements unrelated to teaching effectiveness (Kozub, 2010) and that, the student and the teacher's gender may influence the student ratings.

Beside the use of quantitative research designs, there is

also a growing list of qualitative designs used in the determination of the association between teaching effectiveness and student learning (Galbraith, 2012; Goorha & Mohan, 2010; Smart et al., 2012). Galbraith (2012) used a qualitative design to examine the association between teaching effectiveness and student achievement. The author argued that the enrichment of teaching and learning effectiveness is likely in small–class surroundings where teachers can tailor materials and methods. Thus, using a week long soil and geological science field trip of intercollegiate competition, which involves about 70 students from 10 states, and classified into 12 teams of students and teacher–coaches, a competition ensured among the teams, to endorse student engagement and student–centered learning. The data gathering process included study questions with open–ended answers. The result found that the student–centered learning through exchange of information between–and–within the teams was significant to comprehend the course material. In addition, the result also found a connection between student engagement and the grouping of a comprehensive field trip to a novel resource area with a distinct subject of focus, practice of professional trade skills, a new social interaction, and a contest at the end of the trip. On the other hand, Abel and Campbell (2009), employed a mixed method design, to examine the student perceptions of teaching/learning, using a sample of 59 students in a second year of Master of Social Work (MSW). One of the segments used essentially a conventional teacher–centered method and the other exploited a compact student–centered approach. Using Cross–tabulation, Chi–squares tests, and Pearson's correlation tests, the results found a statistically significant difference between the conventional class and the compact class modernism, in at least six areas of perception (actively involved, role–plays, desired learning, professor trusting students, student–teacher learning cooperatively, emphasis on generating better questions). In addition, using the grounded qualitative design, the results also found students were aware of the dissimilarities between teacher–centered and student–centered teaching, and emerged to favor the latter. Additionally, the result also found a significant improvement in teaching

effectiveness and the development of highly developed practical skills in the student–centered class.

The Qualitative Single Subject Case Study Research Mathematical Model

This section of the proposal involves the data collection, and the anticipated analysis of the data collected. The anticipated data for the research bears relevance to the research topic, purpose, and research questions. The Osler–Mansaray "Instructional Equation of Qualitative Single Subject Case Study Outcomes" mathematical model of data analysis has the following form as given by,

$$\mathbf{T}_{E_{ff}} = [\mathbf{Q}_D \rightarrow \varphi + \chi^2 + \varphi_c]_{SLO}$$
$$(\text{with} \eta = 1)$$

Where,

T_{Eff} = Teaching Efficacy;

Q_D = Qualitative Data;

φ = Phi;

χ^2 = Chi Square;

φ_c = Cramer's V or Cramer's Phi; and

SLO = Student Learning Outcomes.

This equation is defined as, "Teaching Efficacy is equal to the concentration of Student Learning Outcomes that are derived from Qualitative Data, that yields the associative statistical outcomes of Phi with Chi Square and Cramer's Phi".

Sample Instrumentation

Table 3 in Appendix shows the Itemized Frequency Results of Survey Responses Per Indicator (for sample itemized survey questions and results).

Research Support for the Data Collection Methods

The core objective of this research project is to generate data on teaching efficacy and its association with student learning outcomes. The aptness of the purposeful sampling strategy (Creswell, 2013) for the study also seems noteworthy, because it would target a single subject class out of convenience (in the supposition it would offer resolutions) to the research problem and subsequent research questions. In addition, various qualitative data collection techniques are not limited, but including: observations, personal interviews, qualitative survey

questionnaires, research field notes, document reviews (journal articles, newspapers, student test scores), and audio–visual materials (videos, cameras, computer software), among others, will provide the supportive data needed to ascertain the research objectives.

Additionally, the research objectives support the use of the naturalistic and non–participation observation technique (Davidson, Worrall, & Hickson, 2008; Nurani, 2008). Nurani (2008), noted that, non–participant observation requires the researcher to observe and record the activities instantaneously. Inherently, the purpose of the objective appears to ensure the monitoring and recording the students–teacher interaction in the classroom with the application of field notes, recording, and cameras, among others, without the research study's involvement. The utilization of field notes will essence the endorse documentation of observational data. In reality, the observational data would embrace both descriptive and reflective notes (James, Griffin, & Dodds, 2009) relating to teaching approaches. The descriptive notes will also embrace the instructor's teaching technique, course context, and students' reactions. Additionally, the data collection period would equally consist of videotaping teaching lessons, to acquire an image record of the sessions to increase the field notes, as well as the provision of a factual support of classroom activities. In addition, semi–structured face–to–face formal interviews (James et al., 2009; Laragy & Ottmann, 2011; Yu, Zhiming, & Harvie, 2013) with students and the teacher also appear suitable as a qualitative data gathering instrument in regards to the study. Videos, recorders, and field notes, are also deemed usable, to record qualitative interviews for transcription. The generation of informal interviews with the participatory instructor and their students will provide much needed qualitative data regarding student–teacher interaction and will also offer supplementary supportive to resolve the research problem and questions.

In adding up, students will similarly complete a semi–structured questionnaire on the course curriculum, teaching style, feedback and exams, by means of a 5–point Likert scale (Campbell, McCall, Eagleson, & McGinnis, 2012; du Plessis & Webb, 2012; Yu et al., 2013).

Those questions will necessitate qualitative responses in the Likert scale, in addition, to open–ended queries.

Projected Data Analysis Research and Support

Analysis of the data collected in the research investigation, uses the Qualitative Research Model with the use of different analytical methods, rooted in the multiple qualitative techniques. Therefore, an explanation of the data will involve both subjective and objective analysis (Yu et al., 2013) of the information collected during the investigation segment of the research. In the objective analysis, the Cross–tabulation and Chi–square study will help to analyze the qualitative responses of students from the administered survey questionnaires. At the same time, the subjective analysis of the data includes the students' perception of the teacher through the open–ended questions, in addition to the interpretation of the field notes, observations, and personal interviews gathered during the investigation stage.

Clearly, the transcription of the interviews (semi–structured formal, and informal), together with the written descriptive field notes, and videotaped of the classroom procedures collected in the course of the information gathering appears a part from the data analysis. Furthermore, the use of the Framework design (Ritchie & Spencer, 1994) will offer support to the qualitative data analysis phase. Against the backdrop, the familiarization stage of the data analysis of the research appears to embrace a listening of the recorded classroom events (formal and informal interviews), including the evaluation of the field notes documented earlier; the listing of crucial thoughts and recurring premises, become more tailored to the essential facts of the study. The method requires the knowledge of the transcript in an explanatory mode (Mason, 2002). In addition, the use of the thematic framework, to recognize persistent concerns acknowledged in the tapes and field notes for indexing or coding purposes may positively help with the research findings. Laragy & Ottmann (2011) also endorsed this notion when they said thematic analysis embraces extensive coding by cataloguing the data from notes and observations, to identify additional theme. As well, the use of constant comparative techniques (Strauss & Corbin, 1998), in the data analysis will also help out in

inductively coding the interview texts and observation field notes obtained during data gathering. The technique would help to explore the existing dissimilarities and associations, and the results placed into groupings. In that, the application of the qualitative data analysis software design such as ATLAS. Ti (Padgett, 2003) or Nvivo (Laragy & Ottmann, 2011), in the analysis stage, will offer an exceptional input to the identification, indexing, and contrasting of students' responses. At the end, following the application of indexing to individual content, the use of the charting method will help in creating an image of the data simultaneously. Davidson et al. (2008) noted that, charting concerned formulating summary text titles taken from the indexed data. In addition, the authors also said charting involved inductive and reflexive analysis and generated a generalization of themes that included recurring perceptions. In this regard, the analysis will contain the formation of a chart with subject to text captions and reorders the information obtained from their primary structure under the core principles, and the analysis of the focal ideas from the participants' interviews and observational notes.

Results

The Qualitative Single Subject Case Study Research Mathematical Model

Table 1 provides the results and level of statistical significance of the Non–Parametric Chi–Square Tests in terms of the Pearson Non–Parametric Chi Square calculation, Continuity Correction, Likelihood Ratio, the Mantel–Haenszel statistic for the single subject case study research design. Table 2 yields the results of the primary nominal variable associative statistical tests such as PHI (ϕ); Cramer's V (φc); and the Contigency Coefficient at the approximate level if significance (at 00015*1).

Thus,

$T_{Eff} = [Q_D \rightarrow \phi + \chi^2 + \varphi_c]_{SLO} = [Q_D + \square.35874 + 14.34564 + .35874]_{SLO}$

(within = 1), The research results yielding a Positive Teaching Efficacy in terms of Qualitative Data ($Q_D +$).

Recommendations

The researchers make the following recommendations regarding this study,

- The more research studies with this type of single subject case study to be conducted.

- More research to be conducted using Cross–tabulation and Chi–Square tests in the field of education to establish a stronger relationship between teaching effectiveness and student learning; and

- In–depth journal analysis to be kept during the case study research methodology to build a qualitative narrative that is supportive and that is open to address concerns about the methodological single subject case study research validity and reliability.

Findings and Conclusion

Indeed, through the application of the research statements, it is possible to make an assumption of the research questions. Certainly, the objective of the result portion is to aid in revealing which research question has the support of the research data. Therefore, the anticipated findings of the research will establish an association between teaching effectiveness and student success, due in part to the expected goals of the course curriculum, the instructor teaching techniques, and the enthusiasm and learning skills of the students.

Table 1 shows a hypothetical result of the Cross–tabulation and Chi–Square tests of a relationship between teaching effectiveness and student learning (based upon the Osler–Mansaray Qualitative Single Subject Case Study Research Mathematical Model), using the qualitative responses from the 5–point Likert scale. With the application of the SPSS (Statistical Packages of Social

Chi–Square(χ^2)	Teaching Effectiveness and Student Success		
	Value	DF	Significance
Pearson	14.34564	1	.00015
Continuity Correction	12.97160	1	.00021
Likelihood Ratio	14.31250	1	.00014
Mantel-Haenszel	14.00734	1	.00012

Note. Minimum Expected Frequency – 2.10

Table 1. Non–Parametric Chi–Square Test Results

Statistics	Teaching Effectiveness and Student Success	
	Value	Approx. Significance
PHI (ϕ) (	.35874	.00015*1
Cramer's V (φc)	.35874	.00015*1
Contigency Coefficient	.35798	.00015*1

Table 2. Results of Nominal Variable Associative Statistical Tests

Sciences), the Pearson Chi–Square correlation results (p = .000) was significant at the 0.05 significance level. The implication here is the realization of a strong association between teaching effectiveness and student learning outcomes. Next, is the determination of the strength of the relationship between teaching effectiveness and student achievement. The hypothetical results are displayed in Table 2 (based upon the Osler–Mansaray Qualitative Single Subject Case Study Research Mathematical Model). The strength of a relationship is shown by the Cramer's V and the Contingency Coefficient values in Table 2. A Cramer's V value of above .35 indicates a strong relationship. Thus, according to Table 2, the Cramer's V and Contigency Coefficient values were between .35874 and .35798, indicating a strong positive relationship between teaching effectiveness and student success. This notion is also supported by the hypothetical frequency results shown in Table 3 (Appendix). According to Table 3, 78.1% (25) of the respondents, said the instructor's classroom teaching strategies had helped them to understand the course material. Moreover and, presumably, the hypothetical open–ended responses from the participants and the field notes also supported the results of the Chi–square test. Additionally, the open–ended student responses and the field notes taken also showed a close interaction between the instructor and the students, which helped to answer 'how' and 'why' the relationship between teaching effectiveness and student learning outcomes occurred.

However, in spite of the probable outcomes and the significance of the investigation through multiple facets, the research has its limits. Indeed, the case study method is open to concerns about methodological thoroughness regarding its validity and reliability (Miles, 1979; Yin, 1981; Nurani, 2008), and, without diligence, application in management study cannot be claimed (Scandura & Williams, 2000). For example, in the theoretical research proposal, the use of the Cronbach alpha scores for the Likert scale data was lacking in the analysis method because of the response requirements of the case study design. Thus, the validity and reliability of the design tool may appear challenging to define. In addition, because the results hinge on inferences from field notes and open–ended responses, the study may suffer from prejudicial supposition. However, a qualitative research design methodology is needed which goes beyond the traditional quantitative methods which are currently used to assess teaching efficacy. The research model outlined in this paper fills a void in the body of content knowledge regarding the use of qualitative research design methods used to determine teaching efficacy in regard to student learning outcomes. Further research into this area (using the researchers methodology detailed and outlined in this paper) will provide much greater insight into the rationale and the reasons on why and how individual instructor's teaching methods are positively effecting the learning environment.

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Appendix

1. How significant are the instructor's teaching strategies in the classroom (for example, the use of instructional approaches like discussions, lectures, demonstrations) help in your understanding of the course material?

Very significant	25	78.1
Significant	3	9.4
No opinion	1	3.1
Somewhat significant	2	6.3
Not significant	1	3.1

2. How significant is the interaction with your instructor (in–and–out of the classroom) helped towards your learning success in the course?

Very significant	20	62.5
Significant	8	25.0
No opinion	2	6.3

Somewhat significant 1 3.1

Not significant 1 3.1

3. How significant are the teaching curriculum (course outlines, texts, assignments, tests, and examination), and stated goals and objectives of the course help in your perception of the teaching effectiveness of the instructor and understanding of the course material?

Very significant 27 84.4

Significant 3 9.4

No opinion 0 0

Somewhat significant 1 3.1

No opinion 1 3.1

4. How do you find the teaching style of the instructor, passion, and concern of the students in creating and motivating your interest to do well in the course?

Very significant 18 56.3

Significant 8 25.0

No opinion 3 9.4

Somewhat significant 2 6.3

Not significant 1 3.1

5. How significant does the instructor's feedback from tests and exams help enhance your comprehension of the course?

Very significant 10 31.3

Significant 5 15.6

No opinion 5 15.6

Somewhat significant 6 18.8

No opinion 6 18.8

Table 3. Itemized Frequency Results of Survey Responses Per Indicator

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