IOSR Journal of Research & Method in Education (IOSR-JRME)
e-ISSN: 2320–7388, p- ISSN: 2320-737x Volume 12, Issue 1 Ser. V (Jan. – Feb. 2022), 52-60
www.iosrjournals.org

Cooperative Versus Traditional Teaching Strategy in Grade 9 General Education & Training Certificate (GETC) Mathematics

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Abstract
Research indicates that the strategies and outcomes of teaching are two different concepts that do not exist in separation, but are entangled with each other. This study has investigated whether there is a gap in performance results between learners when instructed using traditional versus cooperative teaching strategies in Mathematics. A quasi-experimental was carried out on three Senior Secondary School classes in the Buffalo City Metropolitan Municipality (BCMM) educational district. The target population for this study are Grade 9, General Education and Training Certificate (GETC) learners. Judgement sampling of a random sample collected resting on the decision of the researcher was used to select participants. A two sample t-test for the cooperative versus traditional teaching strategies was used to analyse data. The null hypothesis of mean difference equal to zero was rejected given the t value of 12.0146 (mean C - mean T > 0 is statistically significant). The results of this study showed that cooperative teaching strategy is an effective approach, which Mathematics teachers need to incorporate in their teaching, if improved results are to be achieved.

Keywords: *Mean scores, achievement test, performance, teaching strategy, mean difference.*

Date of Submission: 15-02-2022 Date of Acceptance: 28-02-2022

I. INTRODUCTION

The national Department of Basic Education (2019) announced that the end of July 2020 was scheduled for the completion in the formalising of Grade 9 as one of the exit points of schooling into three streams of education where learners can go for Maritime schools, Aviation and even Engineering (Department of Basic Education [DBE], 2019). As a component of enabling learners who want to enter specialist schools to do so, this was envisioned in the GETC [General Education and Training Certificate] (South African Qualifications Association [SAQA], 2001, p.11) policy document, the intention of inclusion of Mathematics as the foundational subject and without restricting entry, yet providing the beginning for advanced education. Also, it aimed at enabling the constructive involvement of educated and mathematically competent citizens of South Africa (SA). Alas, the COVID-19 worldwide pandemic thwarted its formalisation.

As purported by Zakaria and Syamaun (2017) the strategies and outcomes of teaching are two different concepts that do not exist in separation, but are entangled with each other. In listing by provinces, participation achievement for 2015 Mathematics in the TIMSS, Standard Errors (SE), the Eastern Cape (EC) ranked 346 (SE 14.4) and held the last position of the nine provinces. The poor performance of learners in calculations as announced by TIMSS cannot exist in isolation of the teaching strategies directly practiced by school teachers. The aforesaid declared that learners' results are the performance scores obtained out of the learning exercise implemented directly by a teacher. The measure of excellency of a lesson also relies upon what teachers implement in the classroom to yield quality human capital for the world to come.

From among the many teaching strategies in SA, traditional teaching strategy (TTS) is seen as the strategy that will enable SA to compete on international markets. Out of the past, SA's socio-economic status has been dramatically going through significant developments with the increased call of globalisation and the conception of a global industrial wealth economy. The world market has extended as well, relatively to the human capital, and to how specific learners were made ready for employment in it (Shaw, 1998).

In defence of traditional teacher centred approach, Jansen (1998) avers that in view there is no data in approximately all the years of research for curriculum development on learner centred approach, to advocate that alternating the school curriculum has led to, or is associated with, growth in government economies or relevant up to date. Instead, the first nine grades of formal schooling under General Education and Training [GET] allow learners to attain a GETC to leave school to look for work or continue to the next phase in school or college. Grade 9 is, but the first level of the National Qualifications Framework [NQF] level1 in a national

education system that provides an incentive for individuals in the labour markets outside of the formal education system. Hence, the SAQA facilitates entrance to and continuation within all education, training and career paths.

Despite pre-existing socially constructed difficulties (for example, school resources, school location, gender, etcetera), the traditional teaching-learning approach and its implications of bad performance in Mathematics has continue to exist as a matter of clearly noticeable importance to all stakeholders. As part and parcel of the responsibility of the basic education ministry, they planned to issue the Grade 9 certificate as mentioned above to learners to allow them access to other institutions to learn technical and occupational skills. In the SA hidden curriculum, from among the many teaching strategies, the TTS is also seen as enabling SA to compete on international markets. The core business of the TTS is to pass on to the next generation the information, expertise, and qualities of a right-minded and civilised person contemplated to be vital for the coming age group's social and technological comfort.

Mathematics textbooks become the rule, and the teacher begins to replicate facts, display events and explain activities to learners in procedures in a prescribed manner. In Warthen (2017), exponents of this approach in the south eastern African American contend that any teaching strategy ought to necessitate the teaching of basic rules, skills and understanding that set down the well-grounded base for learners. Notwithstanding the recommendations of the National Council of Teachers of Mathematics (NCTM) in the west or the Curriculum Assessment Policy Statement (CAPS) in SA, the TTS in instructing Mathematics has continued and remained consistently as a teaching strategy in many classrooms in the African diaspora.

Globally, the focus of attention being put in aiding learners in gaining that which being taught mathematical operations, skills with knowledge. Its teaching is prescribed with a viewpoint that it is a listing of formulas, rules, and techniques. The teacher and learner roles are clearly delineated. It is also characterised by a perfectly scaffolded and well taught lesson plans that are sometimes repeated so that learners may reach the mastery of the content knowledge. About a decade ago, Ali (2011) and other researchers have an opinion of the teacher's relationship with class as the axis on which educational quality of learning revolves. He further stated that teachers aim to transfer information to learners from recommended textbooks, assess learners' knowledge through getting them to specify or carry out mastery in a formulated way. Learning of Mathematics mainly consists of memorisation of rules for solving textbook problems. Likewise, learners will automatically memorise rules with no purposeful understanding or the need for doing so.

In actuality, countless teachers normally instil the mastery of the Mathematics content by utilising the TTS, whereupon the learning of the subject in school curriculum became popularised in a significant or hypothetical approach that "forced learners to memorise and recall" (Zakaria & Syamaun, 2017, p. 33). The aforementioned, argued that Mathematics teachers should be adept at simplifying abstract mathematical objects to concrete things that are straightforward to understand, so that the rest of the class can identify that such lesson discovered is worthwhile to their standard of living. Time and again, current teachers put more emphasis on performance results as needed by the department more than concentrate on teaching strategies.

The traditional strategy is still regarded as tried and tested for acquisition of Mathematical knowledge. According to Osei (2000) if one is interested in a topic, one tends to blossom a constructive opinion in comparison with the general area of interest available for use. Contrastingly, if the mathematical exercise is monotonous and trifling, then a negative attitude toward the subject matter at hand is highly likely to develop and might affect the knowledge to be gained and the understanding thereof. Otherwise, the content knowledge background of topic is likely to give an insight into Mathematics. The debate basically stems from a challenge of wanting to see learners focusing most on memorisation and recall of content knowledge provided in the textbooks. This inability of learners to fully comprehend, interpret and transfer or apply knowledge in a meaningful way is occurring in many Mathematics classrooms around the country, where learners imitate like parrots do, rather than learning actively or thinking creatively.

This research study focuses on teaching strategies that can enhance learners' performance in Grade 9 Mathematics. Alongside the advantage of an alternative teaching strategy such as cooperative teaching strategy (CTS), Gamit, Antolin and Gabriel (2017), testify to many teachers still using traditional ways to teach Mathematics to secondary school learners.

II. METHODOLOGY

A quantitative research study approach was adopted. Confirming the strength of a quantitative study, Pring (2014,) avers that politicians and their civil servants seem to prefer randomised controlled experiments, where numbers seem to carry more weight for policy formation than an in-depth interview with a desperate school principal.

Research Design

Since we cannot compare apples and oranges, Privitera and Ahlgrim-Delzell (2019) suggest that one option to relinquish the issues associated with no need of a control or comparison group, is to measure

mathematical performance scores (dependent variable) of the participants before (pretest) and after (posttest) treatments. It is because the classes existed as intact groups, hence the study used a quasi-experimental group pretest and post-test design. The researcher took into account that teachers are not allowed according to the education law to expose learners to a treatment, at the same time deprive others the same treatment.

Population, Sample and Sampling Techniques

The targeted population were total number of Grade 9 Mathematics learners in the BCMM education district, are a population within the larger population of the Eastern Cape Department of Education (ECDoE). This study chose a judgement sample, also called an expert sample, which is an example of a random sample collected resting on the decision of the researchers. In total, 297 participants which were Grade 9 learners were selected.

Data Collection Instruments

In line with the national Curriculum Assessment Policy Statement (CAPS) on curriculum topic coverage, the study was carried for six weeks. A pretest and post-test were administered to three intact classes group. Learners were taught using traditional teaching strategy for about two weeks on work that required them to work individually and pretested on the third week. Another two weeks they were taught using cooperative teaching strategy work that requires them to work in pairs and post-tested on the week.

Mathematics Achievement Test (MAT)

In this study, the achievement test was used to measure the learner's mathematical performance on the topic of Algebra and Geometry. The pre and post-test contained 50 marks question. The time allocated is 60 minutes. All items used were taken from the CAPS document. According to Adu and Galloway (2015) an instrument is said to have high validity if the degree of its ability to measure what should be measured, is high. All the items were viewed by the BCM District Mathematics Subject Advisor and Mathematics teachers of the sampled schools for validation.

Data Analysis

Learners' mathematical achievement results were gathered and analysed using STATA statistical software for descriptive and inferential statistics output. The Two-sample T-test was applied in testing the formulated hypothesis.

III. DISCUSSION

The Teaching Strategies

Teaching strategies refer to the methods that a teacher uses during instruction. Effective teaching strategy triggers not just the use of teaching strategies to optimise learner performance, at the same time a judgement of the context, especially how learners acquire new information, how they categorise facts, what stimulates them to find out more, and what frustrates the learning style.

For instance, various quasi-experiments have revealed that learners in constructivist classrooms are left behind compared to ones taught Mathematics' required skills using the TTS. This effects to a controversial subject of the East Asian learners is their domination in the international standard tests according to the lately released TIMSS 2011 & 2015 report and their use of TTS. This however, urges a requirement to review any famous or newly accepted teaching strategy in Mathematics, including that of social constructivists (Tularam & Machisella, 2018).

The traditional teaching strategy

The chalk-and-talk traditional teaching strategy is a face-to-face mode of delivery like lecturing which turned out to be the measure from the day of the foundation of one of the world's first universities, *The Academy* of Plato during 387 BC. In this strategy, knowledge is delivered through speech that is accompanied by the written word or drawn image/symbol on a chalk- or whiteboard. This is the oldest and most important teaching strategy of all (Baig, 2015). It is a strategy that use a single direction way of talking therein a teacher transmits the content knowledge to learners who respond by passively concentrating and writing down some notes (Oche, 2012).

According to Baig (2015) in this approach, a teacher plays a lively and diligent role whilst learners are at the acquiring position for majority of the time, unless the teacher poses questions or invites comment. For this reason, it is termed a teacher-centred approach. Its instructional emphasis is on teaching knowledge regurgitation, individual responsibility, and competition for top achievement. The classroom activities are centred around the teacher's chalk and talk instruction, and individual accountability. In view of this strategy the teacher's duty is of an all-knowing sage on the stage, and an expert. The learner's role of accepting what the teacher say or do without active response, the user of knowledge, and note taking. Assessments requires a

recalling of facts *after* the lesson is conducted (Oche, 2012). Due to the fact that no ready for action type of work is affected in this strategy, it is only used to explain basic terminology of each topic given in the learner's books of Mathematics. It is relevant to teaching of all subdivisions of Mathematics, including Geometry and Algebra. However, not all mathematical activity related to these subdivisions can be resolved with this strategy, but the official way of doing things and strategies to answer them can be clarified in a very good manner (Baig, 2015).

Baig pointed some of the advantages of this strategy as, the showing of the approach and applicability to improve the status of the facts; the motivation of learners to take down some written notes, which in turn boost knowledge recalling and improves essential geometric skills; the autonomy of this strategy to enable the learner to write, stop, and review what was taught; It is brief, concise, and to the point due to the fact that there is no necessary items of any particular purpose, only one teacher is needed to teach so many learners (Baig, 2015). So (2012) argued that the TTS that is, chalk and talk, or whiteboard, hand-outs, teacher at the front) is suitable for large classes due to the fact that more work can be covered with little effort and in a short space of time.

He further argued that this strategy is favourable for writing boards in the background of Mathematics lessons, seeing that the information written in black and white is persevering and stays viewable to learners, in spite of attending to the next unit or topic. In a chalk-and-talk lesson format, the steps to a solution are written separately, to allow the teacher to stop when necessary and clarify, at the same time arranging questions for the learners upon which the further activity is meant to be. It enables learners to make a meaning by using self-meaningful linkages between prior learning and new content or experienced knowledge. This is conceivable since written notes on the chalkboard continues relentlessly (So, 2012).

The cooperative teaching strategy

In the last two decades there has been a coordinated effort in the field of research for demonising any teaching linked to rote learning by involving approaches in which a learner appears to build or discovers information or evidence in an attempt to make sense of his or her natural world (Tularam & Machisella, 2018).

The conception of a learner centred CTS as a system's approach and a teaching strategy took a vow to the fact that cooperation lies at the heart of all successful economic systems (see Bitzer, 2001; Schul, 2011). It has been exclaimed amongst the top-notch achievement topics in the research and innovation of teaching strategies. As a teaching strategy, it offers a helping learning social environment which is much required since a problem-solving activity can be very distressing and psychologically demanding for learners (Van Loggerenberg-Hatting, 2014).

A variety of strategies can be found for cooperative teaching and they can be utilised every time the teacher have an inclination to do so. Specified below is one of the common strategies with a brief description, Think-Pair-Share (TPS) which is used for Grades 2-12 in Mathematics of any material with single right answers. It has affected this study with active and participative teaching and learning strategies, popular as it is around the world.

This strategy was developed by Frank Lyman (1981) (Millis, n.d.). Millis stated that the teacher poses a higher order question that demands analysis, evaluation, or synthesis, and gives learners a set time to recall from memory to determine a suitable response (Think). This stage may in the same extent be used to write an answer. At a subsequent stage, the learners then turn to their partners and share their workings, therefore enabling time for both immediate feedback and drilling on their ideas (Pair). By the time of the third and finishing stage, that learner workouts may be shareable within working groups or with the whole class around the time of a follow-up reasoning talk (Share).

Mills (n.d.), further asserted that quality of discussion can be improved by this strategy given that, every time and again, the eager beaver with the speediest hands up are picked on during the time that a teacher throws a question to the whole class. Over and above, each and every learner is able to learn by reflection and verbalisation. This strategy, like any other CTS activities, capitalises on the element of simultaneous interaction (Kagan, 2018). Some learners (fifty percent in TPS) actively voice their well thought out strategies given to a subject at hand, in the contrary, in a traditional activity, it is the teacher alone who is actively sharing or a learner in singles times who responds to posed questions to be resolved

The TPS strategy allows learners to participate as individuals in the thinking of their inner circle where they are needed to respond to posed concerns in the presence of the entire class. If there exist four sequential stages for this strategy: In stage one, a group or groups of four learners give attention to the question presented by the teacher; In stage two, all learners are allotted an opportunity to write down or think about their answers; In stage three, pairs of learners read and dialogue their responses; Lastly, some learners are chosen to share by the teacher their answers even some responses among the entire class. This strategy is very effective and well appropriate in the Mathematics class where Mathematics teachers continually ask class in groups to come up with an approach of ideas about an outcome of an activity before it is tackled (Clark, n.d.).

In some ways, Sharan and Sharan (1992, p.25) proposed that TPS is simple to teach and applicable to all grades and content areas. It promotes face-to-face interaction. For instance, learners explain to each other orally how to answer problems; they teach what they learned to one another by explaining concepts that are required for assessment. A teacher poses a question like "What is the formula for factorisation?" Learners then think individually about the possible answer to it and after that they sit face-to-face with their partners and reveal to each other their thinking. It is then after the teacher starts to facilitate the whole class discussion.

Teachers use these generic steps as a criteria reference for the implementation of the TPS cooperative teaching strategy aligned to its basic principles and goals, or check whether they were merely cosmetic improvements on the conduct of classroom management. The steps proposed are:

- Learners listen while the teacher poses a question;
- Learners are given three or more seconds in which to think about their responses (wait-time);
- Learners talk in pairs about their responses;
- Finally, teachers use cuing devices, such as cards or hand signals, to help the learners move smoothly from step to step whilst they share their responses with the whole class.

Its benefits for teaching and learning are, pairs "are the most manageable groups" and one way of facilitating active participation (Sharan & Sharan, 1992, p.35). For example, pairing learners facilitates oral sharing of their responses and a chance to get valuable feedback. Yulianingsih (2017) revealed that "the notion of the positive effects of 'wait time' upon the quality of learner responses in the classroom" (p.102), strengthens English proficiency because non-English speakers must first work out what the question itself means and then cognitively form an answer to it. It influences learners' mastery of speaking skills (Afrilliani, 2018). Thus, learners' confidence levels to speak in public grow the more they experience acceptance and success.

Mathematical knowledge

Das (2015) highlighted that, with Mathematics knowledge rests a critical function in advancing career opportunities for school learners. Howbeit, today many learners are struggling with Mathematics and as they are not motivated as they time to time are confronted with different challenges of engagement. Das also pointed out that a good number of studies were carried out which were relevant nationally in South Africa (SA), provincially and district-wise. These studies assessed learners' levels of performance in compulsory grade subjects, such as Mathematics. The studies consistently reported learners' low levels of performance in Mathematics comparable to other teaching subjects.

The Mathematics lesson standards in all grades from primary and secondary to high school are "either incompatible with their cognitive levels" (Ali, 2011, p.48) or have not remained totally contextualised to display their interests, aspirations, and most of all, their real-world experience. Hence, teachers need to be creative and employ suitable tools to make their subjects interesting and to show how relevant they are to real-life problems. To turn this situation around, Mathematical instruction and mastery processes in the Grade 9 require a good command of the real problems confronted by learners when new concepts are presented to them, particularly at senior secondary grades level; the teaching methods applied by the teacher need to help learners overcome these difficulties. In-depth understanding is not easily achieved as it entails deep Mathematics engagement: learners have to come to grips with the concepts and how they are applied in the subject matter. Such knowledge, like solving algebraic equations, is very functional in sectors requiring Applied Mathematics, such as in computer programming and the manufacturing of electronic circuit-boards.

A learners' experimental and natural world can be manipulated as the footing on which to start the forming of opinion and know-how. The teacher is called for the use of group work and pair-share to integrate knowledge. A five-point paradigm-shift, from the traditional teacher centredness towards learner centred CTS for Mathematics teachers as communicated in the National Council for Teachers of Mathematics [NCTM] (2014) proposes a: 1) Pro mathematical evidence and logic as proof reference – to do away with teacher as the only knowledgeable person; 2) Pro rationality to mathematical thinking – to do away with rote learning; 3) Pro problem solving, inventing and conjecturing – to do away with the overstatement of robotic solution reply.

Inadvertently, the subject of Mathematics comprised the unplanned effects to numerous candidates determined to apply to institutions of higher learning, according to SAQA (2001). It is regardless of "the arguments for the need to produce numerate citizens who can, at worst, 'get by' in banks, shops, and casinos" (p.19). Not surprisingly, in relaxing the policy, the South African Certificate Council (SAFCERT) submission to the GETC (SAQA: 2001) policy document made a point of explaining the consequence of enforcing Mathematical Literacy in principle and understanding whereby many learners would decide not to continue with their studies.

The findings in the 2015 international Mathematics performance revealed only 34% of Grade 9, SA learners achieved a score of over 400-point TIMSS benchmark for Mathematics. It indicated that a third of the fraction of SA ninth grade learners displayed gains at a minimum level in Mathematics. There was a decrease of gains in a proportion in relation to the whole of SA participants that achieved more than the 400-point, a

benchmark of the TIMSS for 2003 and 2015 Mathematics. One would recall that, solely 10.5 per cent learners of Mathematics scored more than 400 points in 2003. During 2011, it more than doubled to 24.5 per cent and in 2015 to 34.3 per cent. In other words, this means that, from 2003 back to 2015, there was a 24 percentage of points increase in the amount of learners that achieved more than 400 (Zuze, Reddy, Visser, Winnaar & Govender, 2017).

In listing by provinces, participation achievement for 2015 Mathematics in the TIMSS, Standard Errors (SE), the Eastern Cape (EC) ranked 346 (SE 14.4) and held the last position of the nine provinces. The poor performance of learners in calculations as announced by TIMSS cannot exist isolation of the instructional exercise directly practiced by schoolteachers.

IV. FINDINGS

Null Hypothesis Testing

Null Hypothesis (H_O): There is no significant difference in the mean achievement scores of learners when taught using traditional versus cooperative teaching strategies.

Table 1: Demographic Background for the Sample

Tabulation of Teaching Strategies

Strategy	Freq.	Percent	Cum.
Cooperative	131	44.11	44.11
Traditional	166	55.89	100.00
Total	297	100.00	

Data presentation and analysis begins with demographic background. The random sampling technique was used to sample 297 learners such that variables in the study were put into consideration. Description of variables ware given in the category of teaching strategies based on learner observations with a scale of frequencies and percentages

Table 1 and Figure 1 shows the observations of learners by the researcher in teaching sessions. Applying the respective teaching strategies was being conducted, under the cooperative approach, 131 (44.11%) learners voluntarily participated in the MAT, while under the traditional one, 166 (55.89%) voluntarily participated in the MAT. Fewer learners participated in the MAT conducted after the use of CTS than after the TTS sessions (cooperative < traditional).

Figure 1: Illustrative Summary of School Based Observation

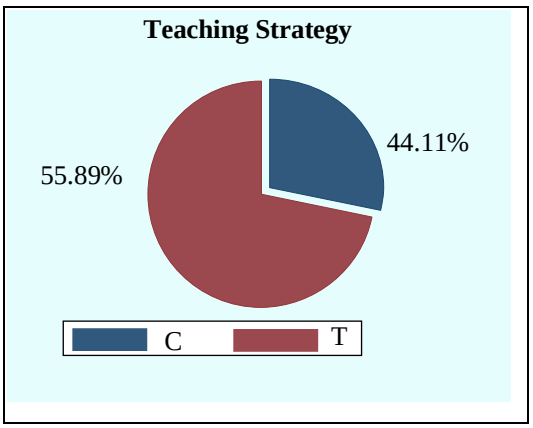


Table 2 below reveals a two sample T-test for the cooperative versus traditional teaching strategies which was run on a sample of 297 participants.

Table 2: Two Sample T-test for the Cooperative Versus Traditional Teaching Strategies

Two Sample T- test with Equal Variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Cooperative	131	20.9542	.7351475	8.414148	19.4998	22.4086
Traditional	166	11.01807	.4509106	5.809577	10.12777	11.90837
combined	297	15.40067	.5002652	8.621414	14.41615	16.3852
Diff		9.936126	.8270029		8.308553	11.5637

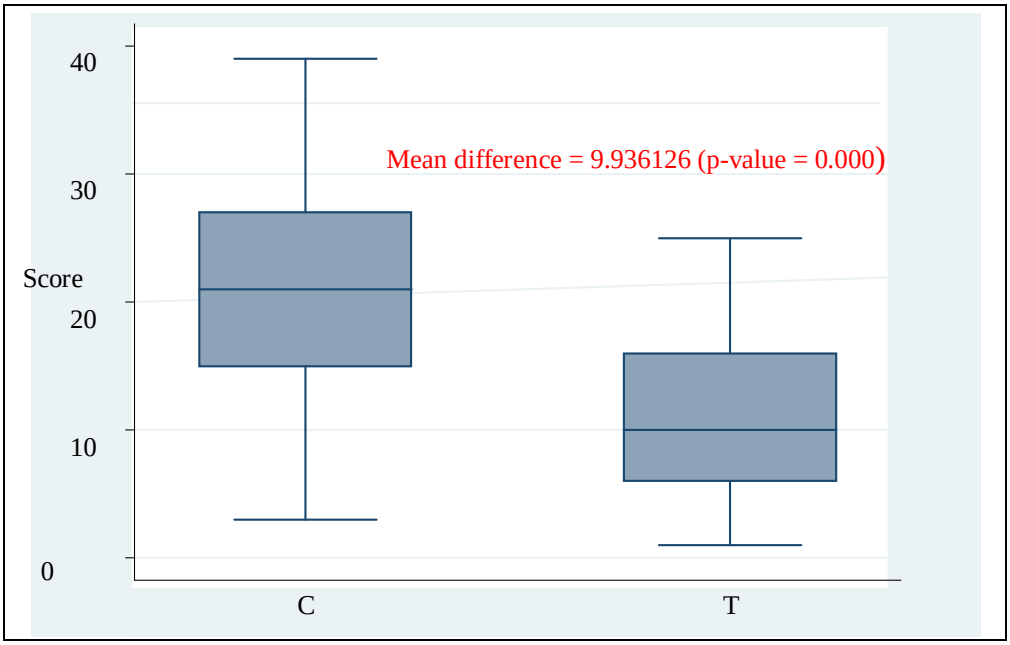
diff = mean(C) - mean(T) **t** = 12.0146
Ho: diff = 0 **degrees of freedom** = 295

Ha: diff < 0 **Ha: diff!** = 0 **Ha: diff** > 0
Pr(T < t) = 1.0000 **Pr(|T| > |t|)** = 0.0000 **Pr(T > t)** = 0.0000

The results showed that the mean score for the cooperative teaching group is 20.95, which is higher than that of traditional teaching group (11.02) by 9.94. The null hypothesis of mean difference is equal to zero (There is no significant difference in the mean achievement scores of learners when taught using traditional versus cooperative teaching strategies), thus, it is rejected given the t value of 12.0146 (p-value= 0.0000). The test further confirms that cooperative teaching strategy scores are on average above traditional marks (mean C - mean T > 0 is statistically significant).

The box plots below summarise the data across the two teaching strategies, showing the mean bar of cooperative relatively higher than that of the traditional one.

Figure 2: Summary of the Data Across the Two Teaching Strategies (Cooperative vs Traditional)



The above finding is supported by Gamit and Antolin (2017) that learners in cooperative groups enjoy group-work when there is a test. Also, the finding by Akanmu (2019) that CTS is effective at improving learners' academic performance, particularly in Mathematics. Teaching Mathematics is not simply about

learning Mathematics! Once one recognises this, it is easier to understand the heated debates over the Mathematics curriculum: in discussing the merits of 'cooperative' versus 'traditional' strategies used in Mathematics teaching, they are conflicts not simply about the best way to teach and learn Mathematics, or even about the best Mathematics to learn, but about the appropriate attitudes and values that schools should foster in learners, such as, autonomy or interdependence.

IV. CONCLUSION

In general, the mean achievement scores of learners when taught using CTS were higher than that of traditional approach. In fact, CTS (20.95) engages learners twice as effectively as TTS (11.02) does. During an insight observation in the classrooms where cooperative learning was implemented, learners had academic growth in Mathematics (Average = 20.95) more than some of the 2014 and the last up to date Annual National Assessment (ANA) provincial averages. For example, in the 2014 ANA results of the Northern Cape, learners in Grade 9 obtained an average of 9.7 percent for Mathematics, against the national average of 10.8 percent. The highest was in the Eastern Cape, where the average Mathematics mark of Grade 9 for GETC was 13.3 percent, while Limpopo recorded the lowest with 5.9 percent. This study implies that the practice and promise of CTS for the twenty-first century Mathematics education and towards the realisation of the 2030 Agenda in Africa has the potential and benefits to socialise learners to empathise with various points of view, while also encouraging them to work together in a common cause of self-development, despite differences that could otherwise divide them.

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Acknowledgement

- ✓ This study was supported by the University of Fort Hare, Govan Mbeki Research and Development Centre (GMRDC) under Postgraduate Studies (PG10), Supervisor Linked Bursary (SLB).
- ✓ I wish to express my gratitude to my supervisors (Dr Sive, I. Makeleni and Dr Rose, K. Masha) for the support, mentorship and guidance given throughout the study.
- ✓ Acknowledge the "Conditions of the Bursary", to submit at least one manuscript for publication to an approved list of journals from the South African Government's Department of Higher Education and Training (DHET).
- ✓ In seeking an expert's second opinion, I also acknowledged the data analyst (RESA ANALYTICS) for the job well done.
- ✓ Finally, my gratitude goes to my beloved family for their patience and emotional support when I needed time alone and in quietness.

Conflict of Interest

- ✓ *I, the Corresponding Author, declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.*
- ✓ *I, the Corresponding Author, confirm that the manuscript has been read and approved by all named authors. I further confirm that the order of authors listed above has been approved by all of us.*