Learning Styles, Reflective Praxis, and Transformative Learning as Effective Teaching Tools Implemented by Trinidadian Primary School Teachers

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Abstract
Forty-two Trinidadian primary school teachers were asked questions pertaining to their development in terms of: (a) teaching delivery and instruction; (b) reflection of their instructional practice; (c) altering their instructional practices to suit their students' differentiated abilities; and (d) any additional comments. Responses yielded the following four themes: (a) catering to students' preferred learning style; (b) the promotion of a culture of reflective praxis among teachers; and (c) transformative learning as a means of fostering enhanced teaching practice among student/teachers. With these themes forming the principal aspects of the data garnered, the theoretical frameworks were: (a) learning styles; (b) reflective praxis; and (c) transformative learning. Matching teaching styles to students' learning styles have been subjects of extensive study by several learning styles' theorists such as Gregorc and Ward (1977), Butler (1987), Dunn and Dunn (1999), and Bissessar (2005). This study extended the literature on learning styles by examining it in relation to teachers' reflective praxis and their transformative learning. Further studies are needed to determine the success of these Trinidadian primary school teachers' use of learning styles and their students' achievement.
Keywords: learning styles, reflective praxis, transformative learning

1. Introduction

The Trinidad and Tobago Government implemented the Government Assistance for Tuition Expenses in 2004 as a means of encouraging students to further their studies at the tertiary level. This resulted in a significant number of fledgling and experienced teachers being able to complete their Bachelor of Education (B Ed) degree. The *Newsday* (April 23, 2013) reported:

> Scores of teachers who graduated from the University of Trinidad and Tobago's Bachelor of Education Programme (B Ed) in 2010, gathered yesterday outside the Ministry of Education, St Clair, to demand their status be upgraded from Assistant Teacher Primary (ATP) to Teacher 1 (T1). (p. 1).

This action by the Trinidadian teachers reflects that they have been exposed to further teacher education. The need, therefore, is to be able to determine the effect this exposure to additional training and knowledge is having on Trinidadian teachers' pedagogy.

Forty-two Trinidadian primary school teachers were asked questions pertaining to their development in terms of: (a) teaching delivery and instruction; (b) reflection of their instructional practice; (c) altering their instructional practices to suit their students' differentiated abilities; and (d) any additional comments. Responses yielded the following four themes: (a) catering to students' preferred learning style; (b) the promotion of a culture of reflective praxis among teachers; and (c) transformative learning as a means of fostering enhanced teaching practice among student/teachers. With these themes forming the principal aspects of the data garnered, the theoretical frameworks were: (a) learning styles; (b) reflective praxis; and (c) transformative learning.

The thrust toward inculcating a more research driven culture among the higher education citizenry in Trinidad and Tobago was underscored by Patricia Worrell in her presentation to professional educators on April 30, 2013. She highlighted the need for educators to collect data and move toward a more evidence-based approach to fomenting changes in the classroom. This paper heeded that call.

Dunn, and Shea (1991) exhorted that "research in learning styles provides clear directions for either how to teach individuals through their style or how to teach them to teach themselves by capitalizing on their personal strengths" (p. 95). Learning styles is a crucial aspect of teaching and learning and responses from participants in this study further augmented that fact. Moreover, a google search on 29th January, 2014 of the keywords *Trinidadians' learning styles* showed only one study conducted by Martin et al (2011) on engineering students' learning styles. The need for further research on Trinidadian teachers' use of learning styles in the classroom is imperative in determining the type of teaching practices and learning processes extant in schools. Furthermore, links among learning styles, reflective praxis and transformational leadership are limited. A google search on 29th January, 2014 of the keywords *Learning Styles and Reflective Practice*, *Reflective Practice and Transformational Leadership*, and *Transformational Leadership and Learning Styles* displayed no concrete study linking all three concepts. This study extends the available body of empirical data on these three theoretical frameworks.

2. Literature/Learning Styles

Aristotle in 334 BC pioneered interest in students' preferred learning style. Today, the literature abounds with empirical research on the success of teaching and learning when students' preferred learning styles are used to reinforce learning. Acharya (2002) defined learning styles as a "set of cognitive emotional characteristic and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment" (p. 1). For the purpose of this paper, the four learning styles, auditory, visual, kinesthetic and tactile will be used to represent the concept of learning styles. Auditory learners "remember much of what they hear and more of what they hear and then say." Visual learners "remember best when they see: diagrams, pictures, flow charts, time lines, films, demonstrations" (Felder, 1988, p. 676). Tactile/Kinesthetic learners learn through performing activities.

Researchers suggested that learners who are more actively involved in the learning process feel empowered and their personal achievement and self-direction levels rise (Dewar, 1999). The following researchers indicated that the implementation of learning styles can increase mental acuity, improve such intangible qualities as self-confidence and empowerment and result in benefits for both teacher and student. Gregorc and Ward (1977) further demonstrated that matching teaching styles with students' preferred learning styles resulted in more favorable outcomes for students. Carbo and Hodges (1988) stated that "matching students' learning styles with appropriate instructional strategies improved their ability to concentrate and learn" (p. 48). Irvine and York (1995) also agreed that matching teaching and learning styles can result in enhanced thinking skills, academic achievement, and creativity. Dunn and Dunn (1999) underscored the role of the teacher in matching teaching and learning styles and espoused that achievement and motivation increased when teaching and learning styles are matched.

Archarya (2002) suggested that "information about learning styles can help faculty become more sensitive to the differences students bring to the classroom" (p. 1). Catering to these eclectic variations form part of a successful teacher's pedagogic tools where according to Felder (1988) "Active learners do not learn much in situations that require them to be passive and reflective learners do not learn much in situations that provide no opportunity to think about the information being presented" (p. 678). Matching teaching and learning styles become pivotal to achieving effective teaching and learning outcomes.

Researchers conducted studies on matching teaching and learning styles and found that students taught using their preferred learning styles performed better than a control group where learning styles were not taken into consideration (Keefe, 1988; Bascombe, 2004; Bissessar, 2005). A student's preferred learning style should inform the instructional delivery methods used (Talmadqe & Shearer, 1969; Keefe, 1988; Reiff, 1992). In their discussion on why teachers should implement learning styles, Montgomery and Groat (1998) posited five advantages to incorporating learning styles. Firstly, learning becomes more active and students are no longer seen as empty vessels and there is a paradigm shift in teaching and learning. Secondly, in catering to differing learning styles, teachers are responding to the diverse needs of their clientele. Thirdly, teaching then moves from knowledge-based learning to skill-based learning from teaching content to teaching students. Fourthly, catering to individual learning styles can be satisfying to teachers as well as students. Ultimately, learning styles ensure that teachers are constantly improving their practice.

Montgomery and Groat (1998) suggested that the benefits in catering to students' learning styles include faculty self-reflection about their pedagogical goals and their teaching strengths and weaknesses, teaching and learning styles are malleable, and also matching teaching style to learning style does not solve all classroom issues. Similarly, awareness of the pedagogic needs of various learning preferences can be used to enhance the effectiveness of teaching and learning. In order to become more aware of their students' learning needs teachers reflect on their instructional practices. This reflection creates a paradigm shift in their practices and they transform as teachers, perennially honing their instructional practices to suit their students' collective and individual needs. A discussion of reflective praxis and transformative learning ensue.

2.1 Reflective Praxis

Self-analysis and self-improvement are the hallmarks of an effective teacher, student, and leader. Dewey (1934) indicated that reflection is a critical underpinning of growth and learning. It is related to self and the possibility of improving future practice through retrospective analysis of action. Introspection and critical analysis of one's instructional methodology are essential in the teaching/learning process. By collecting information about what occurs in the classroom, and by analyzing and evaluating this information, student-teachers, educators, and leaders identify and explore their own practices and underlying beliefs. This may then lead to changes and improvements in their teaching/learning. Thus, the bridge between the etic and emic voices is constructed.

Schon (1983, 1987) introduced the concept of reflective practice as a means of developing teachers' teaching skills and improving the dissemination of information. Schön (1983) stated, "any reflective practicum requires that student teachers plunge into the doing and try to educate themselves before they know what it is they are trying to learn. The teachers cannot tell them" (p.1). Shon coined *reflection-in-action* and *reflection-on-action* as the two distinct areas of reflection. Reflection-in-action describes the tacit

process by which the teacher thinks about what he/she needs to do and then does it. This demonstrates that learning is taking place because the teacher alters his/her practice to show that learning is taking place. Reflection-in- action remains hidden and is not verbalized (Clark &Yinger, 1977). However, reflection-in action is evident when a teacher is able to deal with unexpected problems and improvise on the

spot (Loughran, 1996). Reflection-on-action is described by Russell and Munby (1992) as the "systematic and deliberate thinking back over one's actions" (p. 3). Leitch and Day (2000) concluded that "These two processes together, in Schön's terms, form the core professional artistry of the reflective practitioner" (p. 180).

Enhancing Schon's (1983/1987) concept of reflective practice, similar advocates viewed educators' critical reflection of their pedagogical repertoire as akin to improved instructional delivery and by extension, student learning outcomes (Kemmis & McTaggert ,1990; McNiff, 1997; Danielson & McGreal, 2000). Johnston & Badley (1996) defined reflective practice as the "acquisition of a critical stance or attitude towards one's own practice and that of one's peers" (p. 4). Motivation to improve oneself personally and professionally is the nexus between positive returns in student learning outcomes and increased teacher autonomy.

In fact, Bissessar (2013) suggested that one of the tool kit Caribbean principals utilize is the creation of an "an ambience of reflexivity with increased opportunities for self-reflection with the observation of the *authentic classroom* in order to engender teacher-focus and increased commitment to improving praxis" (p. 138). Reflective praxis leads to a more meaningful understanding of individual teaching/learning styles. In order to accommodate reflective praxis, there is a need to inculcate the following: (a) journal writing (individual/group); (b) peer observation; (c) teaching methodology observation; and (d) video-recording of classes for further examination. Reflection as a teacher development tool can yield high rewards for teachers' pedagogical improvement and students' learning outcomes.

Hyams (2010) suggested the following four conditions needed to foster a culture of reflection among student-teachers: (a) They should be placed in situations that force them to get outside their comfort zones so that their reactions will trigger a need to reflect; (b) They should be willing to engage in reflection and be honest in their reflections; (c) They should be open to the process and an atmosphere of risk taking should ensue in order for students to be honest with their reflections; and (d) They should be willing to learn from their reflections and experiences. Moreover, Calderhead, (1992) concluded that reflective teaching:

> Enables self-directed growth as a professional; facilitates the linking of both theory and practice; it helps to explicate the expertise of teachers and subject it to critical evaluation. It enables teachers to take a more active role in their own professional development. (p. 9)

Reflective praxis if used correctly by teachers can chart the progress of individual teachers in their instructional delivery, teaching methodology, and overall concept of what it means to be an effective teacher. Reflective praxis and transformative learning share a symbiotic dyad where one gives vent to the other and vice versa.

2.2 Transformative Learning

Mezirow (1978) started the movement toward transformative learning which is the process "by which we call into question our taken for granted frame of reference to make them more inclusive, discriminating, open, and reflective so that they may generate beliefs and opinions that prove more true or justified to guide action" (p. 2). "Perspective transformation" occurs when an individual through experience, critical reflection and rational discourse transforms his/her previous point-of-view. Mezirow (2000) purported four types of learning reflecting the theory of transformative learning: (a) elaborating existing frames of reference; (b) learning new frames of reference; (c) transforming habits of mind; and (d) transforming points of view. It is these four types of learning reflecting theory according to Gravett (2004) that typify transformative learning. She espoused:

> Transformational learning involves individuals gaining an awareness of their current
> habits of mind assumptions and premises. It also includes an assessment of alternative
> views and a decision to renounce an old view in favour of a new one, or to make a
> synthesis of old and new resulting in more dependable knowledge and justified beliefs to guide action. (p. 260)

Transformative learning, therefore, charts the teacher's progress along a continuum as the shift in thinking takes place and fosters new instructional practices.

3. Method

Convenience sampling was used to include the student-teachers who were accessible to the researcher. Participants gave informed consent for their papers and interviews to be used in this study. The researcher thematically grouped students' action research problems. The sample population consisted of five males and 78 females from ages 20 to 60 years. Participants taught at primary, early childhood centers and special needs schools in north west, north east, central, south east, and south west Trinidad.

All participants were expected to attend 12 weeks of instruction and application of individual action research with each session lasting three hours. On week 1, students were introduced to action research and qualitative and quantitative methodologies. They were expected to start thinking about a problem they would like to resolve and

one that was within their scope. From weeks 2 to 4 students worked on the problem, the purpose, the methodology, the background, sample population and the definition of terms. From weeks 5 to 8 students completed the literature review and the data collection. From weeks 9 to 12 students discussed the findings, made recommendations for future research and submitted their final paper two weeks later.

All participants were emailed a list of 6 interview questions pertaining to the development of teaching practice among student/teachers. The questions dealt with their development vis a vis: (a) teaching delivery and instruction; (b) reflection of their instructional practice; (c) altering their instructional practices to suit their students' differentiated abilities; and (d) any additional comments. Four participants responded to the email and the researcher interviewed the additional 38 participants via telephone from July 5th to 17th, 2013.

Kvale (1996) and Mc Namara (1999) stated that interviews provide in-depth information from participants and allow them to give details of their experiences while providing factual information. Turner (2010) suggested that, "interviews provide in-depth information pertaining to participants' experiences and viewpoints of a particular topic" (p. 754). Forty-two of the 83 teacher-students responded to the six questions posed.

Two males and 40 females responded. The interview questions were validated using the "validity-as-reflexive accounting" procedure where "the researcher, the topic, and the sense making process interact" (Creswell & Miller, 2000, p. 125). The researcher then implemented "disconfirming evidence" to indicate recurring themes and categories (Johnson, 1997, p. 283). Catering to students' preferred learning style, the promotion of a culture of reflective praxis among teachers and transformative learning as a means of fostering enhanced teaching practice among student/teachers were the emerging themes when a content analysis of the responses was performed as well as analytical and topical coding.

3.1 Findings

Based on the information garnered the following three themes emerged when data were cross-referenced and coded. During the process of inquiry the researcher checked the data for trustworthiness "credibility, transferability, dependability, and conformability" (Lincoln & Guba 1985, p. 189). From the data garnered, there was the repetition of key descriptive words and phrases such as: "more research," "catering to students' preferred learning styles," "multiple intelligences," "multi-sensory," "reflection," "more interaction," "more engagement," "props," "real life," "motivation/encouragement," and "match theory with practice" which when analyzed quantitatively proved to be 80% of words participants used during the interviews.

Initial coding based on content analysis indicated the preponderance of similar themes of catering to students' preferred learning style, the promotion of a culture of reflective praxis among teachers and transformative learning as a means of fostering enhanced teaching practice among student/teachers were the emerging themes when a content analysis of the responses was performed as well as analytical and topical coding.

Marshall and Rossman (1989) suggested a five mode analytical procedure in content analysis which involved: (a) organizing the data; (b) generating the categories themes and patterns; (c) testing the emergent hypothesis against the data; (d) searching for alternative explanations; and (e) writing the report. When adhering to these five modes, the researcher found adequate content to validate the emerging themes of empowerment, student satisfaction, promotion of a culture of reflective praxis, and transformative learning. Themes were deemed important based on the percentage of recurrence throughout the content. The frequency of themes was recorded based on the data garnered. From a qualitative analysis of the content the following themes evolved.

3.2 Catering to Students' Learning Styles

In responding to the questions based on improving instructional delivery, all respondents indicated that they had been making changes in the classroom based on new knowledge and training of how students learn and their preferred learning styles. They indicated that they catered to all aspects of visual, kinesthetic, auditory and tactile learning differences. Carbo, Dunn and Dunn (1986) underscored the significance of each subscale of learning styles:

> Approximately 20 to 30 percent of the school-aged population remembers what is heard; 40 percent recalls well visually the things that are seen or read; many must write or use their fingers in some manipulative way to help them remember basic facts; other people cannot internalize information or skills unless they use them in real-life activities such as actually writing a letter to learn the correct format. (p. 13)

One participant showed that she has been using a combination of all learning styles when she stated, "I use visual arts, more skits, drama, music, and technology."

3.2 a Real-Life Experiences and Learning Styles

On the issue of using real-life experiences, one participant stated, "I learned to use and incorporate real life situations or materials in lessons, to be more effective." This allowed students to relate to what was being taught. Needing to be more creative, another participant stated, "I am often thinking of new or different ways to do over any lesson that was not well-grasped by the majority of the pupils." Another participant shared, "I am excited about the strategies I have implemented and want to see the students succeed." Another participant stated, "I now

cater more for the students, I use multiple intelligences to guide my teaching and use pictures instead of words and have changed my teaching delivery to incorporate more group-work and role-plays." This participant used more visuals to cater to her students' preferred learning style.

3.2 b Matching Teaching and Learning Styles

Peacock (2001) suggested "matching teaching style with learning style gives all learners an equal chance in the classroom and builds self-awareness" (p. 4). When discussing how matching teaching styles to learning styles has altered her pedagogy, this participant remarked, "it has been excellent, it has allowed me to match the teaching styles with the theories" (personal communication, July 4, 2013). Matching learning styles and teaching styles, another respondent added, "I keep trying to meet the students at their learning styles and incorporate all the styles in my teaching." Another participant stated, "My teaching is more child-centered now rather than teacher-oriented. I use multi-sensory learning tools and try to cater to the various learning styles and preferences and I use peer-tutoring as well." Another participant stated, "my classes are more child-centered now and I am not delivering the syllabus but pitching the lesson to cater to students' needs." Instead of teaching the content, this student/teacher started teaching the students.

3.2 c Extrinsic and Intrinsic Motivation and Learning Styles

Bain (2004) indicated that the different types of learners and their motivation determine the type of learning styles used. In fact, Deci (1969) chose the Soma puzzle cube to conduct an experiment on students' extrinsic and intrinsic motivation. He had a controlled group who was not paid to complete the Soma puzzle and an experimental group who was paid to complete the puzzle. At the end of the experiment, he discovered that the students who were paid for each pieces of the puzzle stopped the puzzle once payment was received and the experiment ended. However, the control group, who was not paid, continued the puzzle long after completion of the experiment. With this knowledge, one student/teacher who conducted her action research on extrinsic and intrinsic motivation opined, "because of action research I am no longer giving tangible rewards but try to engage students and use a more hands on approach so that they are intrinsically motivated. So far, this approach has worked well because I work with academically gifted students."

3.2 d Technology and Learning Styles

On the issue of implementing technology, one teacher/student opined, "Of course, I have been guilty of not implementing enough technology in my lessons but now I realize that I can engage students and let them come up with the ideas and concepts I want them to learn using technology." Another participant stated, "I use a lot more electronic media and Power Point to cater to a wider range of students." One student/teacher added, "I am now trying to bring props into the classroom, or using pictures and Power Point to aid the pupils." Solvie and Kloek (2007) found that the use of technology in the classroom taps into all four areas of students' learning styles and increases student engagement.

3.2 e Auditory and Kinesthetic Learners

The use of music as a behavior modification technique is well-known and can also raise academic achievement. Bush (2014) uses music as a coping mechanism with his clients who are in need of therapy. Similarly, Meei-Fang (2001) used music therapy as a means of decreasing agitated behavior among elderly person. Music has been used to cater to auditory learners. One participant stated, "when I had to teach a first year infant class, I used soft music and lullabies as behavior modification techniques and it calmed the students." Another participant stated, "I also integrate music and electronics to teach Attention Deficit Hyperactivity Disorder (ADHD) students." Stern (2008) purported that students who are supposedly ADHD are generally kinesthetic learners and will appear to be highly active and fidgety.

On the issue of gender differences, one participant stated, "it geared me to do research on how boys learn-movements and hands-on approach. They are very receptive to it and they want to learn." It has been proven that males are more kinesthetically inclined than females and understand the need for a more hands on approach (Dunn & Dunn, 1993).

3.2 f Students with Learning Disabilities and Learning Styles

Students with learning disabilities should be equally catered to in terms of their individual learning style. Participants indicated that as a result of their increased knowledge in the action research they changed their methods of dealing with students with learning disabilities. One student/teacher stated, "I changed my tactics in dealing with students who have disabilities for the past two terms, I was able to work one-on-one with a particular student using a step-by-step approach and I got her to come out of her shell. I also used recall activities and she improved." Another student indicated, on the issue of special needs students, "I gained knowledge that I did not have before on special needs children and how they could be mainstreamed into the inclusive classroom." On the issue of other strategies students implemented, one participant stated, "I have used past students' work, journaling activities, demonstrations, peer-tutoring, collaboration and it has been a learning experience for both teacher and students." One interviewee indicated, "I implemented critical thinking strategies and this has helped tremendously." The most marked difference was indicated by this participant:

In the composition area especially, I have moved away from just talking and discussing with pupils a

topic before giving them to write on a particular topic. It was always a concern to me as to how after a discussion and pupils are given words to assist that they could not still write a complete paragraph. After reflections on lessons and research, I have found that poor writing was mainly attributed to pupils lacking experience and could not relate to real life situations.

From the findings, it is axiomatic that student/teachers have been able to alter their practice to suit the needs of their ever changing clientele as they strive to achieve higher levels of student engagement, learning outcomes, and active participation. Dunn, Holtschneider, Klavas and Miles (2000) exhorted "when the appropriate instructional method is matched with students' tactual and kinesthetic strengths, higher achievement gains and more positive attitudes resulted than with traditional instruction" (p. 14). Catering to students' learning styles is apparently the most significant factor resulting in effectively transforming their teaching pedagogy. This was only possible through reflection.

3.3 Promotion of a Culture of Reflective Praxis

The very nature of action research suggests reflection. In order for participants to change their teaching practices to facilitate their students' needs and individual learning styles, there must have been a process of introspection and self-awareness. From the aforementioned

information given, it is evident that all 42 teacher-students interviewed were involved in reflective praxis according to Schon's (1983/1987) definition. McMahon (2013) posited, "reflective practice can be seen as the specific application of experiential learning to activities carried out as part of one's profession or job" (p. 163). In fact, Ashcroft and Foreman-Peck (1994) suggested the *Reflective Teacher Model* which entails critical inquiry due to experience segued with reflection. These teachers suggested that they did some form of reflection of their teaching to be able to implement changes in the classroom.

All participants noted improved changes in their pedagogical repertoire through reflecting and merging theory and practice. They stated that they had become more reflective practitioners engaged in understanding and meeting the needs of their students at their level. One interviewee stated, "I am constantly reflecting and go back and go over what I have done and try to deliver it in a different way so that students understand the work." One participant stated, "I use more realia and more interaction and do more observation of what students need and their progress and how I should improve my instructional delivery." Another respondent stated, "I am

involved in reflection on a daily basis and I do so after each lesson to ensure that my students are learning and how best I can cater to their preferred learning styles." She segued, "I am more confident regarding my strategies and matching them with my learners and more knowledgeable to the various learning styles. I include a lot more drama, music and technology in my classes." Another participant stated, "I have grown in leaps and bounds and my classes are now more child-centered rather than teacher-oriented, I plan, reflect and re-plan on a regular basis." Another participant stated, "I realize that I must reflect at the end of each class and that I need to accept criticism in a positive light. I must also plan and evaluate my lesson better." Another participant stated, "I am constantly researching as I am in the habit of researching now. In

between research, I am reflecting on my practice with what I have done and thinking more about how I can improve. Before, I felt I knew it all." This obvious paradigm shift exemplifies transformation.

3.4 Transformative Learning Opportunities

Gravett (2004) concluded, "the research demonstrated that transformation in teaching perspective could be induced through a teaching development process informed by transformative learning theory, involving inquiring and interactive teaching" (p. 270). In fact, teacher-students interviewed in this study expressed the movement from: (a) elaborating existing frames of reference; (b) learning new frames of reference; (c) transforming habits of mind; and (d) transforming points of view. Transformative learning can be found in the words of the interviewees for example, One of the male participants stated, "At first, I did not see the need for it after teaching for 20 years but in terms of teaching it has opened my eyes and I will continue to implement it in the classroom situation." Another participant stated, "doing the research and the

degree has changed my way of thinking and I do more reflecting now." Another interviewee stated, "I gained added knowledge that I did not have before on special needs children and how they could be mainstreamed into the inclusive classroom." Student/teachers involved in the action research process altered their teaching as their knowledge and understanding of action research increased and the need to move away from a content-driven teaching culture to a more skills-based culture became critical to their teaching practice.

5. Conclusion

Forty-two Trinidadian primary school teachers were asked questions pertaining to their development in terms of: (a) teaching delivery and instruction; (b) reflection of their instructional practice; (c) altering their instructional practices to suit their students' differentiated abilities; and (d) any additional comments. Responses yielded the following four themes: (a) catering to students' preferred learning style; (b) the promotion of a culture of reflective praxis among teachers; and (c) transformative learning as a means of fostering enhanced teaching practice among student/teachers. With these themes forming the principal aspects of the data garnered, the

theoretical frameworks were: (a) learning styles; (b) reflective praxis; and (c) transformative learning. Subscales of learning styles were also found pertaining to auditory, kinesthetic/tactile and visual learners. Participants were very specific about what they were doing and how much the action research aspect of the education program had influenced their instructional pedagogy.

The findings of this study corroborate similar findings on matching teaching styles with learning styles where participants indicated that they implemented different methods of teaching the same topic to ensure that learning took place. This is similar to Gregorc and Ward's (1977) summation whereby:

> *The instructional materials and techniques used by teachers have a direct effect on many students...If the approach fit the preferred learning mode, the learner usually reacted favorably. If, on the other hand, the methods were mismatched, the student "worked hard to learn", "learned some and missed some material", or "tuned out." (p. 5)*

Although this study comprises student/teachers' responses on the differentiation of instruction through individual learning styles and do not contain their students' responses, the conclusions drawn are in line with several researchers' views of matching teaching and learning styles.

Dunn and Dunn (1999) stated "Once teachers learn how their students learn, they can match individuals' learning styles with the method most responsive to that style" (p. 51). The participants in this study stated that they did that. Furthermore, Butler (1987) indicated that matching teaching style to student learning style promotes learning in a less stressful environment for students and results in greater student achievement. Bissessar (2005) implemented learning styles as a means of increasing vocabulary retention among 6th, 7th, and 8th grade middle school students in Bermuda and obtained increased post-tests scores for all students. Respondents in this study did not indicate whether or not there was increased student achievement however, a follow-up study could identify this.

Furthermore, Leitch and Day (2000) stated, "A self-aware, self-reflexive teaching
population, capable of producing the highest quality learning situations for pupils, is a laudable and necessary aim in a world characterized by social fragmentation, increasing economic competition and personal turbulence" (p. 186). Interviews with 42 student/teachers demonstrated that as a result of their participation in the action research, they felt more confident in reflecting on their practice and evaluating themselves in order to hone their instructional delivery and design.

The findings in this paper pinpoint the need for additional research on the influence of the increase of teacher education on: (a) instructional delivery and design; (b) student learning outcomes; and (c) teachers' desire to continuously improve their pedagogy. This study has provided data on a small-scale as to what is taking place in one institution in Trinidad and Tobago with the increase in teacher training and development. More studies are needed to illustrate the value and benefit to society that enhanced teacher training can have on all facets of teaching and learning.

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