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ASSESSMENT OF CONTEMPORARY ISSUES IN DEVELOPMENT OF CHEMISTRY TEACHING AMONG SECONDARY SCHOOL CHEMISTRY TEACHERS IN ANAMBRA STATE NIGERIA.

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Abstract

The study investigated the assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachers in Anambra State Nigeria. A descriptive survey research design was used for the study. The sample for the study comprised of 41 government Chemistry secondary school teachers. The sample is made of 22 male teachers 19 female teachers. The Chemistry teachers used were all active chemistry teachers in government own schools in the state. The instrument used for data collection was self structured questionnaire derived from National Education Association, United State of America on teachers assessment headlines (NEA, 2019) titled Contemporary Issues in Development of Chemistry Teaching (CIDCT). The questionnaire had three headlines namely, Professional growth, use of evidence of students learning and multiple measure. Mean and standard deviation were used to answer the research question while t-test was used to test the hypotheses. The result revealed that the teachers agreed on a greater percentage on items under professional growth in assessment of contemporary issues in development of Chemistry teaching in the state. The teachers also agreed in items under use of students' evidence in assessment of contemporary issues in development of Chemistry teaching in the state but in the items of multiple measure in assessment

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of comporary issues in development of Chemistry teaching, teachers in the state has a 50-50 responses to it. Showing that half of the teachers in the state have no issue in that area of assessment while half the Chemistry teachers in the state has issues in that area of assessment. Base on the findings of this study, it was recommended on professional growth that male Chemistry teachers in the state should be encouraged and funded for STAN conferences, teachers in general should also be encouraged and funded by the government to further their education to create room for new strategies in teaching and learning Chemistry in the state. In the use of evidence of students in assessment of contemporary issues in development of Chemistry teaching among Chemistry teachers, female Chemistry teachers should be encouraged by government and assisted by their male counterpart to improve on the performance of their students in Chemistry subject at national level in SSCE. Finally, educational authority and government should be more concerned in areas of multiple measures in assessment of contemporary issues in the state for instances, the aspect of teachers' perception in Chemistry as a difficult subject, school authorities allocating good time and period for Chemistry subject, and students perception of Chemistry as difficult subject.

Keywords: Science Education, Chemistry and Assessment

Introduction

Science education deals with sharing of science content and process with individuals who are not considered traditionally to be member of the scientific community; the individuals could be students, farmers, market women or a whole community. Science concepts, method of teaching and addressing misconceptions held by learners regarding science concepts (Aina 2013). Science Education is very important to the development of any nation that is why every nation must take it very serious in all institutions of learning (Okafor, 2017). Many of the developed nations were able to achieve so much in science and technology because of science education. Launching of sputnik by the Russian government in October, 4 1957 would not have been possible if not for the position they placed Physics and Chemistry in science education (Aina, 2013).

Science Education comprises of three major subjects in senior secondary school namely, biology, Chemistry and physics but at the course of this research only Chemistry would be of center concentration. Over the years there has

been low enrolment of Science Education course which Chemistry is included in higher institutions (Aina, 2013). Causes of this low enrolment include society disdain, mockery of teacher and low prestige of teachers.

Interestingly, as important as Chemistry is, students' performance has not been encouraging and this is worrisome and called for investigation. The poor performance of students in chemistry may be attributed to poor science teaching strategy by non certified teachers in secondary schools in Nigeria which can be seen in the teachers' professional growth evidence in student learning and multiple measures (Nnorom, Obi &Erhabor, 2017).

Chemistry teaching can be developed through a shift in education paradigm from teacher centered approach to a more student centered approach in order to have a meaningful impact to the learner to enhance Chemistry academic achievement (Adeyemi, 2008). This may be achieved through proper assessment of Chemistry teaching strategy to enhance learning and teaching of chemistry concept.

Obikezie (2018) opined that poor assessment and evaluation of teaching strategy may be an issue that hinders development of Chemistry teaching in recent years in Nigeria. He pointed out that because of the abstract nature of Chemistry concept; teaching strategy should be properly assessed and implemented to yield a positive result to the learner.

According to Toanabull(2008), assessment is the wide variety of methods or tools that teachers use to evaluate measure and document the academic readiness, learning process, skill acquisition or educational needs of students. Assessing a student involves taking a sample of what the student can perform and the student's capability, in the same vain, assessing a teacher involves clear set of performance standards set aside by the educational authority for positive impactation of knowledge by male and female teachers to learners (Enemou, Anyaduba&Bardi, 2017). According to these researchers, there are many reasons for teachers' assessment

- To know if the teacher can identify what a student should know
- To know if the teacher can identify students' special need
- Determination of appropriate placement
- To identify if the teacher can help to select appropriate curricular to meet students individual needs.

According to National Education Association (NEA) United States of American teachers are assessed based on the following

- Professional growth
- By use of evidence of student learning and
- By use of multiple measures (NEA, 2019)

According to Obikezie (2018) there is need for continuous chemistry teachers' assessment in Nigeria to enable the education body check make the performance of students in West African Examination council in recent years.

For example, below are the trends of students' performance in chemistry in WAEC from 2005 – 2014 in Nigeria.

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Table 1 Trend of Students Performance in Chemistry in WAEC from 2005 – 2014 in Nigeria

YEAR	TOTAL ENTRY/ REGISTRATION	NUMBER & PERCENTAGE WITH GRADES		
		CREDIT $A_1 – C_6$	PASS $D_7 – C_6$	FAIL F9
2005	349,936	179156 (50.65%)	65804 (18.63%)	116615 (30.05%)
2006	393209	173103 (45.11%)	87645 (22.84%)	132459 (32.05%)
2007	434460	196081 (46.16%)	105602 (24.86%)	132777 (28.98%)
2008	4184123	198621 (30.04%)	121139 (26.50%)	3864362 (43.46%)
2009	468546	204752 (43.69%)	114697 (23.41%)	149124 (32.9%)
2010	568291	236057 (50.70%)	109944 (23.61%)	222290 (25.69%)
2011	565692	280243 (49.54%)	156357 (27.64%)	129092 (22.82%)
2012	627302	270555 (43.13%)	215478 (34.35%)	141269 (22.52%)
2013	60221	243289 (40.4%)	223235 (37.07%)	135677 (22.53%)
2014	505691	230089 (45.50%)	166928 (33.01%)	108674 (21.4%)

Source: West African Examination council, Nigeria cited by Bello &Oke (2015) and Sakiyo & Badau (2015).

From the table above, it could be observed that it was only in two years that students who enrolled for Chemistry in WAEC had grade passes of C6 – A1

were up to 50%, the remaining eight years were below 50% showing that percentages passes of students that enrolled for those eight years are poor. Many factors may be the cause of this poor performance and achievement of students in chemistry in WAEC in recent years which includes teachers and teaching factors (Bello &Oke, 2015). This was what prompted the present study which tries to find out the contemporary issues in development of chemistry teachers in Anambra State. The contemporary issues that will be used to assess the teachers will be under professional growth, use of evidence of students learning and use of multiple measures with support of behaviouristtheory (NEA 2019).

Behaviourist theories (BT) emerged strongly in the 1930s and are most popularly associated with the work of Parlor, James Watson, B.F. Skinner and Thorndike.

Behaviourist remained a dominant theoretical perspective into the 1960s and 70s when some of today's teachers were trained, and can still be seen in behaviour modification programmes as well as everyday practice. Bredo (1997), who is particularly interesting in the subject of the philosophical and political movements that provide the background to these development, notes the association with the political conservatism that followed the end of world war 1 and the growth of positivism, empiricism, technicism and managerialism (James, 2006).

According to these theories the environment for teaching and learning is the determining factor. Teaching and learning are viewed as the conditioned responses to external stimuli.

Implications of BT for teaching construe the teachers' role as to train people to respond to instruction correctly and rapidly (James, 2006). BT help in curriculum planning, basic skills are introduced before complex skills. Positive feedback, often in the form of non-specific praise and correction of mistakes are used to make the connections between stimulus and response. As for the environment for learning, these theories imply that students are taught best in homogenous groups which the teacher oversees according to skill level, or individually according to the rate of students' progress through a differentiated programme based on a fixed hierarchy of skill acquisition. BT motivates and enhance the assessment of teachers to take charge the responsibility of making sure the learner learns even learning from a failed stage and correction stages,

even warranting going back to search over and over again, this calls for regular assessment of teachers in other to enhance knowledge especially where certified teachers are (James, 2006) and (Muchter, 2017). With the numerous benefits of assessment of teachers as explained by the behaviourist, the researchers sought to assess the contemporary issues in development of Chemistry teaching among secondary school chemistry teachers in the state.

Research Questions

In order to guide the study, the following research questions were formulated.

1. To what extent does the itemized assessment of contemporary issues in development of chemistry teaching affect professional and non-professional secondary school Chemistry teachers in Anambra State?
2. To what extent does the itemized contemporary issues in development of Chemistry teaching affect male and female secondary school chemistry teachers in Anambra State?

Hypotheses

Two hypotheses was formulated to guide the study

1. There is no significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affects secondary school professional Chemistry education teachers and non professional education teachers in Anambra State.
2. There is no significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect male and female secondary school Chemistry teachers in Anambra State.

Methodology

The design of the study is descriptive survey it is concerned with investigating events in their most natural settings and without manipulating of the variable.

According to OsegboIfeakor and Enemou (2009) a survey is a study which seeks to document and describe what exists or the present status of existence of what is being investigated. The study was carried out in six education zones in Anambra State namely Aguata, Awka, Nnewi, Ogidi, Onitsha and Otuocha. Government/public School chemistry teachers were randomly chosen from the zones, (Male teachers = 22, female

teacher = 19). Out of 50 questionnaires distributed to the chemistry teachers 41 were collected 9 were rejected due to manipulations in the responds columns.

Instrument

The instrumentfor data collection wasself structured questionnaire which is based on National Education Association, United State of America teachers' assessment headlines (NEA, 2019).The instrument was titled Contemporary Issues in Development of Chemistry Teaching (CIDCT) which has three questionnaire headlines namely professional growth, use of evidence of students learning and multiple measures. Each of the headlines has ten (10) questions under it all amounting to 30 questions in the questionnaire. The questionnaires were given to both professional and non professionalchemistry teachers provided the teacher is assigned to teach Chemistry in the public secondary school in Anambra state.

A four point rating scales of strongly agree (SA) = 4 points, Agree (A) = 3 point, Disagree (D) = 2 point and strongly disagree (SD) = 1 point were provided for the Chemistry teachers to make their responses.

The researchers' instrument was subjected to scrutiny by two experts, one from Department of Foundation Education Nnamdi Azikiwe University Awka and one from Department of Science Education Chukwuemeka Odumegwu Ojukwu University Uli Campus. The researchers' sent the questionnaires to the chemistry teachers in the different education zones of the state and personally gave out the rest to the Chemistry teachers nearer to the researchers' domain.

The response to the questionnaire was collected within the space of three (3) weeks. Mean and standard deviation were used to answer the research questions while t-test was used in testing the hypothesis formulated for the study at reliability of 0.78 using Cronbash alpha technique. Mean values between 2.5 and above is accepted while mean value below 2.5 is not accepted.

Research Question I

To what extent does the itemized assessment of contemporary issues in development of chemistry teachings affect professional and non professionalsecondary school chemistry teachers in Anambra state?

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Table1: Itemized assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachers in the state.

S/N	ITEMS	GENDER	SA	A	D	SD	$\bar{x}$	SD	DECISION
PROFESSIONAL GROWTH									
1.	I passed through collage of Education department of science or any school of Education?	M	14	2	3	3	3.22	5.69	A
		F	12	4	2	1	3.42	4.92	A
2.	I passed through teaching practice before I start professional teaching?	M	15	1	5	1	3.36	5.61	A
		F	10	1	4	4	2.89	3.32	A
3.	I studied chemistry education in first decree or N.C.E	M	11	1	7	3	2.91	4.43	A
		F	7	2	5	5	2.58	1.95	A
4.	I am an active member of science teachers association of Nigeria	M	8	1	8	5	2.55	3.32	A
		F	8	5	5	1	3.84	2.51	A
5.	I normally go for STAN conference and workshop in state level?	M	4	4	1	3	2.41	3.70	D
		F	8	4	1	1	3.00	3.49	A
					6				
6.	I normally go for STAN conference and workshop in National level?	M	5	0	1	3	2.32	6.03	D
		F	4	3	4	4	2.68	3.78	A
					1				
					1				
7.	I started professional teaching with N.C.E	M	6	3	9	4	2.50	2.65	A
		F	7	0	8	3	2.48	3.27	D
8.	I started professional teaching with B.Sc. (Edu.) Chemistry or B. (Hons) Chemistry?	M	10	3	6	3	2.91	3.32	A
		F	8	4	3	4	2.84	7.09	A
9.	I have PGDE qualification?	M	11	2	6	3	2.95	4.04	A
		F	6	2	3	8	2.47	5.57	D
10.	I have post graduate	M	4	1	1	7	2.09	3.87	D

qualification in chemistry education Example M.Sc. (Edu.) or PhD in Chemistry education?	F	3	1	0	4	2.16	4.70	D

USE OF EVIDENCE OF STUDENTS LEARNING

11.	I have been an active Chemistry teacher in these classes SS1, SS2, & SS3?	M	15	4	2	1	3.50	6.45	A
		F	12	3	2	2	3.47	4.28	A
12.	Every term and session my students pass above 50% average of C6-A1?	M	10	11	0	1	3.36	5.80	A
		F	8	9	2	0	3.32	4.38	A
13.	I have taught SS3 class Chemistry class?	M	18	3	0	1	3.72	8.43	A
		F	13	3	3	0	3.53	5.20	A
14.	During my tenure as SS3 class Chemistry teacher, my student pass above average of 50% in senior secondary certificate examination in grade between C6-A1?	M	13	8	0	1	3.50	6.14	A
		F	10	5	4	0	3.32	3.94	A
15.	My students have represented the school in any local government organized Chemistry quiz or competition?	M	13	7	1	1	3.45	5.74	A
		F	9	8	2	0	3.58	4.43	A
16.	My students have represented the school in any state	M	10	12	0	1	3.50	6.13	A
		F	8	6	4	0	3.05	3.42	A

	government organized Chemistry quiz or competition?								
17.	My students have represented the state in any national Chemistry/chemical quiz or competition?	M F	6 2	5 5	9 10	2 2	2.68 2.37	2.89 3.77	A A
18.	My students have been the best performed students in Chemistry subject has been the best performed students in Chemistry subject at national level in SSCE	M F	3 1	6 11	12 6	1 1	2.50 2.63	4.80 4.79	A D
19.	My student has been the best performed students in Chemistry subject at national level in SSCE	M F	4 1	6 5	11 12	1 1	2.59 2.32	4.20 5.19	A D
20.	My student has been performing above average in my personal evaluations?								
MULTIPLE MEASURES									
21.	I make use of demographics chemistry/chemical importance in society in teaching Chemistry to my students?	M F	10 8	10 9	1 2	2 0	3.36 3.32	4.92 4.43	A A
22.	I perceive Chemistry	M	3	0	10	9	1.86	4.80	D

	as difficult subject?	F	1	2	7	9	1.74	3.86	D
23.	Society today needs Chemistry and its importance in the society?	M	20	1	0	1	3.82	9.68	A
		F	16	3	0	0	3.84	7.63	A
24.	My school authority allocate good time and period for Chemistry subject	M	16	2	3	1	3.50	7.05	A
		F	5	7	7	0	3.21	3.30	A
25.	There is always an upgrade in school Chemistry lab and other Chemistry fertilities in my school	M	11	5	3	3	3.09	3.79	A
		F	4	7	6	2	2.68	2.22	A
26.	My school authority does not allocate good time and period for Chemistry subject?	M	3	5	8	6	2.22	2.08	D
		F	1	8	7	3	2.37	3.30	D
27.	My students over the years, perceive chemistry as difficult subject	M	0	13	6	3	2.45	5.57	D
		F	2	7	8	2	2.47	3.20	D
28.	My students over the years, do not perceive Chemistry as a difficult subject.	M	1	7	11	3	2.27	4.43	D
		F	1	8	7	3	2.37	3.30	D
29.	The time allocated for Chemistry period is always enough to teach Chemistry	M	1	10	8	3	2.40	4.20	D
		F	1	8	7	3	2.37	3.30	D
30.	Chemistry teaching in Nigeria has developed in recent years?	M	1	18	2	1	2.86	8.35	A
		F	5	11	2	1	3.05	4.50	A

In table 1 above it shows that chemistry teachers in Anambra state agree in items number 1, 2, 3, 4, 8, 11, 12, 13, 14, 15, 16, 18, 20, 21, 23, 24, 25, 30, with mean averages between 2.50 and above, while they have mixed responses in item no 5, 6, 7, 9, 17, 19, 29 and disagreed totally in item no 10, 22, 26, 27, 28, 29 with mean averages below 2.50.

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Research Question 2

To what extent do the itemized assessment of contemporary issues in development of Chemistry teaching affect male and female secondary school Chemistry teachers in Anambra State?

Table2: Itemized assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachers in the state.

S/N	ITEMS	GENDER	SA	A	D	SD	$\bar{x}$	SD	DECISION
	PROFESSIONAL GROWTH								
1.	I passed through collage of Education department of science or any school of Education?	M	14	2	3	3	3.22	5.69	A
		F	12	4	2	1	3.42	4.92	A
2.	I passed through teaching practice before I start professional teaching?	M	15	1	5	1	3.36	5.61	A
		F	10	1	4	4	2.89	3.32	A
3.	I studied Chemistry education in first decree or N.C.E	M	11	1	7	3	2.91	4.43	A
		F	7	2	5	5	2.58	1.95	A
4.	I am an active member of science teachers association of Nigeria	M	8	1	8	5	2.55	3.32	A
		F	8	5	5	1	3.84	2.51	A
5.	I normally go for STAN conference and workshop in state level?	M	4	4	11	3	2.41	3.70	D
		F	8	4	6	1	3.00	3.49	A
6.	I normally go for STAN conference and workshop in National level?	M	5	0	14	3	2.32	6.03	D
		F	4	3	11	4	2.68	3.78	A
7.	I started professional teaching with N.C.E	M	6	3	9	4	2.50	2.65	A
		F	7	0	8	3	2.48	3.27	D
8.	I started professional teaching with B.Sc. (Edu.) Chemistry or B. (Hons) chemistry?	M	10	3	6	3	2.91	3.32	A
		F	8	4	3	4	2.84	7.09	A

9.	I have PGDE qualification?	M	11	2	6	3	2.95	4.04	A
		F	6	2	3	8	2.47	5.57	D
10.	I have post graduate qualification in chemistry education Example M.Sc. (Edu.) or PhD in chemistry education?	M	4	1	1	7	2.09	3.87	D
		F	3	1	0	4	2.16	4.70	D
	USE OF EVIDENCE OF STUDENTS LEARNING								
11.	I have been an active Chemistry teacher in these classes SS1, SS2, & SS3?	M	15	4	2	1	3.50	6.45	A
		F	12	3	2	2	3.47	4.28	A
12.	Every term and session my students pass above 50% average of C6-A1?	M	10	11	0	1	3.36	5.80	A
		F	8	9	2	0	3.32	4.38	A
13.	I have taught SS3 class Chemistry class?	M	18	3	0	1	3.72	8.43	A
		F	13	3	3	0	3.53	5.20	A
14.	During my tenure as SS3 class Chemistry teacher, my student pass above average of 50% in senior secondary certificate examination in grade between C6-A1?	M	13	8	0	1	3.50	6.14	A
		F	10	5	4	0	3.32	3.94	A
15.	My students have represented the school in any local government organized Chemistry quiz or competition?	M	13	7	1	1	3.45	5.74	A
		F	9	8	2	0	3.58	4.43	A
16.	My students have represented the school in any state government organized Chemistry quiz or competition?	M	10	12	0	1	3.50	6.13	A
		F	8	6	4	0	3.05	3.42	A
17.	My students have	M	6	5	9	2	2.68	2.89	A

	represented the state in any national Chemistry or chemical quiz or competition?	F	2	5	10	2	2.37	3.77	A
18.	My students have been the best performed students in Chemistry subject has been the best performed students in Chemistry subject at national level in SSCE	M	3	6	12	1	2.50	4.80	A
		F	1	11	6	1	2.63	4.79	D
19.	My student has been the best performed students in Chemistry subject at national level in SSCE	M	4	6	11	1	2.59	4.20	A
		F	1	5	12	1	2.32	5.19	D
20.	My student has been performing above average in my personal evaluations?								
	MULTIPLE MEASURES								
21.	I make use of demographics Chemistry or chemical importance in society in teaching chemistry to my students?	M	10	10	1	2	3.36	4.92	A
		F	8	9	2	0	3.32	4.43	A
22.	I perceive chemistry as difficult subject?	M	3	0	10	9	1.86	4.80	D
		F	1	2	7	9	1.74	3.86	D
23.	Society today needs Chemistry and its importance in the society?	M	20	1	0	1	3.82	9.68	A
		F	16	3	0	0	3.84	7.63	A
24.	My school authority allocates good time and period for chemistry subject	M	16	2	3	1	3.50	7.05	A
		F	5	7	7	0	3.21	3.30	A

25.	There is always an upgrade in school Chemistry lab and other Chemistry fertilities in my school	M	11	5	3	3	3.09	3.79	A
		F	4	7	6	2	2.68	2.22	A
26.	My school authority does not allocate good time and period for chemistry subject?	M	3	5	8	6	2.22	2.08	D
		F	1	8	7	3	2.37	3.30	D
27.	My students over the years, perceive Chemistry as difficult subject	M	0	13	6	3	2.45	5.57	D
		F	2	7	8	2	2.47	3.20	D
28.	My students over the years, do not perceive Chemistry as a difficult subject.	M	1	7	11	3	2.27	4.43	D
		F	1	8	7	3	2.37	3.30	D
29.	The time allocated for chemistry period is always enough to teach Chemistry	M	1	10	8	3	2.40	4.20	D
		F	1	8	7	3	2.37	3.30	D
30.	Chemistry teaching in Nigeria has developed in recent years?	M	1	18	2	1	2.86	8.35	A
		F	5	11	2	1	3.05	4.50	A

From table 2 also it shows that in item number 5, that female Chemistry teachers in Anambra State, agree they go for STAN conference and workshop in state level with mean of 3.00 while the male disagree with mean of 2.41. The female Chemistry teachers also agree they go for STAN conferences and workshop at the national level with mean of 2.68 while male disagree with 2.32. In item no 7 the male Chemistry teachers in Anambra State agree that they started professional teaching with N.C.E with mean of 2.50 while their female counterpart disagree with mean of 2.48. In item no 9, the male teachers agree they have PGDE qualification with average mean of 2.47. In item no 17 the male teachers agree that their students have represented the state in any national Chemistry or chemical quiz or competition with mean of 2.68 while the

female teachers disagree with mean of 2.37. Also the male teachers agree that their students has been the best performed students in Chemistry subject at national level in SSCE with average mean of 2.59 while the female teachers disagree with it with average mean of 2.32.

Test of Hypotheses

Hypothesis One

Ho_1 There is no significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect certified professional and non-certified professional Chemistry education teachers in Anambra State.

Table 3: Assessment of development of Chemistry teaching among certified and non certified professional Chemistry education teachers in the state

Questions	Test Value = 0					
	T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**95% Confidence Interval of the Difference**	
					Lower	**Upper**
1	1.947	3	.147	10.25000	-6.5083	27.0083
2	2.001	3	.139	10.25000	-6.0487	26.5487
3	3.231	3	.048	10.25000	.1548	20.3452
4	4.053	3	.027	10.25000	2.2016	18.2984
5	3.687	3	.035	10.25000	1.4024	19.0976
6	2.277	3	.107	11.00000	-4.3727	26.3727
7	3.216	3	.049	10.00000	.1054	19.8946
8	3.903	3	.030	10.25000	1.8929	18.6071
9	3.812	3	.032	10.25000	1.6933	18.8067
10	2.544	3	.084	10.25000	-2.5706	23.0706

From the above one sample t-test table 3, the outcome from the analysis indicated that some items are insignificant; while some are significant. Questions number 1, 2, 6 and 10 are not statistically significant; I passed through collage of Education; I passed through teaching practice; I normally go for STAN workshop in National level; I have post graduate qualification in chemistry. There p-values are higher than 0.05 (0.147, 0.139, 0.107, and 0.084

respectively). Meanwhile, questions 3, 4, 5, 7, 8, and 9 are statistically significant, hence there p-values are less than or equal to 0.05 (0.048, 0.027, 0.035, 0.049, 0.030, 0.032) respectively. The questions includes; I studied Chemistry education in first decree, I am an active member of science teachers association, I normally go for STAN conference in state level, I started processional teaching with N.C.E, I started professional teaching with B.Sc. (Edu.), and I have PGDE qualification.

However, there is no mean difference between the research questions except items number 6 and 7; I normally go for STAN workshop in National level and I started processional teaching with N.C.E respectively with means difference of 11.000 and 10.000.

The study therefore uphold alternative hypothesis which stated that there is a significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect certified and non-certified professional Chemistry education teachers in Anambra State in favour of certified professional chemistry education teachers.

Hypothesis Two

Ho: There is no significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect male and female secondary school Chemistry teachers in Anambra State.

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Table 4: Assessment of contemporary issues in development of Chemistry teaching among male and female secondary school Chemistry teachers in the state

Questions	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
11	1.815	3	.167	10.25000	-7.7233	28.2233
12	2.021	3	.137	10.25000	-5.8926	26.3926
13	1.466	3	.239	10.25000	-12.0034	32.5034
14	2.068	3	.130	10.25000	-5.5224	26.0224
15	2.054	3	.132	10.25000	-5.6290	26.1290
16	2.270	3	.108	10.25000	-4.1225	24.6225
17	3.231	3	.048	10.25000	-1548	20.3452
18	2.434	3	.093	10.25000	-3.1500	23.6500
19	2.207	3	.114	10.25000	-4.5278	25.0278
20	2.142	3	.122	10.25000	-4.9779	25.4779

From the above one sample t-test tables 4, the analysis results show statistically significant question 17 with p-value of 0.045 which is showing that my students have represented the state in any national Chemistryor chemical quiz or competition. On the other hand, questions 11 to 16, 18 to 20 are not statistically significant, hence their p-value are 0.167, 0.137, 0.239, 0.130, 0.132, 0.108, 0.093, 0.114, and 0.122 respectively which is higher than 5% level of significance. However, there is no mean difference between the research questions. Their mean difference is 10.250. The study therefore uphold null hypothesis which stated that there is no significant difference in the way itemized assessment of contemporary issues in development of chemistry teaching affect male and female secondary school chemistry teachers in Anambra State.

Discussion

In the table 1 and 2 base on the assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachings in Anambra State Nigeria, the teachers have a greater percentage of agree in professional growth, and use of

evidence of students learning but in multiple measures the teachers in the state disagree totally in five items out of ten that is in question number 22, 26, 27, and 28 and 29 this may be as a result non certified teachers in secondary schools in Nigeria which can be seen in the teachers professional growth, evidence in student learning and multiple measures as opined by Nnoron, Obi &Erhabor (2017).

Table 3 indicate that the study therefore uphold alternative hypothesis which stated that is a significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect certified and non-certified professional chemistry education teachers in Anambra State in favour of certified professional Chemistry education teachers. This is in line with Behaviorist theory (BT) as postulated by (James 2006) and (Muchtar, 2017) that BT motivates and enhance the assessment of teachers to take the responsibility of making sure the learner learns even learning from a failed stage and correction, stages, even warranting going back to search over and over again. This is possible my regular assessment of teachers especially certified teachers.

Table 4 indicate that the study uphold null hypothesis which stated that there is no significant difference in the way itemized assessment of contemporary issues in development of Chemistry teaching affect male and female secondary school Chemistry teacher in Anambra State. This is also in line with (Enemou, Anyadoba&Berdi 2017) that said assessment of a teacher involves clear set of performance standard set aside by the education authority for positive impartation of knowledge by male and female teachers to learners, this held in equal assessment of teachers.

Conclusion

From the findings of the study the following conclusion were drawn from the topic assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teaching in Anambra State, Nigeria. The teachers grows professionally when assessed, also the use of evidence of their students learning has helped to an extent in assessment of issues in development of Chemistry teaching among secondary school Chemistry especially in male teachers as can be seen in item number 17 but in multiple measures a lot should be done because the teachers responds is half or 50 – 50 meaning that the issues in

multiple measure in assessment of contemporary issues in teaching among secondary school Chemistry teachers in the state needs attention.

Recommendations

From the findings to this study, the following recommendations were made

1. On professional growth of assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachings, male Chemistry teachers should be encourage to participate in conference like STAN both in state and national level, both male and female Chemistry teachers should be encourage and founded to further their education to create room for new strategies in teaching and learning of Chemistry subject for good out come in future assessment.
2. In use of evidence of students learning in assessment of contemporary issues in assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachers, female Chemistry teachers should be encouraged, or be assisted by male teachers to improve the performance of their students in Chemistry subject at national level in SSCE.
3. In assessment of contemporary issues in development of Chemistry teaching among secondary school Chemistry teachers in the state, the education authority and government should be more concern in the areas of multiple measures like the teachers perception of chemistry as difficult subject, school authority allocating good time and period for Chemistry subject, students' perception of Chemistry as difficult subject e.t.c.

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