

The Effects of Teams-Games-Tournaments on Achievement, Retention, and Attitudes of Economics Education Students

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KEYWORDS Teams-Games-Tournaments. Test of Economic Literacy. Achievement Test. Retention Test. Attitude Test. Pretest-Posttest Design

ABSTRACT Cooperative learning, as an instructional methodology provides opportunities for students to develop skills in group interactions and in working with others that are needed in today's world. The purpose of this study was to determine the effects of the cooperative learning technique of Teams-Games-Tournaments (TGT) on the achievement, retention, and attitudes toward TGT as a teaching method. A pretest-posttest, quasi-experimental design was used. Data collection instruments, an achievement test (Test of Economic Literacy), an attitude toward TGT and a retention test were used for the purpose of this study. Results indicated that the achievement test score for the TGT group was 52.99, while the Lecture control group was 50.13. This implies that the TGT group performed better in the achievement test compare to the control group. The retention test for both groups were very similar. The treatment group indicated positive attitude towards TGT as a teaching strategy for economics education.

INTRODUCTION

In recent years, South Africa has experienced an important paradigm shift in education: a teacher-centred approach has been replaced by a learner-centred approach. Put differently, the emphasis is now on an Outcomes-Based Education approach (OBE approach) as the key underlying principle of the National Curriculum Statement (NCS) (Van Wyk 2007). The process associated with reviewing and modernising the school curriculum for grades R to 12 commenced in the year 2000 and was aimed at restructuring and rewriting the interim syllabi into new, integrated and justified learning programmes. The culmination of the process was the establishment of a curriculum for the General Education and Training (GET) and Further Education and Training (FET) phases, which is known as the National Curriculum Statement (National Department of Education 2002). Within the NCS curriculum, but specifically in Economics, it is of critical importance that learners learn how to gather relevant information and to transform such information into marketable knowledge; in other words, the learner has to be enabled to identify problems and find solutions to these challenges by means of creative and innovative thinking in real-life situations. To ensure that the outcomes of Economics teaching are achieved, Economics teachers are compelled to consider different

teaching strategies and methods. By pursuing these new strategies and methods, Economics teachers will be enabled to initiate teaching and learning effectively so that knowledge, skills and positive attitudes may be optimised among learners in their response to the economic environment. A large variety of teaching strategies, methods and techniques are available, but this study focuses on cooperative learning, which can be utilised to immense benefit in the teaching and learning situation (Steyn 1985: 84; Borich 1996: 238-268; Nichols 2002; Killen 2007: 159).

The researcher contends that Economics teachers should strive to present their subject in ways that are meaningful and learner centred. If this can be achieved, learners are engaged effectively in the subject, and an interest in the learning content may be evoked. By establishing excellent modes of teaching, such as cooperative learning, the Economics teacher may create an optimal learning environment to enable learners as workers to transfer knowledge and skills into the workplace.

Cooperative learning, as an instructional methodology provides opportunities for students to develop skills in group interactions and in working with others that are needed in today's world (Johnson and Johnson 1990). According to Johnson and Johnson (1989), cooperative learning experiences promote more positive attitudes toward the instructional experience than

competitive or individualistic methodologies. In addition, cooperative learning should result in positive effects on student achievement and retention of information (Dishon and O'Leary 1984; Johnson and Johnson 1990; Slavin 1991). Further, McKeachie (1986) and van Wyk (2007) postulates that students are more likely to acquire critical thinking skills and metacognitive learning strategies, such as learning how to learn, work in small group cooperative settings as opposed to listening to lectures.

Excellent and effective teaching demands a host of devices, techniques and strategies not only to achieve cross critical outcomes, but because variety, itself, is a desideratum. The cooperative learning technique of Teams-Games-Tournaments (TGT) bug bit and infected me with the active and participative virus. I was exposed to different cooperative learning techniques such as the TGT, Student Teams Achievement Divisions (STAD), economic games and simulations during the Train-the-Trainers program 2005-2007, presented by the Council on Economic Education (CEE 2005: 3-5). I was trained in the TGT technique by CEE faculty staff and came to appreciate the effectiveness and relevance of TGT in Economics education. My conscience bothered me for almost a year. Then I started experimenting with TGT in my classes. I don't have a fair and valid excuse for my delayed enthusiasm.

Theoretical Perspective

According to Slavin (1987), there are two major theoretical perspectives related to cooperative learning — motivational and cognitive. The motivational theories of cooperative learning emphasize the students' incentives to do academic work, while the cognitive theories emphasize the effects of working together.

Motivational theories related to cooperative learning focus on reward and goal structures. One of the elements of cooperative learning is positive interdependence, where students perceive that their success or failure lies within their working together as a group (Johnson et al. 1986). From a motivational perspective, "cooperative goal structure creates a situation in which the only way group members can attain their personal goals is if the group is successful" (Slavin 1990: 14). Therefore, in order to attain their personal goals, students are likely to encourage members within the group to do whatever helps the group

to succeed and to help one another with a group task.

There are two cognitive theories that are directly applied to cooperative learning, the developmental and the elaboration theories (Slavin 1987). The developmental theories assume that interaction among students around appropriate tasks increases their mastery of critical concepts (Damon 1984). When students interact with other students, they have to explain and discuss each other's perspectives, which leads to greater understanding of the material to be learned. The struggle to resolve potential conflicts during collaborative activity results in the development of higher levels of understanding (Slavin 1990; Abass 2001). The elaboration theory suggests that one of the most effective means of learning is to explain the material to someone else. Cooperative learning activities enhance elaborative thinking and more frequent giving and receiving of explanations, which has the potential to increase depth of understanding, the quality of reasoning, and the accuracy of long term retention (Johnson et al. 1986). Therefore, the use of cooperative learning methods should lead to improved student learning and retention from both the developmental and cognitive theoretical bases.

Several studies have examined the effects of cooperative learning methods on student learning. Humphreys et al. (1982) compared cooperative, competitive, and individualistic strategies in science classes and found that students who were taught by cooperative methods learned and retained significantly more information than students taught by the other two methods. Further, Sherman and Thomas (1986) and Nichols (2002) found similar results in a study involving high school general mathematics classes taught by cooperative and individualistic methods. Research conducted by Allen and Van Sickle (1984) on the use of STAD as the experimental treatment in a study which involving low achieving students. Results of the study revealed that the cooperative learning group scored significantly higher on a world geography test compared to the control group. Another study conducted by Perrault (1983) found that cooperative learning resulted in significantly higher achievement in industrial arts students at the knowledge and comprehension levels of Bloom's taxonomy, but not at the application level when compared to students taught by competitive

methods. In a study in which nutrition was taught to both elementary and secondary students using a cooperative learning strategy, Wodarski et al. (1980) found significant gains between the pretest and posttest scores. The researchers concluded that cooperative learning was an effective method of teaching nutrition. In a review of 46 studies related to cooperative learning, Slavin (1983) found that cooperative learning resulted in significant positive effects in 63% of the studies, and only two studies reported higher achievement for the comparison group. Johnson et al. (1981) conducted a meta-analysis of 122 studies related to cooperative learning and concluded that there was strong evidence for the superiority of cooperative learning strategies in promoting achievement over competitive and individualistic strategies.

Johnson and Ahlgren (1976) and van Wyk (2010c) examined the relationships between students' attitudes toward cooperation, competition, and their attitudes toward education. The results of the study indicated that student cooperativeness, and not competitiveness, was positively related to being motivated to learn. Humphreys et al. (1982) also found that students studying physical science in a cooperative learning treatment group rated their learning experience more positively than did students in competitive and individualistic treatment groups. Tjosvold et al. (1977) found that cooperative learning strategies promoted positive attitudes toward both didactic and inquiry methods of teaching science, and students taught by cooperative strategies believed they had learned more from the lesson than did students taught by competitive strategies. In a study involving elementary and secondary students who were taught nutrition, Wodarski et al. (1980) found that 95% of the elementary students enjoyed the cooperative learning activities and that they had learned a lot about economic concepts and content.

Teams-Games-Tournaments (TGT)

Teams-Games-Tournaments was originally developed by David DeVries and Keith Edwards at the Johns Hopkins University as a cooperative learning method (DeVries et al. 1975). It uses the same teacher presentations and team work as in STAD, but replaces the quizzes with weekly tournaments, in which students play academic games with members of other teams to contribute

points to their team scores. Student play the games at three-person "tournament tables" with others with similar past records in mathematics. A "bumping" procedure keeps the games fair. The top scorer at each tournament table brings sixty points to his or her team, regardless of which table it is; this means that low achievers have equal opportunities for success. Hulten and DeVries (1976) and Mills (2008) conducted a study to determine the relative contribution of team competition and peer group practice sessions to the effectiveness of a classroom instructional technique, Teams-Games-Tournament (TGT), to 299 seventh grade mathematics students participated in an experiment varying reward system (team vs. individual competition) with practice mode (group vs. individual). An external control group was used. Dependent variables included mathematics achievement on the Stanford Achievement Test (SAT) and four student attitude scales. Results indicated that Team Competition students improved significantly more on the SAT, attached more importance to game success, and reported a higher level of peer group interest and peer pressure to do well at the game than did Individual Competition students. Group Practice students did not differ significantly in their performance on the SAT from Individual Practice students, but did attach less importance to game success than students who practiced individually. When compared to the external control group, Team Competition students (the standard TGT treatment) indicated significantly greater improvement on the SAT, reported a higher expectancy of success at the game, attached more importance to game success, reported more interest by peers in their performance, and were more satisfied with the game task. The group classification in this cooperative technique is based on a grouping of four to five students per group. The different groups are each heterogeneous in respect of the learners' abilities, gender and academic performance in the grade group. This technique works on the principle of a weekly TGT in the form of games, i.e. an academic spelling tournament, with learners competing against the members of other teams to earn team points. The winner in each team earns six points for his/her team. Poorer performers compete against poorer performers, and better performers against better performers. Everyone has an equal chance at success. Team-mates help one another to prepare, but may not help one another during

the games. This learning model is accessible and applicable for all grades and all subjects at school. According to De Vries et al. (1980), this cooperative technique can be described as follows: "...TGT is the most appropriate for teaching well-defined objectives with single right answers, such as mathematical computations and applications, language usage and mechanics, geography and map skills, and science concepts". Examples of TGT techniques that can be used are quiz competitions and tests for individual learners (Bernaus and Gardner 2008).

Statement of the Problem

While cooperative learning as an instructional methodology is an option for teachers, it is currently the least frequently used (Johnson and Johnson 1991; van Wyk 2007, van Wyk 2010a). More than 85% of the instruction in schools consists of lectures, seatwork, or competition in which students are isolated from one another and sometimes forbidden to interact (Humphreys et al. 1984). Goodlad (1984) reported that most classroom time is spent in "teacher talk", with only 10% of the students' classroom time used for reasoning about or expressing an opinion.

In the new national curriculum model, Economic and Management Sciences (EMS) is a compulsory learning area for the General Education and Training phase (grades R-9) for South African schools (NDE 2005). Emanating from this, more students enrolled for Economics as a high school subject. Currently, Economics is an elective subject in the FET phase for grades 10-12. Economic education is a growing subject in secondary education. The current teaching strategies that are implemented by economic teachers at the high school level are outdated and do not pertain to the ways in which students best comprehend economic content (van Wyk 2007). It is of outmost importance that student teachers at our institution being empowered and exposed to effective teaching strategies, such a TGT cooperative learning techniques which was employed in this study.

In a recent study conducted in the Free State Department of Education (FSDoE) schools, group work has been used extensively in economic education to provide practice in acquiring both competence and skills in interpersonal relations (van Wyk 2007). The introduction of cooperative learning strategies in economics has potential for

improving the group activities commonly used in these classes (Hall and Paolucci 1972; van Wyk 2010b). While empirical evidence supports the use of cooperative learning with a variety of subject areas and age groups, the extent to which these methods are beneficial in home economics education is unknown. Without empirical evidence to support the effectiveness of cooperative education in economics, it is likely to be ignored as an instructional methodology by economics educators.

The purpose of this study was to determine the effects of the cooperative learning approach of Teams-Groups-Tournaments (TGT) on the achievement, retention of information, and attitudes toward the instructional method of selected economics students.

The following research questions provided the specific focus for the study:

1. Was there a difference in achievement and attitude, as measured by the researcher developed achievement test for students who have been taught by the cooperative learning method, TGT, and those who were taught by the traditional lecture method?

2. Was there a difference in achievement and retention of information, as measured by the researcher developed retention test administered three weeks after the achievement test for students who have been taught by the cooperative learning method, TGT, and those who were taught by the traditional lecture method?

METHODOLOGY

Research Design: This study used a pretest-posttest method as the design and was carried out in a 12-week time period. A quasi-experimental research design, with partially matched TGT-experimental and traditional lecture method groups, was constructed because of its resistance to common threats to internal validity (Mouton 2001 and Gray 2004).

Designing the Experiment: To objectively assess whether TGT-experimental (treatment) method provides measurable improvement in student outcomes over more traditional instructional lecture methods. I compared the outcomes achieved by students who took the elementary economics course (EEE 112 module) taught using traditional lecture methods with those who took the same course taught using the TGT-experimental (treatment) group. The specific measures

selected for this study were student attitude, retention and student academic performance. The study used a quasi-experimental design; although there were treatment groups and control groups, assignment of individual student subjects to specific groups was based on the class for which they registered (parallel instruction both Afrikaans and English classes*) and, as such, could not be considered completely random. The treatment group consisted of two sections of the elementary economics (an eight credit module EEE 112) course taught using the TGT-teaching method. The control group included students who also registered for the same course taught using traditional lecture methods first semester of 2009. The control group sections (referred to here as the traditional sections) were taught without the TGT teaching method but did include some in-class group exercises, and the material covered in all four sections was consistent. In particular, both the TGT teaching method and traditional lecture method of the course used the same textbook and schedule of module EEE 112 assessment tasks. Also, individual economic quizzes (25 marks x 2 sessions), moderated controlled test (25 marks x 2 sessions) and examinations (50 marks of one hour session during June /July examinations) were generated from the same text book question bank, and individual assignments (assessment tasks) were essentially the same, varying only enough to discourage cheating. Sections of the EEE 112 course for the economic quizzes used the computerized management tool (Blackboard) that provided course information, e-mail access to the students, and individual and team scores to students. Further, all four sections of the study guide were taught in the same lecture room. Lastly, dates were set to complete the economic quizzes. Each student login and completed the quiz at the UFS computer lab.

Sampling: Third year BEd-student teachers were identified for the investigation. Only 110 BEd-students who were registered for module EEE 112, elementary economics, were selected as the proportional stratified sample for the quasi-experimental research. The sample consisted of thirty five percent (35%), Black (African, Coloured and Asian) and sixty three percent (63%) White (Afrikaans, English, Chinese and Portugese) students. Furthermore, 81% of the students were females (N=89) and 19% were males (N=21). The sample composed of the experimental group

(N=57) and control group (N=53), who were randomly selected from the registered list for module EEE 112. The experimental group consisted of 57 students and the control group of 53 students minus 2, these two students were registered for module AEO 112 (Economics subject didactics) but a clash in their classroom timetable and they were accommodated into the experimental group before the pretest. Both groups were taught by the researcher over a 12 week period of two contact sessions of 55 minutes per week for the first semester. This action research was done in the Department of Curriculum Studies in the Faculty of Education.

Research Instrument: The Test of Economic Literacy (TEL) which is a standardized test of economics content, designed by CEE. TEL is nationally norm-referenced in the United States for use in high schools and first year economics classes at university level (CEE 2005). The researcher used a modified TEL for the pre-posttest for both groups. TEL composed of 90% of standardized economic literacy questions from the CEE Test for Economic Literacy and 10% of general South African newspapers contemporary economic issues. The TEL composed of hundred multiple-choice items which was structured and aligned on the content of EEE 112 (Van Wyk 2008). Achievement and Retention instruments were also used in this study to obtain data. All students concerned were informed that results of information will only use for research purposes. This gave the researcher an indication on which angle to present the TGT during the contact sessions.

Validity and Reliability: The TEL which is a standardized test of economics content used by high schools and universities in the United States (CEE 2005). A statistical tool was used, the Cronbach's alpha coefficient which indicates a measure of internal consistency of the items in the questionnaire (Huysamen 1993). Furthermore, Starborn (2006) mentions that Cronbach's alpha is an appropriate test to use to assess the internal consistency of scales that are computed from 4-point Likert scale. To test the reliability of the research results, Cronbach's alpha coefficient was calculated for items in questions 2 ($0.9501 > p$), question 3 ($0.8788 > p$) and question 4 ($0.733 > p$). The total average for items in the questionnaire was 0.8166.

Procedure: A pretest-posttest was administered at the first orientation and last class session

of the module EEE 112 for the study. The experimental group received training and demonstrations in using TGT-method during their contact sessions. After 12 weeks, all participants (N=110) were retested with the TEL, Achievement and Retention instruments. The researcher calculated the standardized mean difference of percentiles to determine impact on students' economic literacy levels. According to Hays (1973) and Gray (2004), samples of this size would allow the researchers to detect differences between the treatment groups larger than 0.50 standard deviations at an alpha level of .05 and a desired power of .90. In order to account for possible pre-existing differences in overall ability between the treatment groups, TEL scores and first semester grades in elementary economics were used as covariate measures. In order to control for the "teacher quality" variable, both groups were taught by the regular economics lecturer who were provided in-service training in the use of TGT by CEE faculty over four seminars of eight weeks. Both groups were taught the module on elementary economics using the same content outline, but students in the cooperative learning group completed learning activities in small heterogeneous groups, while the students in the lecture group completed activities individually. The eight credit module was taught to both groups over a twelfth-week period. The Kuder-Richardson coefficient of internal consistency for the instrument was .87. The test was administered to both groups at the end of the instructional unit. Three weeks later, the TEL was administered again to the students to determine retention of information. The instrument used to measure attitudes toward the method of instruction was developed and used in a similar study by Gray (2004). Content validity of the attitude instrument was established by faculty at the Department of Psychology of University of Free State who had expertise in the development of attitude instruments. The instrument had a coefficient of internal consistency (Cronbach's Alpha) of .89. The attitude instrument was administered at the end of the module EEE 112 of instruction.

RESULTS

Preliminary analyses of covariate measures (Test scores and average grade in elementary economics) showed that students who were exposed to the TGT strategy compared to those in the lecture method were not significantly different (see Table 1). Moderate relationships, with correlation coefficients ranging from .29 to .54, were found between the covariate measures and the dependent variables of achievement and retention. These relationships supported the use of the covariate measures used in this study.

Firstly, in this study I aimed to determine whether there was any significant difference between the means of the achievement pretests of the students of the TGT-treatment and control groups. An independent t-test comparing the mean scores of the pretest and the posttest between the experimental group and control group was computed to determine if a significant difference existed. In order to reject or accept the hypothesis for this study, the t-test scores for both groups were computed (Mouton 2001; Gray 2004).

The means and standard deviations (SD) for the pretest and posttest are displayed in Table 1. The overall mean for the students' pretest was 42.43 (SD = 9.249) with scores ranging from 35 to 69. The overall mean for the students' posttest was 57.99 (SD = 12.603) with scores ranging from 54 to 97. Table 1 indicates that the whole population participating in the study made an overall increase of student achievement in economics performance (see also Table 3).

Based on results in Table 2, the analysis of the achievement test data indicated significant overall treatment effects, controlling for pretest, $F(2,244) = 27.81$, $p=0.000$. Regarding academic achievement, students in the TGT groups benefited significantly more than those in the control groups (mean difference: 7.057, $p=0.000$), as did students in the TGT groups (mean difference: 2.310, $p=0.000$). Similarly, there were significant differences between the TGT groups, in favour of TGT (mean difference: 2.310, $p=0.000$).

Table 1: Summary of achievement for pretest and posttest of both groups

<i>Test*</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>SD</i>
Pretest	110	35	69	42.43	9.249
Posttest	110	54	97	57.99	12.603

*TEL consist of 100 test

Concerning the attitude data, overall analysis for covariance, $F(2,213)=1.321$, $p=0.000$, indicated significantly positive attitude towards TGT as a teaching strategy by experimental group to economics education.

A paired sample t-test was used to determine the paired differences between the pretest and posttest scores for the two groups. Table 3 shows that the mean of the paired differences was -11.60 (SD = 8.846). The data show that there was a statistically significant difference $t(109)=-7.18$, $p < .01$ between the pretest and the posttest of the TGT experimental and Lecture method control groups.

An independent t-test was used to determine the difference between the means of the pretest and posttest of the experimental groups versus the control groups. Table 4 shows that the experimental group (pretest mean of 35.67) and the control group (pretest mean of 36.00) as very similar. This show that the control group perform better then the treatment group. After conducting the quasi-experiemnt, the posttest for the experimental group reported a mean of 51.80 (SD = 12.399) compared to the control group of 49.07 (SD = 9.285) which showed a remarkable and a significant difference in scores. This showed that the experimental group had a 16.13 increase from

pretest to posttest. Further, the control group also showed an increase of 13.07 difference from pretest to posttest. When comparing the different means between the two gropus, there was a (16.13 minus 13.07) 3.06 difference between the increases of the experimental over the control group generally. Both cases in the table show a significant change in overall scores for this study. Table 4 reveals that the experimental group which were exposed to the TGT teaching method, had a statistically significant increase of student achievement compared to the control group. The results revealed TGT is a more effective teaching technique compared to the traditional lecture method in economics education.

Based on the results in Table 5, student achievement scores was measured by the number of correct responses on the TEL (hundred multiple-choice items) achievement test. The mean scores for the treatment group were adjusted by the covariate measures to statistically control for preexisting differences. The adjusted mean achievement test score for the TGT group was 52.99, while the adjusted mean score for the Lecture control group was 50.13. This implies that the TGT group performed better in the achievement test compare to the control group. The retention test was administered three weeks

Table 2: Results of analysis of covariance achievement and attitude measures

Measurers	F	df	P	Direction
Academic achievement overall	27.81	2	0.000	
TGT vs Lecture	2.310	4	0.000	TGT > Lecture
Attitude to economics education	1.321	5	0.000	TGT > Lecture

Table 3: Summary of paired samples test for pretest and posttest of experimental and control groups

Mean Paired df	SD	t-value	Sig. (2-tailed)
-11.60	8.846	-7.18	.000**

** 2-tailed Sig. $p < .01$

Table 4: Mean differences between the experimental group and control group

Group	N	Pretest mean	SD	Posttest mean	SD	Difference	t-value	Sig. (2 tailed)
TGT experimental	57	35.67	8.966	51.80	12.399	16.13	-7.48	.000**
Lecture method control	53	36.00	9.285	49.07	9.285	13.07	-3.93	.001**

** 2-tailed Sig. $p < .01$

Table 5: Mean student achievement and retention scores by teaching method.

Teaching method	N	Achievement test scores		Retention test scores	
		Observed mean	Adjusted mean	Observed mean	Adjusted mean
TGT experimental group	57	51.80	52.99	50.67	50.79
Lecture control group	53	49.07	50.13	50.11	50.35

following the achievement test for both groups. The adjusted mean score for the TGT group on the retention test and the control group were very similar.

DISCUSSION

Since the sample is limited to only one hundred and ten BEd Foundation and Intermediate phase student teachers who were registered for module EEE 112, elementary economics and for the duration of 14 weeks, any generalizations drawn from this study should be considered with caution. The results of this study indicated that the cooperative learning method TGT is more effective in terms of academic achievement than the traditional lecture method.

It is obvious from the results of this investigation that there were significant differences in the achievement scores (mean 52.99) of students who were exposed to TGT as a cooperative learning-teaching technique compared to the lecture teaching method (see Table 5). Results further show that the retention test score for the TGT group compare to the control group were very similar. The findings of this study revealed similar results of Slavin (1980) and Tarim and Akdeniz (2008) studies on achievement scores. In these studies, Slavin analysed 28 experimental studies in which nine different cooperative learning methods compared with other methods were used. Slavin indicated that in general, cooperative learning was found to be more effective than other methods on students' academic achievement, positive relationships among different ethnic groups, students' mutual relations and students' self-esteem. This implies that other factors such as diverse student learning styles and social skills was not considered in this study. Dickie (2006) and Berry (2008) conducted a study by using classroom experiments to teach economics. The author used a pretest-posttest control-group design to test whether classroom experiments and grade incentives that reward performance in experiments affect learning of introductory microeconomics. The author measured the partial effects of experiments independently of instructor quality and teaching methods using Test of Understanding in College Economics scores.

Further, this study reports that the students' who participated in the experimental group, demonstrated better achievement test scores

compared to the control group. The overall mean for the students' pretest was 42.43 (SD = 9.249) with scores ranging from 35 to 69. The overall mean for the students' posttest was 57.99 (SD = 12.603) with scores ranging from 54 to 97, which indicates that the whole population participating in the study achieved an overall increase of student achievement in economic literacy levels. The experimental group had a 16.13 increase from pretest to posttest. The control group had a 7.07 increase from pretest to posttest. There was a 9.06 difference between the increase of the experimental over the control group. The analysis of the achievement test data indicated that there were significant overall treatment effects, controlling for pretest, $F(2,244) = 27.81, p = 0.000$. Regarding the academic achievement test score for the TGT group (mean = 52.99), while the adjusted mean score for the Lecture control group (mean = 50.13). This implies that the TGT group performed better in the achievement test compare to the control group. The retention test was administered three weeks following the achievement test for both groups. The adjusted mean score for the TGT group (mean = 50.79) on the retention test and the control group (mean = 50.35) were very similar.

Tarim and Akdeniz (2008) explored the effects of Team Assisted Individualisation (TAI) and Student Teams Achievement Divisions (STAD) on fourth grade students' academic achievement in and attitudes to mathematics. The results of their investigation revealed that both the TAI and STAD methods were found to have positive effects on students' academic achievement in mathematics. The pairwise comparisons showed that the TAI method had a more significant effect than the STAD method. Furthermore, the study also revealed no significant differences regarding students' attitudes towards mathematics. The findings of Tarim and Akdeniz's study also support the findings of this quasi-experimental design. Similarly, Leikin and Zaslavsky (1999) and Tarim and Akdeniz (2008) reported in their studies while learning mathematics in certain cooperative learning settings, students often improve their problem solving abilities, solve more abstract mathematical problems and develop their mathematical understanding. In addition, from a cognitive developmental perspective, the cooperation between students of similar ages with common aims is very important. Moreover, Adams and

Hamm (1990) support this idea as follows: "Collaboration between peers clearly helps even very young children to learn how to take different points of view into account. And when children at different development levels work together to explore differences of opinion, they all improve their thinking skills" (p. 33). Furthermore, Balfakih (2003) investigate the effectiveness of STAD in teaching high school chemistry at the UAE. The results showed that the treatment groups benefited most from the study.

CONCLUDING REMARKS

The results of this study are encouraging and add to the work of other research studies in this regard (e.g., Bryant 1981; Bonoparte 1990; Johnson and Johnson 1994; Johnson et al. 1994; Johnson et al. 2000; Vaughan 2002; Tatin and Akdeniz 2008; Van Wyk 2007, 2010a, 2010b). While cooperative learning was not found to be more effective than lecture method with respect to home economics students' achievement and retention in this study, the literature suggests there may be additional reasons to use cooperative learning. Certainly, the ability to work with others within a group and to develop interpersonal skills may be justification for using cooperative learning strategies. This study has shown that cooperative learning methods were as effective as lecture method with regard to achievement and retention, so concerns about the effectiveness of cooperative learning methods in these areas have been addressed. Students taught by cooperative methods should perform equally as well as students taught by lecture method. In addition, student attitudes toward cooperative learning are similar to lecture learning.

Based upon the findings of this study, the following conclusions were drawn:

1. The TGT technique is more effective than the lecture method with regard to economics student achievement and student retention of economics content. Findings showed that the adjusted mean achievement test score for the TGT group was 52.99, while the adjusted mean score for the Lecture control group was 50.13. This implies that the TGT group performed better in the achievement test compare to the control group. The retention test was administered three weeks following the achievement test for both groups. The adjusted mean score for the TGT

group (mean=50.79) on the retention test and the control group (mean= 50.35) were very similar (see Table 5).

2. The TGT technique is more effective than the lecture method with regard to economics students' attitudes toward the method of instruction. Results indicated that there were differences in achievement test (mean=52.99) scores and significantly positive attitude towards economics education, as measured by the researcher for students who have been taught by the cooperative learning method, TGT, and those who were taught by the traditional lecture method (mean=50.13). The overall analysis for covariance, $F(2,213)=1.321$, $p=0.000$, indicated significantly positive attitude towards TGT as a teaching strategy by experimental group to economics education (see Table 2).

The students who participated in the experimental group increased their posttest mean of 8.60 percentile posttest score over the control group's mean. The findings reveal that the TGT is a more effective teaching technique compared to the traditional lecture method in economics education. Findings showed that TGT had a significant impact on the achievement of the experimental group (52.99). While results were extremely powerful, there are some issues to consider when interpreting them. Only 57 experimental group members were exposed to this technique and because this sample size of both groups was statistically small, it was difficult to determine whether or not the results accurately represent a larger population. Another issue is that of the short period of time for this research study which was twelve weeks. The investigation may have shown different results if it had been conducted over a longer period of time.

In the light of the above results and discussions, I believe that it is important to conduct a study for a longer period of time in order to be able to determine changes in academic performances, retention and attitudes. In addition, the same questions might be used for control and experimental groups in order to achieve a better comparison. Additionally, such a study can be conducted using larger sample groups and schools with different socio-economic levels. It would be of interest to understand the internal dynamics of TGT. For example, evidence on peer interactions might be obtained from observations or from stimulated recall of cognitive processes

in small groups. Moreover, the attitudes of students towards cooperative learning methods can be determined by means of observations and interviews.

Further research should be conducted to increase the generalizability of the findings to economics education. Studies in which cooperative learning strategies are used for a semester or an entire year should be conducted to determine if student achievement is increased with additional experience in using TGT cooperative learning strategy. Future research should also focus on comparisons between TGT and STAD techniques (models) of cooperative learning, as well as comparisons with lecture method in order to determine if other cooperative learning models are equally effective in producing desired student outcomes. Based on the results of this study, lecturers, teachers and curriculum developers need to be aware of the positive results of achievement test, retention test and attitude toward TGT of this study. It is the intent of the researcher to explore further:

- the impact of TGT as an anti-bullying strategy in the economics classroom;
- teachers' teaching styles and students learning styles in economics education; and
- the effect of TGT as a teaching strategy on students' learning styles and motivation in economics education.

ACKNOWLEDGEMENTS

The author acknowledged the financial contributions made by the National Research Foundation of South Africa (NRF) for this intellectual project. Acknowledgement and thanks goes to the EEE 112 modular students and the research assistant, who voluntarily participated in this research study. Lastly, the quality of language revision work done by the accredited language editor, Carol Keep is acknowledged. Any opinions, findings, and conclusions expressed in this paper are those of the author and do not reflect the views of the NRF or the Department of Curriculum Studies.

NOTE

*The UFS Language policy is a parallel medium of instruction which is Afrikaans and English. Both languages are part of the eleven official languages in according to the South African Constitution.

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