

Effectiveness of Student Team Achievement Division and Team Accelerated Instruction on Student's Engagement in Secondary School Quantitative Economics Contents

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Abstract: The study sought to determine the effectiveness of students team achievement division and team accelerated instructional techniques on student's engagement in senior secondary school quantitative economics contents. It also determined the influence of gender on student's engagement in senior secondary school quantitative economics contents using STAD and TAI. Three research questions and three null hypothesis guided the study. The design adopted for the study was quasi-experimental non-equivalent pre-test, post-test control group design. The population consisted of 8966 SS11 students from the study area. Sample for the study consisted of 186 SS II students made up of 65 males and 121 females drawn from four co-educational schools in Nsukka Local Government Area of Enugu State. Purposive sampling was used to sample four co-educational schools and two intact classes from each of the schools that were assigned to the two experimental groups (STAD and TAI) were randomly selected. The instrument used for data collection was the Student's Self Report on Engagement (SSRE). The instrument was face validated and tested for reliability. The internal consistency of SSRE was 0.81 using Cronbach's alpha. Data collected were analysed using mean and standard deviation for the research questions while ANCOVA was used in testing the null hypothesis at 0.05 level of significance. The result showed that there was a significant difference in the mean engagement response scores of students exposed to TAI than in STAD. However while there was a significant difference in the mean engagement responses of male than female students in quantitative economics contents there was no significant interaction effect between STAD, TAI and gender. Based on the findings, it was concluded that TAI is more efficacious than STAD in enhancing student's engagement in secondary school quantitative economics contents. The findings imply that the application of TAI in teaching quantitative economics contents could enhance student's engagement. It was recommended, among other things that TAI should be adopted in teaching secondary school quantitative contents of senior secondary school economics. To achieve this, the ministry of education in collaboration with faculties of education in universities and colleges of education should organize conferences, workshops and seminars for economics teacher's on the inherent skills and procedures for using TAI technique in promoting student's engagement in quantitative economics contents.

Key words: STAD, TAI, engagement, economics, quantitative contents, promoting student's

INTRODUCTION

Economics is an important school subject in the society. The senior secondary school economics curriculum is predicated on the principle of equipping students with basic knowledge and skills considered necessary for appreciating the nature of economic problems in the society. This is intended to fully prepare students for the inherent challenges in the Nigerian economy (Federal Ministry of Education, 2008). The study of economics is useful for the development of capacity for decision making in human being. Important decisions as regards man's survival in the society amidst limited resources in the society are guided by the

knowledge of economics principles and practices. Economics refers to the study of human behaviour in relation to available resources. Robins, cited in Tasrun stated that economics is a social science which studies human behaviour as a relationship between ends and scarce means which have alternative uses. Economics is the study of how a society uses scarce resources to produce valuable commodities and distribute them among different people. Thus, economics deals with the study of decision taken by people depending on what they come across in their daily lives. Operationally, economics as a discipline examines how people choose to use limited or scarce resources in an attempt to satisfy their unlimited wants.

Facilitating the process of knowledge transmission in economics demands that economics teachers apply appropriate instructional methods that best suit specific objectives and level of outcome. This is because students encounter some difficulties in learning economics despite its importance (Adu *et al.*, 2014). This perceived difficulty could be attributed to both the structure and abstract nature of some quantitative or mathematical contents of senior secondary school economics which tend to discourage students from engaging in quantitative economics instruction. The difficulty students encounter in learning these quantitative contents of economics could be attributed also to poor teaching of the mathematical or quantitative contents of the subject (Shiller, 2013). The difficulty in learning economics is basic and universal to science and social science disciplines which have some mathematical foundations due to their problem-solving nature. The assumed difficulty nature of some quantitative contents of economics makes students and teachers to be disengaged in the course of teaching and learning economics. This challenge demands that economics teachers use appropriate participatory instructional methods to enable the students to be involved in the process of teaching and learning economics.

Appropriate use of teaching method in teaching any topic of instruction facilitates students engagement. When appropriate instructional methods are used effectively to accomplish a task, it can motivate students to be involved in the instruction and help them focus attention and organize information for easy comprehension of the subject matter. The choice of instructional method in teaching and learning process depends on the educational philosophy, classroom demography and the subject. However, many teaching practitioners widely apply teacher-centred methods (like lecture method) to impart knowledge on learners irrespective of the nature of contents being taught (Rahman *et al.*, 2016). The lecture method is a type of instructional delivery which is in the form of a talk given to a group of students on a particular subject. In this method, students are made to listen quietly while the teacher talks. Adu and Ayeni opine that the lecture method does not give students the opportunity to ask questions or participate in the learning process. However, studies on the effectiveness of the lecture method and other alternative teaching methods like cooperative, discussion, blended learning media methods and so on, show that the lecture method did not enhance student's achievement in a statistically significant manner.

One of the effective and student-centred instructional method that can be used to accommodate a range of student differences is cooperative learning method. Cooperative learning techniques include; Student's Team Learning (STL), (like, student team achievement division), Jigsaw reading, Group Investigation (GI),

Learning Together (LT), team accelerated instruction or Team Assisted Individualization (TAI), among others. These methods are usually not used by most teachers in teaching economics. This study adopted STAD and TAI. The reasons for the choice of these two techniques are that according to the developer, Slavin and Karweit (1984) STAD works best with materials that have single correct answers and is most likely to be used in mathematics, computations and mechanics. TAI, on the other hand is designed to foster mathematical operations and topics (Kusumayanti, 2014). For this reason, the researchers believes that the two techniques are suitable for the contents under investigation which are the quantitative aspects of senior secondary school economics which is mathematical oriented.

The Student Team Achievement Division (STAD) is a technique of cooperative learning where small groups of learners with different levels of ability work together to accomplish a shared learning goal (Majoka *et al.*, 2010). In STAD, students within a given class are assigned to four or five member learning team, each of which has representative of both sex, ethnic group and different levels of achievers team members use worksheets to master the academic material presented by the teacher and then help each other learn the material through tutoring, quizzing one another and team discussion. These quizzes are scored and each individual is given an improvement score. This improvement score is based on the degree to which the score exceeds a student's past average, rather than on student's absolute score. Weekly newsletter announces teams with the highest score and students who have exceeded their past records by the largest amounts or who have perfect scores on the quizzes (Awofala *et al.*, 2012). The team with the highest score earns a certificate or other awards. Alijanian (2012) posited that well-structured cooperative learning techniques such as STAD can ensure that all group members participate in the learning process actively. Student's team achievement division takes into consideration one of the key components of any teaching-learning process which is motivation. According to Slavin cited in Alijanian (2012), by rewarding the top team, both intrinsic and extrinsic motivations are applied. The major principle behind this technique is that learners cooperate to learn and are held accountable with respect to their teammates and their own achievements. It boosts student's team spirit and self-esteem. This technique was chosen because amongst other cooperative learning techniques, STAD is easy for teachers to apply and can be used to teach a variety of subjects from primary to university level. However, according to Majoka *et al.* (2010), STAD is effective for academic engagement in mathematically-related subjects as it ensures students involvement compared to traditional methods of teaching such as the lecture method.

Another technique used in this study is team accelerated instruction or Team Assisted Individualization group (TAI). This is a method that has been found effective in facilitating achievement in mathematics (Nneji, 2011) which could be amenable to the teaching of quantitative contents in economics. TAI combines cooperative learning with individualized programmed instruction. Individualized instruction feature of TAI means that it focuses on the need of the individual students. Students individually, receive teacher's help to enable them to learn. TAI is a technique where students take a placement test at the beginning of the programme and begin instruction at an appropriate place in an individualized sequence. This placement test determines the ability level or placement of student's in groups of 4-5. Students proceed at different units depending on their ability level. This method minimizes teacher's directed instruction and maximizes the opportunities for teachers to spend more time educating and guiding small groups to understand concepts. Thereafter, students are assigned to teams of 4-5 students and team score sheet is prepared for each team.

TAI instructional technique is programmed for 4 weeks and during each week specific concepts and teaching strategies will be introduced and built upon each other. There are varieties of assessment during the process such as mini-test and homework, to ensure they have the regular, systematic renew of concepts. Students earn points with their team members by passing tests, handing in assignments, completing homework, understanding the concepts and completing their work. At the end of the 4th week, the teacher presents the whole content studied and resolves all areas of confusions of student's on issues resulting from the lessons. This is to ensure that curriculum objectives are attained. This also provides the class with a break from the TAI routine (Yang, 2011). An award is given at the end of the session to the team that performed higher by adding the points of individual students. TAI was developed to apply cooperative learning techniques to solve many of the problems of individualized instruction. This instructional strategy provides all students with materials appropriate to their levels of skill and allows them to proceed through these materials at their pace. This technique (TAI) was chosen for this study on the basis that it could help in accelerating engagement in quantitative contents of senior secondary school economics.

Engagement in learning refers to being involved in learning with an attempt to understand what is being taught. McCarthy (2014) states that readiness and interest lead to engagement. The difficulty experienced in learning quantitative economics could disengage students from learning the subject. Thus, when a topic connects to what students like to do engagement deepens. Student's engagement refers to the degree of attention, curiosity, interest, optimism and passion that students show when

they are learning or being taught which extends to the level of motivation to learn and progress in their education (Glossary of Education Reform, (GER), 2015). Student's engagement, therefore is the willingness of students to be involved and participate in the class and school activities in order to attain educational outcomes. Student's engagement is increasingly seen as an indication of successful classroom instruction and it is predicated on the belief that learning improves when students are inquisitive, interested or inspired. Students are engaged when they are attracted to their work, persist despite challenges and obstacles and take visible delight in accomplishing their work. This position is buttressed better by self determination theory by Deci and Ryan (1995) which states that students no matter their age, gender, socio-economic status, possess inherent growth tendencies that provide a motivational foundation for their high quality classroom engagement.

The concept of student's engagement typically arises when educators prioritize educational strategies and teaching techniques that address the intellectual, emotional, behavioural, physical and social factors that either enhance or undermine learning in students. A study by Kenny, Kenny and Dumont, cited in Holdsworth identified five indicators of student's engagement in secondary school. They include level of academic challenge, active and collaborative learning; student-faculty interaction; enriching educational experience and a supportive learning environment. A variety of teaching approaches including experiential, collaborative/cooperative and other forms of learning can foster student's engagement. Engagement leads to improvement in learning and so, the researchers determined which of the cooperative learning techniques (STAD or TAI) can foster student's engagement in learning quantitative contents of senior secondary school economics. The need for student's engagement in economics is very crucial due to the importance of the subject and because of the discouraging performance of students and their attitude towards the quantitative nature of economics.

Quantitative contents in the senior secondary school economics curriculum include basic tools of economic analysis, the concept of demand and supply, production possibility curve, cost and revenue concept, price determination, elementary treatment of utility theory, balance of payment, national income accounting among others (Federal Ministry of Education, 2008). Teaching and learning content quantitative contents, demand quantitative ability by the teachers and students, respectively. Studies have shown that the quantitative aspect of economics contents has been perceived by students as difficult (Kalu, 2013). This perception makes students lose interest in learning quantitative economics contents. This could have made students to dread the quantitative contents thereby being

disengaged in learning the subject which promotes poor achievement in economics. To correct this poor achievement and disengagement trend there is a need for teachers to use a student-centred approach such as cooperative learning instructional strategy (like STAD and TAI) as advocated by Edward (2016), Kwen *et al.* Johnson *et al.* (2000) and Okam (2000). The use of STAD and TAI could improve student's engagement in quantitative ability. Hence, part of the concern of this study was to find out which between STAD and TAI engages students the most in quantitative contents of economics.

However, gender is another variable that could influence student's engagement. Gender refers to the role of a male or female in the society (Newman, 2018). It tends to denote the social and cultural role of each sex. There is a gender gap in the learning of economics and this could be the reason that made Jensen and Owen (2001) state that economics curriculum does not include topics and methodology that are of interest to female. Nonetheless, female students are reported to have a higher level of engagement than male (Amir *et al.*, 2014; Lietaert *et al.*, 2015). Girls were also significantly better than boys in engagement in quantitative subjects (Ayub *et al.*, 2017). These inherent controversies of research findings on students engagement make this study necessary. Against this backdrop, this study determined the effectiveness of STAD and TAI on student's engagement in secondary school quantitative economics contents.

Statement of the problem: Despite the perceived relevance of economics, researchers have shown that students seem to have wrong impression about the difficult nature of the subject and as such lose interest in learning it. This leads to their disengagement in learning the subject which could be attributed to the notion that the subject is structurally difficult and highly mathematical in contents. These deficiencies could be attributed to student's negative attitude towards mathematical contents as well as ineffectiveness on the part of teachers due to the use of conventional instructional methods. This ineffectiveness could result in low student-teacher interaction due to the routine use of conventional teaching methods that do not encourage student's participation in the teaching-learning process. This outcome, explains the aversive attitude of students towards engaging in the quantitative aspects of the subject. Sources also attributed student's poor engagement in teaching and learning process to gender. Thus, the inconclusive research findings on the influence of gender on student's engagement, makes the inclusion of gender as a moderating variable to this study imperative. Against this backdrop, this study compared the relative effectiveness

of STAD and TAI in enhancing student's engagement in the quantitative contents of senior secondary school economics.

Research questions: The following research questions guided the study:

- What are the mean engagement response scores of students in quantitative contents of senior secondary school economics when taught with STAD and TAI?
- What are the mean engagement response scores of male and female students in quantitative contents of senior secondary school economics when taught with STAD and TAI?
- What are the interaction effects of STAD, TAI and gender on student's engagement response scores in quantitative contents of senior secondary school economics?

Hypothesis: The following null hypothesis were formulated to guide the study and were tested at 0.05% level of significance:

- H_{01} : there is no significant difference in the mean engagement response scores of student's taught quantitative contents of economics using STAD and TAI
- H_{02} : there is no significant difference in the mean engagement response scores of male and female student's taught quantitative contents of senior secondary economics using STAD and TAI
- H_{03} : there is no significant interaction effect of STAD, TAI and gender on student's mean engagement response scores in quantitative contents of senior secondary school economics

MATERIALS AND METHODS

The design adopted for the study was quasi-experimental non-equivalent pre-test, post-test control group design. The population of the study consisted of 8966 (4,659) female and (4,307) males senior secondary school students from thirty public secondary schools in Nsukka Local Government Area of Enugu State in 2015/2016 academic session sample for the study consisted of 186 SS II students made up of 65 males and 121 females drawn from four co-educational schools in Nsukka Local Government Area of Enugu State. Purposive sampling was used to sample co-educational school due to gender variable, simple random sampling technique was used to select both the four co-educational secondary schools and two intact classes from each of the school sampled schools were randomly sampled. The

intact classed were assigned to the two experimental groups (STAD and TAI). The instrument for data collection is a questionnaire titled Student's Self Report on Engagement (SSRE). The SSRE consist of 37-item questions to ascertain student's engagement. The SSRE has two sections, A and B. Section A elicits the personal data of the students. The instrument was validated by three experts, two from economics education and one from the measurement and evaluation unit in the University of Nigeria, Nsukka. The instrument was face validated and tested for reliability. The internal consistency of SSRE was 0.81 using Cronbach's alpha. The SSRE was administered by the regular teachers trained on how to use the techniques as a pre-test to the two groups in the sampled schools. The treatment lasted for four weeks. The same instrument was shuffled and administered to the same research subjects to obtain the post-test scores. Data collected were analysed using mean and standard deviation for answering the research questions while ANCOVA was used for testing the null hypothesis at 0.05 level of significance. ANCOVA is often used in Quasi-experimental study of a non-equivalent control group to control initial group difference.

RESULTS AND DISCUSSION

Research question one: What are the mean engagement response scores of student's in quantitative contents of economics when taught with STAD and TAI?

Table 1 shows that the students who were taught quantitative contents of economics using STAD had pretest mean engagement response score of 51.42 and post-test mean engagement response score of 83.45 while those who were taught using TAI had pretest mean engagement response score of 52.75 and posttest mean engagement response score of 85.96. Mean gain response scores of 32.03 and 33.21 for the two groups, respectively imply that the students who were taught using TAI had

Table 1: Mean and standard deviation of the mean engagement response scores of students taught quantitative contents of secondary school economics using STAD and TAI

Group	n	Pre-test		Post-test		Mean gain
		Mean	SD	Mean	SD	
STAD	74	51.42	5.65	83.45	6.12	32.03
TAI	112	52.75	6.46	85.96	8.54	33.21

higher mean engagement response score than their counter parts who were taught using STAD. The standard deviation for students exposed to STAD before and after treatment was 5.65 and 6.12, respectively indicating that there was a wider spread of scores from the mean after treatment than before the treatment. The standard deviation for the TAI group before and after treatment was 6.46 and 8.54, respectively. This implied that scores are more widely spread away from the mean after treatment than when compared to what it was for the STAD group:

- H_{01} : there is no significant difference in the mean engagement response scores of student's taught quantitative contents of economics using STAD and TAI

Table 2 reveals that the probability associated to the calculated value of F (8.07) for the effect of STAD and TAI on student's mean engagement responses in quantitative contents of economics is 0.015(0.02). Since, the probability value of 0.015(0.02) is <0.05 level of significance ($p < 0.05$), the null hypothesis was rejected. The inference drawn, therefore was that there was a significant difference in the mean engagement response scores of students taught quantitative content of economics using STAD and TAI in favour of those taught using TAI.

Research question two: What are the mean engagement response of male and female student's in quantitative contents of senior secondary school economics?

Table 3 shows that male students who were exposed to STAD had a pretest mean engagement response score of 52.88 with a standard deviation of 4.42 and a post-test mean engagement response score of 83.54 with a standard deviation of 5.98 with mean gain of 30.66 while the female students who were also exposed to STAD had a pretest mean engagement response score of 50.62 with a standard deviation of 6.11 and a posttest mean engagement response score of 83.40 with a standard deviation of 6.26 with mean gain of 32.78. Similarly, male students who were exposed to TAI had a pretest mean engagement response score of 52.97 with a standard deviation of 6.26 and a post-test mean engagement response score of 87.28 with a standard

Table 2: Analysis of covariance of the effect of STAD and TAI on student's mean engagement response scores in quantitative contents of secondary school economics

Sources	Type III sum of squares	df	Mean square	F-values	Sig.
Corrected model	1107.851 ^a	4	276.963	5.008	0.001
Intercept	18574.685	1	18574.685	335.836	0.000
Pre-interest	13.611	1	13.611	0.246	0.620
Group	114.570	1	314.570	8.071	0.015
Gender	291.728	1	291.728	5.275	0.023
Group*Gender	48.326	1	48.326	0.298	0.713
Error	10010.885	181	55.309		
Total	1353779.000	186			
Corrected total	11118.737	185			

^aSignificant value

Table 3: Mean and standard deviation of the mean engagement response of male and female student's in quantitative contents of senior secondary school economics

Groups/Genders	n	Mean	Pre-test		Post-test	
			SD	Mean	SD	Main gain
STAD						
Male	26	52.88	4.42	83.54	5.98	30.66
Female	48	50.62	6.11	83.40	6.26	32.78
TAI						
Male	39	52.97	6.26	87.28	9.29	34.31
Female	73	52.63	6.60	84.93	7.46	32.30

Table 4: Mean and standard deviation of the mean engagement response scores of students for the interaction effect of STAD, TAI and gender on student's in quantitative contents of senior secondary school economics

Groups/Genders	n	Mean	Pre-test		Post-test	
			SD	Mean	SD	Main gain
STAD						
Male	26	52.88	4.42	83.54	5.98	30.66
Female	48	50.62	6.11	83.40	6.26	32.78
TAI						
Male	39	52.97	6.26	87.28	9.29	34.31
Female	73	52.63	6.60	84.93	7.46	32.30

deviation of 9.29 and mean gain of 34.31 while the female students who were also exposed to TAI had pretest mean engagement response standard deviation of 6.26 and a post-test mean engagement response score of 87.28 with a standard deviation of 9.29 and mean gain of 34.31 while the female students who were also exposed to TAI had pretest mean engagement response score of 52.63 with a standard deviation of 6.60 and a posttest mean engagement response score of 82.93 with a standard deviation of 7.46 with mean gain of 32.30. This by implication, shows that both male and female students who were exposed to TAI had higher posttest mean engagement response scores than the male and female students who were exposed to STAD:

- H_{02} : there is no significant difference in the mean engagement response scores of male and female students in quantitative contents of economics

Table 2 reveals that the calculated value of F (5.28) for the influence of gender on student's mean engagement response scores in the quantitative contents of economics had an associated probability value of 0.02. Hence, there is a significant difference in the mean engagement response scores of male and female students in quantitative contents of economics in favour of the male students, since, the probability value of 0.02 is <0.05 level of significance ($p < 0.05$).

Research question three: What is the interaction effect of STAD, TAI and gender on student's mean engagement responses scores in quantitative contents of senior secondary school economics?

Table 4 shows that male students who were exposed to STAD had a pretest mean engagement response score of 52.88 with a standard deviation of 4.42 and a post-test mean engagement response score of 83.54 with a standard deviation of 5.98 with mean gain of 30.66 while the female students who were also exposed to STAD had a pretest mean engagement response score of 50.62 with a standard deviation of 6.11 and a posttest mean engagement response score of 83.40 with a standard deviation of 6.26 with mean gain of 32.78. Similarly, male students who were exposed to TAI had a pretest mean engagement response score of 52.97 with a standard deviation of 6.26 and a post-test mean engagement response score of 87.28 with a standard deviation of 9.29 and mean gain of 34.31 while the female students who were also exposed to TAI had pretest mean engagement response score of 52.63 with a standard deviation of 6.60 and a post test mean engagement response score of 82.93 with a standard deviation of 7.46 with mean gain of 32.30. This by implication, shows that both male and female students who were exposed to TAI had higher posttest mean engagement response scores than the male and female students who were exposed to STAD. The improvement in engagement response scores of males and females in the TAI over males and females in STAD could be attributed to the effect of treatment alone and not from the interaction effect of STAD, TAI and gender. The standard deviation for both male and female in STAD and TAI were higher in the posttest compared with the pretest. This implies that the individual mean engagement response scores after the treatment were farther away from the mean:

- H_{03} : there is no significant interaction effect of STAD, TAI and gender on student's mean engagement response scores in the quantitative contents of economics

Table 2 reveals that the calculated value of F (~0.30) for the interaction effect of STAD, TAI and gender on student's mean engagement response scores in quantitative contents of economics had an associated probability value of 0.71. Since, the probability value of 0.71 is >0.05 level of significance ($p>0.05$), the null hypothesis was accepted. Hence, there is no significant interaction effect of STAD, TAI and gender on student's mean engagement response scores in the quantitative contents of economics.

The result revealed that students who were taught quantitative contents of economics using TAI had higher mean engagement response than their counterparts who were taught using STAD. The study also established a significant difference in the mean engagement responses of students taught quantitative content of economics using STAD and TAI in favour of those taught using TAI. The finding of the study is in line with connect and Wellborn by Fredrick and Mccolskey who found out that participation and involvement in academic, social or extracurricular activities is considered crucial for achieving positive academic outcomes. The findings by June and Selim conform to the findings of this study by stating that engagement predicts performance.

The findings on the mean engagement responses of male and female students in quantitative economics contents using STAD and TAI revealed that male students who were exposed to TAI had higher mean engagement response score than their female counterparts. The findings also indicate that there is a significant difference in the mean engagement response of male and female students in quantitative contents of economics in favour of male students in the TAI group. The findings contradict with the findings by Kinzie *et al.* and Abdul *et al.* that female students have a higher level of engagement. The present study focused on quantitative ability in economics and its findings are in line with the findings by Jensen and Owen (2001) that females are less likely to major in economics, due to its nature. Their orientation in economics can make them be disengaged in the study of economics.

Evidence from the findings on the interaction effect of STAD, TAI and gender on student's engagement response scores in quantitative contents of economics, revealed that both male and female students who were exposed to TAI had higher posttest mean engagement responses than the male and female students who were exposed to STAD. The findings also show that there is no significant interaction effect of STAD, TAI and gender on student's engagement response in quantitative contents of

economics. This finding is in line with the findings by Cavanagh (2011) that students value cooperative activities and are more likely to be more engaged when cooperative learning is used than the lecture method. The reason for this from Caranagh's findings is because cooperative learning presents students with more engaging activities to work in small groups.

CONCLUSION

On the strength of the findings of this study, the following conclusions are hereby drawn. The TAI technique had a facilitative effect on senior secondary school student's engagement in quantitative contents of senior secondary school economics. This means that the TAI prove more efficacious to STAD in promoting student's engagement in quantitative economics contents. Male and female student's exposed to TAI had a significantly higher engagement response scores in the quantitative contents of economics than those exposed to STAD. However, the mean engagement response score of male students is higher than their female counterparts. The interaction effect of STAD, TAI and gender on student's engagement in quantitative contents of senior secondary school economics was not statistically significant. This means that the improvement in student's engagement in quantitative contents of senior secondary school economics was due to the treatment applied.

RECOMMENDATIONS

The following recommendations are made based on the findings and implications of the study: economics teachers should adopt TAI technique as an alternative to lecture method which they have frequently used in teaching quantitative contents of economics.

Education authorities through universities, Colleges of Education and Ministries of Education should organize workshops, seminars and conferences on the prospects, procedures and skills required to apply TAI in economics instruction.

The preparatory programmes of economics Education in Universities and Colleges of Education should include use of TAI in their methodology courses like special methods. This may improve students engagement in quantitative contents of economics when used appropriately. TAI should be used by economics teachers to enhance both male and female engagement in secondary school quantitative economics.

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