

AWARENESS, PERCEIVED USEFULNESS AND UTILIZATION OF TASK-BASED TEACHING STRATEGY AMONG SECONDARY SCHOOL MATHEMATICS TEACHERS IN MINNA EDUCATIONAL ZONE, NIGER STATE

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Abstract

This study investigated awareness, perceived usefulness and utilization of task-based teaching strategy among secondary school Mathematics teachers in Minna educational zone. Ten (10) co-educational schools were used in the selected zone and (100) mathematics teachers were sampled out of the population of 245 using purposive sampling technique. Descriptive survey research was employed, and Secondary School Mathematics teachers were used as research sample. Three research questions guided the study and a 30-item questionnaire was used as instrument for data collection. The questionnaire was validated by test and measurement experts. Pilot study was carried out on Secondary School Mathematics teachers and a reliability coefficient of 0.95, 0.89 and 0.89 were obtained for awareness, perceived usefulness and utilization of task-based teaching strategy respectively. Data collected from the administration of the research instruments were analyzed using descriptive statistics of Mean and Standard Deviation. A decision rule was set, in which, a mean score of 3.0 and above was considered Agreed or Aware while a mean score below 3.0 was considered Disagreed or Unaware. Findings revealed that secondary school mathematics teachers are aware of task-based teaching strategy and perceived the strategy useful with mean scores of 3.83 and 3.66 respectively. However, findings revealed that Secondary School Mathematics teachers are not using task-based teaching strategy with a mean score of 2.63. Based on these findings, it was recommended among others that despite that the secondary school mathematics teachers are aware of task-based teaching strategy, school administrators should not relent on organizing seminars, workshops and conferences. Also, teachers training institutes should include the use of innovative teaching strategies like task-based teaching strategy so as to equip secondary school mathematics teachers with the necessary skills about student centered strategies like task-based teaching strategy.

Keywords: Awareness, Perceived usefulness, Task-based teaching strategy and utilization

Introduction

In contemporary classroom worldwide, students are known to have diverse instructional needs, abilities, interests, learning styles, due to their socio-cultural backgrounds. Indeed, educators no longer have a legitimate choice about but to respond to the diverse challenges they are confronted with in the classrooms (Chamberlin, 2011). Many of these students in primary and secondary schools experience these difficulties more in the learning of some aspects in Mathematics. Just as the students find learning mathematics as difficult so can be said of Mathematics teachers equally facing difficulties in achieving effective teaching of some aspects of Mathematics in Nigerian schools (Azuka, 2013).

However, the teachers are faced and saddled with the responsibility of achieving an effective teaching that would result to better performances of students in both internal and external examinations in Nigeria. It was observed that among the factors that influence the performance of students in Mathematics in secondary schools are teachers' effectiveness as measured through the acquisition and use of good instructional skills and methodologies or teaching strategies which appear prominent (Azuka, 2013). The shortcomings of the present teaching methods partly accounted for the poor performance of students in the Senior School Certificate Examination in Niger State and Nigeria at large (Davis, 2012). In another related report, West Africa Examination Council Chief Examiners' reports (2011-2018) showed that the learning outcomes of senior secondary school students in Mathematics are very poor.

Teaching strategy used in teaching by teachers are important as these affects the students in different ways. Supporting this, Emaikwu, (2013) reported that teaching strategies affects the response of students and determines whether they are interested, motivated and involved in a lesson in such a way as to engage them in learning process. Teaching strategies are procedures or formats used in the presentation of concepts to the students in order to aid learning and ensuring the smooth delivery of the instruction (Ridwan 2016). However, (Muhammad, Ghulam, Shaheen, & Muhammad, 2012) defined teaching strategy as a process by which an instructional module, instructional phase or an entire course (Mathematics) is delivered. He stated that teaching strategies plays a very vital role in any teaching and learning situation and in that note the teaching strategies implemented by the teachers during or on the process of teaching may promote or hinder learning of Mathematics. There are different types of strategies for efficient and effective teaching. These strategies include: Lecture, demonstration, laboratory, field trip, assignment, tasked-based and team-teaching strategies among others.

Tasked-based Teaching Strategy (TBTS) is an activity-based learning whereby learners are actively engaged in a learning process, rather than "passively" absorbing lectures delivered by the teacher. TBTS is based on the core premise that learning should be based on doing some hands-on experiments and activities rather than listening to lessons only (Azuka, 2013). It was defined as a method where the teacher only acts as a facilitator and learners are at the center of the learning process by their high involvement in practical activities and discussion. It is the mode of learning guided by the assumption that; significant learning takes place when the subject matter (Mathematics) is perceived by the learners as relevant to their own purpose, Much significant learning is acquired through doing, Learning is facilitated by the learner's accountable participation in the learning process, and lastly Self-initiated learning involving the whole persons feeling as well as intellect and is the most universal and lasting type of learning (Okwudishu, 2011). Current researches on effective Mathematics teaching focuses on instruction that promotes students' involvement and activity. The new instructional strategy requires teachers to move away from lecturing and move towards teaching strategies that is students centered rather than the teacher centered like Task-Based Teaching strategy (TBTS). Tasked-Based Teaching strategy can only come into light and solve the difficulties found in teaching and learning of Mathematic if only teachers gives less emphasis to Conventional Teaching Strategy (CTS). Therefore, with the laid down importance of Task-Based Teaching strategy (TBTS) this give rise to this question, are Mathematics teachers really aware of this teaching strategy, if yes then to what extent?

Ugwuanyi and Ejikeme (2011) defined awareness as the ability to perceive, to feel, or to be conscious of events, objects, thoughts, emotions, sensory patterns but more broadly; it is the

quality of being aware of something. The awareness of any classroom teaching could enhance meaningful learning of Mathematics. Having the knowledge of the existence of such occurrence will then lead to planning on how to manage and use the moments effectively. Effective management of teaching strategy is very essential so that the students can learn effectively. How to manage the moment should be a major concern of teachers of mathematics, this can be done by using different resources that attract the attention of students and require active participation of students (Alharbi & Drew, 2014). The basic ingredient in learning of mathematics is active participation of learners (Akinoso, 2016). Mohammed *et al* (2012) stressed that Mathematics education reform needs to focus on teachers helping students to develop self-confidence in Mathematics achievement. Teachers must make Mathematics learning environments appealing, engaging and safe for the learners to simplify Mathematics content by making Mathematics lessons real, true to life, and hence making learning more meaningful right in their attitudes and will equally help them perceive the concepts useful. Awareness of any teaching strategy usually forms the backbone of its utilization and productivity level (Gbadamosi, 2016). He further asserted that it is when an individual is aware of the principles and content of a teaching strategy that such an individual can cultivate right type of attitude that will result in improved productivity. In the teachers' awareness of the innovative strategies, the decision of the teacher on the utilization of the innovative strategies will be based on the teachers' knowledge on the existence of the innovative strategies.

According to Davis (2012) perceived usefulness refers to as what one perceived to be useful in the discharge of certain task. He went on to define perceived usefulness as the individual's perception on using a particular idea or a strategy that will enhance or improve her/his performance. Similarly, Mathwick (2010) defined perceived usefulness as the extent to which a person appraises a particular strategy (Task-based teaching Strategy) to boost performance. Perceived usefulness explains the extent to which a strategy can give benefits, enhance or improve productivity or job performance of a Teacher, and it's only when mathematics teachers perceive this teaching strategy useful then they can think of utilizing it.

The word utilization is the act of using a particular thing in an effective way, so as to achieve a set target or a desired result. Utilization of any new instructional strategy greatly depend on the awareness of the existence of that particular strategy and their perception of its usefulness. Utilization and perceived usefulness are also greatly influenced by the teacher's years of experience. Year of teaching experience is the knowledge gained through time spent in service. Effective utilization of any teaching strategy or developed Package in Nigerian secondary schools would depend largely on the level of acceptance of the strategy or package among teachers (Falode, 2018). He further stated that the use of the strategy or package would in no doubt improve students' achievement in sciences subjects especially physics and make teachers more efficient in teaching of the subject if proper measures are put in place.

Mathematics, being a core subject that has its application in every other subject is not taught using an appropriate teaching strategy which has led to poor performance by the students, hence ways of improving the teaching and learning of the subject (Mathematics) remained the concern of the stakeholders. Performance in Mathematics in Senior Secondary School Certificate Examinations conducted by the West African Examinations Council (WAEC, 2012-2018), results are not encouraging at all. The persistent poor performance in mathematics at school certificate level has given rise to an assumption that most secondary school mathematics teachers do not make use of these wide-ranging forms of teaching strategies so as to be able to cope with

some specific difficulty associated with the teaching and learning of the subject. Ajaja (2013) identified a number of factors obstructing students understanding and achievement in science subjects especially mathematics and among these factors was the use of inappropriate, non-effective teaching strategies. Other Researches like Hui-ling (2014) reported on many teaching strategies, like task based teaching strategy, team teaching strategy, demonstration strategy, guided discovery strategy, field trip among others, were all proven to be effective when used judiciously, From the research reports on task based teaching strategy, it was reported that the teaching strategy is of great significant, Hui-ling (2014) reported that task-based teaching strategy is effective as it enhances students' academic performance, also the study of Ellis (2008) revealed that students tend to retain information for a longer period of time when they learn through performing task on their own under the guidance of a trained teacher.

Despite all these findings of the effectiveness of task-based teaching strategy, there is limited report showing that mathematics teachers are using the strategy. This could either be that the Secondary School's mathematics teachers are not aware of this strategy or have a negative attitude towards the strategy or rather do not perceive them useful in teaching and learning of mathematics. It was on this basis that the study is set to investigate the awareness, perceived usefulness and utilization of task-based teaching strategy among secondary school's mathematics teachers in Minna educational zone, Niger State.

Research Questions

The following research questions were raised to guide this study:

- (i) What is the level of awareness of task-based teaching strategy among secondary school mathematics teachers in Minna educational zone?
- (ii) What is the perceived usefulness of task-based teaching strategy among secondary school mathematics teachers in Minna educational zone?
- (iii) What is the extent of utilization of task-based teaching strategy by mathematics teachers in Minna educational zone?

Methodology

The study adopted a descriptive survey research design. In relation to the study descriptive survey design enables the researcher to investigate the awareness, perceived usefulness and utilization of task-based strategy by secondary school mathematics teachers in Minna educational zone. The population of this study comprised of all the Secondary School Mathematics teachers from all the Government Secondary Schools in Minna educational zone, Niger State, in 2019/2020 academic session with a total population of 245, (Niger state ministry of education). Minna educational zone is made up four local government areas namely; Bosso, Chanchaga, Paiko and Shiroro. A multi-stage sampling technique was adopted, and they are: purposive sampling and simple random sampling technique. Among the seven educational zones in Niger State a purposive sampling technique was used to select one educational zone which was Minna educational zone and it was selected considering its closeness to the researcher. A simple random sampling technique was used to select 10 schools within the selected educational zone. A purposive sampling technique was used to select 100 mathematics teachers (both male and female) from the 10 sampled senior secondary schools proportionally.

The research instrument used for this study was a researchers' designed questionnaire tagged Questionnaire on Awareness, Perceived Usefulness and Utilization of Tasked-Based Teaching

Strategy by Secondary School's Mathematics Teachers (QAPUUTBTS). The instrument contained Four (4) sections (A –D). Section A was designed to collect the respondents' demographic information. Section B contains ten (10) items purposely meant to collect information on Awareness of Tasked-Based Teaching Strategy. Section C contains ten (10) items designed to collect information on perceived usefulness of Tasked-Based Teaching Strategy and lastly Section D contains ten (10) items design to collect information on utilization of Tasked-Based Teaching Strategy among Secondary School Mathematics Teachers. Section B will be based on five (5) point's Likert rating scale of NT (Not Aware)-1 point, BA (Barely Aware)-2 points, N (Neutral)-3 points, A (Aware)-4 points, SA (Strongly Aware)-5 points. Section C and D will be based on Five (5) points Likert rating scales of SD (Strongly Disagree) – 1 point, D (Disagree) – 2 points, N (Neutral) – 3 points, A (Agree) – 4 points and SA (Strongly Agree) – 5 points. The research instrument was subjected to expert's face and content validation. Two experts in test and measurement from federal university of technology Minna validated the research instrument, their observations were noted and effected accordingly.

The reliability of the research instrument was determined after it was pilot tested on 20 randomly selected secondary school mathematics teachers Maryam Babangida Girls Science College Minna, which did not form part of the study sample. The data obtained were analyzed using Cronbach Alpha formula. The reliability coefficient for awareness, perceived usefulness, and utilization of task-based teaching strategy of 0.95, 0.89, and 0.89 were obtained respectively. The result of the reliability coefficient indicates that the instrument is reliable.

The data were collected by administering the research questionnaire to secondary school's mathematics teachers in Minna educational zone, Niger State. Prior to the above, a permission letter collected from the Head of Department and was taken to the school authority where the pilot study was conducted. When the permission was granted, the secondary school's mathematics teachers were instructed in the survey to provide information about their Awareness, Perceived Usefulness and utilization of Tasked-Based Teaching Strategy. Since the data involves only the collection of information from the group of secondary school's mathematics teachers, there was no special training session for research assistants. The questionnaire was administered and collected immediately to avoid lost. After the collation of the scores the data was subjected to analysis. Mean and Standard Deviation were used to answer the research questions. The decision rule was set at 3.0, which was gotten by summing the five points linkert rating scale and dividing by 5. A value of less than 3.0 will be considered disagreed while a value of 3.0 and above will be considered agreed.

Results

Research question One: What is the level of awareness of task-based teaching strategy among secondary school mathematics teachers? To answer this research question, mean and standard deviation was used and the results are presented in Table1.

Table 1: Mathematics teachers' Mean Response on Awareness of task-based teaching strategy

No	Items	N	\bar{x}	S. D	Decision
1.	Task-based teaching strategy (TBTS) is a method of teaching where task is given to students to do on their own and teachers only serves as facilitators.	100	3.47	1.25	Aware
2.	In task-based teaching strategy, mathematics content is divided into sub contents and given to students to do ahead of time.	100	3.40	1.15	Aware
3.	In task-based teaching strategy teachers only serve as facilitators as they only give guidance to students during task performance.	100	3.39	1.29	Aware
4.	Task-based teaching strategy could be used to reduce the passiveness of students in the classroom as they are engaged with task.	100	3.33	1.40	Aware
5.	In task-based teaching strategy, students learn by interacting as sometimes they are given task in group.	100	3.51	1.34	Aware
6.	In task-based teaching strategy errors are a natural part of the learning process.	100	3.21	1.31	Aware
7.	Task-based teaching strategy when used effectively can enhance students learning skills and ability to work in group	100	3.54	1.28	Aware
8.	In task-based teaching strategy, participation in and completion of task is extremely motivated.	100	3.46	1.23	Aware
9.	Task-based teaching strategy focuses on using and stimulating realistic language.	100	3.20	1.28	Aware
10.	Task-based teaching strategy focuses in the process as a whole rather than the end.	100	3.32	1.24	Aware
Grand Mean			3.83		Aware

Decision Mean = 3.00

Table 1 shows the Mean and Standard Deviation of Mathematics teachers mean response on the awareness of task-based teaching strategy. The table reveals that, the grand mean score of responses to the 10 items is 3.83 which was greater than the decision mean score of 3.00. This implies that secondary school Mathematics teachers in Minna educational zone are aware of task-based teaching strategy

Research Question Two: What is the perceived usefulness of task-based teaching strategy among secondary school mathematics teachers in Minna educational zone? To answer this research question, mean and standard deviation was used and the results is presented in Table2.

Table 2: Mathematics teachers' Mean Response on perceived usefulness of task-based teaching strategy

No	Items	N	\bar{x}	S. D	Decision
1.	Using Task-based teaching Strategy in my teaching career enables me to achieve teaching and learning objectives faster.	100	3.75	1.04	Agree
2.	Using Task-based Teaching Strategy assist to attract and sustain students' attention there by increasing their learning ability and performance.	100	3.73	0.94	Agree
3.	Using task-based Teaching Strategy as a teacher increases my teaching performance.	100	3.57	0.91	Agree
4.	Using task-based Teaching Strategy enhances my effectiveness as a Mathematics teacher.	100	3.70	1.00	Agree
5.	Using task-based Teaching Strategy makes it easier to teach mathematics as students have done most of the task on their own.	100	3.64	0.98	Agree
6.	Using task-based Teaching Strategy in my teaching career enables me to motivate the students as they are rewarded for task well performed	100	3.59	0.98	Agree
7.	Using task-based Teaching Strategy as a teacher reduces my workload as students do most of the works.	100	3.49	1.05	Agree
8.	Using task-based teaching Strategy as a teacher increases my productivity.	100	3.66	1.09	Agree
9.	Using task-based teaching Strategy enhances my teaching skills as a Mathematics teacher.	100	3.65	0.94	Agree
10.	Using task-based teaching strategy will enhance the students' problem-solving skills.	100	3.83	1.06	Agree
Grand Mean			3.66		Agree

Decision Mean= 3.00

Table 2 shows the Mean and Standard Deviation of secondary school Mathematics teachers' response on their perceived usefulness of task-based teaching strategy. The table reveals that, the grand mean score of responses to the ten items was 3.66 which was greater than the decision mean score of 3.00. This implies that secondary school Mathematics teachers in Minna educational zone perceived task-based teaching strategy very useful.

Research Question Three: What is the extent of utilization of task-based teaching strategy by secondary school mathematics teachers in Minna educational zone? To answer this research question, mean and standard deviation was used and the results are presented in Table3.

Table 3: Mathematics teachers' Mean Response on the utilization of task-based teaching strategy

S/N	Items	N	\bar{x}	SD	Decision
1.	I use task-based teaching strategy to teach mathematical concepts.	100	1.72	0.55	Disagree
2.	I divide mathematical contents into sub contents to be given to students to do before time.	100	1.71	0.56	Disagree

3.	When using task-based teaching strategy I places the students into various groups for group task performance in the classroom	100	1.75	0.59	Disagree
4.	I only facilitate and give guidance during task performance in the classroom	100	1.96	0.90	Disagree
5.	I adopt task-based teaching strategy to enhance student's problems solving skills.	100	1.67	0.62	Disagree
6.	I access and evaluate my teaching input and output when I use task-based teaching strategy	100	3.04	0.20	Agree
7.	In using task-based teaching strategy I give examples and illustrations that are relevant to students' daily lives	100	1.68	0.53	Disagree
8.	I use task-based teaching strategy to achieve teaching and learning objectives	100	1.65	0.54	Disagree
9.	I select only relevant task from instructional objectives to be given to the students to perform.	100	3.05	0.22	Agree
10.	I use task-based teaching strategy to cover mathematics scheme of work easily and faster	100	1.65	0.54	Disagree
Grand Mean			2.63		Disagree
Decision Mean = 3.00					

Table 3 shows the Mean and Standard Deviation of secondary school Mathematics teachers' response on their utilization of task-based teaching strategy. The table reveals that, the grand mean score of responses to the ten items was 2.63 which was less than the decision mean score of 3.00. This implies that secondary school Mathematics teachers in Minna educational zone do not utilize task-based teaching strategy.

Discussion

Findings of this study revealed that Secondary School Mathematics teachers are aware of task-based teaching strategy. This finding is in agreement with the following studies: (Gbadamasi, 2016; Ridwan, 2016; Samba, Achor & Ogbeda, 2010) whose studies discovered that the biology teachers in Oyo south senatorial district were highly aware of some selected innovative teaching strategies with the level of awareness to be 88%, chemistry teachers were aware of cost reducing teaching strategies, and the level of teachers' awareness of some selected innovative teaching strategies was high respectively. However, this finding contradicts the finding of Oladosu (2012) who revealed that teachers in Nigeria are not aware of some of these innovative teaching strategies and teaching aids like computer software applications for teaching and learning purposes. The mathematics teachers' awareness of task-based teaching strategy could be due to their attendance of seminars, workshops and conferences. Hence, they have been acquainted with different teaching and learning strategies.

Finding reveals that secondary school Mathematics teachers perceived the use of task-based teaching strategy useful. This finding is in agreement with the following researches: Shun- Fen Lin (2012), Falode (2018), Alharbi and Drew (2014) who found out that teachers perceived the use of teachers guide for science teachers very useful. Pre-service teachers perceived the use of virtual laboratory package to be useful in teaching and learning of secondary school physics concepts, and academic teachers' perception of the usefulness of learning management system was positive, because they know that it enhances their teaching and make them efficient in teaching of physics concepts respectively.

Another finding that emanated from this study revealed that secondary school Mathematics teachers are not using task-based teaching strategy. This finding is in line with the views of the following researchers: Ogbeba (2010) who found out that most science teachers are not using varying teaching strategies to cope with the difficulties associated with the teaching of science (mathematics), Anchor, Samba and Ogbeba (2010), who not only discovered that mathematics teachers are not using teaching strategies for teaching and learning purposes but also found out the effect and cause of not using them. They stated that the inability of Mathematics teachers to use teaching strategies is an indicator that certain concepts in science have probably not been taught using the appropriate teaching strategies. They equally revealed that mathematics teachers do not use innovative teaching strategy because they believed they have been into the system and have been doing that same work before they were aware of these innovative teaching strategies. Another reason why Mathematics teachers are not using these teaching strategies is because the teachers are always in a haste to cover a large course content within a very short time, because using some of these innovative strategy takes a longer period of time as they are students centred and students' needs to understand the concepts before proceeding to the next concept. Hence, Mathematics teachers are not using task-based teaching strategy not because they are not aware or don't perceive it useful but because of the barriers associated to the use of task-based teaching strategy. This study is not in line with the study of Gbadamosi (2016) whose study revealed that the science teachers used all the innovative strategies, however he stated that out of the 32 teaching strategies studied only 2 were not utilized by the science teachers.

Conclusion

Findings of this study revealed that secondary school Mathematics teachers in Minna educational zone of Niger State aware of the existence of task-based teaching strategy. It reveals further that secondary school Mathematics teachers perceived the use of task-based teaching strategy useful, but are not using task-based teaching strategy in the planning and executions of mathematics instructions. The researcher thereby concludes that since secondary school mathematics teachers are aware of task-based teaching strategy and perceive the strategy useful, they can utilise the strategy if equipped with the skills required for its utilization.

Recommendations

Based on the findings of this study, the following recommendations are relevant:

1. School administrators should not relent in organizing seminars, workshops and conferences as this will equip the secondary school mathematics teachers with the necessary skills on the utilization of these students centered strategies like task-based teaching strategy.

2. Teachers training institutions should include innovative teaching strategies like task-based teaching strategy and its utilization into their curricular sets and be taught so as to make teachers conversant with the use of the strategies effectively.
3. Authors of science text books, mathematics particularly should show carefully in their content organization, how to effectively and efficiently make use of these innovative strategies like task-based teaching strategy so that teachers can follow the break down in the text books when teaching.
4. Science teachers should avail themselves the opportunities provided by these innovative strategies like task-based teaching strategy by employing the strategies in their teaching plans and execution in order to improve the performance of their students.

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