EMPLOYABILITY SKILLS NEEDED IN THE 21ST CENTURY SECONDARY SCHOOL MATHEMATICS DELIVERY FOR JOB CREATION

By

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Abstract

The study explored the employability skills needed in the 21st century secondary school mathematics delivery for job creation. Three research questions guided the study. Descriptive survey design was adopted. A population of 154 mathematics teachers in Onitsha Education zone of Anambra State was involved in the study. A 30-item questionnaire having three sections titled "Questionnaire on Employability Skills needed in the 21st century Secondary School Mathematics Delivery for Job Creation (QESSSMDJC), "Questionnaire on the Impact of Employability Skills in the 21st century Secondary School Mathematics Delivery for Job Creation (QIESSSMDJC) and "Questionnaire on the Extent of Application of Employability Skills in the 21st century Secondary School Mathematics Delivery for Job Creation(QEAESSSMDJC)" was validated by three experts in Science Education (Mathematics Education and Measurement and Evaluation). Reliability index of 0.74 was determined using Cronbach Alpha method. Mean, percentage and chart were used to answer the research questions. Findings of the study showed that *the employability skills needed in the 21st century secondary school mathematics delivery for job creation are problem solving skills, effective communication, creativity, student – teacher relationship, evaluation, critical thinking, innovations, team work and computation skill. Adapting to innovations, fostering problem –solving approach, embracing teamwork, solving real-world problems, developing lifelong learners, enforcing collaborative learning approach, promoting logical reasoning* and *proper evaluation are the impacts of employability skills in the 21st century secondary school mathematics delivery for job creation. Further findings showed that most mathematics teachers do not use innovations like ICT and technologies in teaching mathematics and occasionally use critical thinking and creativity for mathematics activities.* It was recommended among others that *problem solving skill, effective communication, creativity, student – teacher relationship, evaluation, critical thinking, innovation (ICT and technologies), team work and computation skill should be use in the 21st century secondary school mathematics delivery for job creation.*

Keywords: *Employability skills, secondary school, mathematics, mathematics delivery and job creation.*

Introduction

The state of unemployment among the youths has become so alarming and worrisome to the extent that most youths graduated from school today without the requisite skills or competencies that would enable them function in today's emerging society. Franita (2016) attributed the causes of unemployment in the country to lack of expertise among job seekers and insufficiency of skills among the workers. Georgieva, (2013) urged that for the youths to be employed and meet the demands of the employee and local market, they should learn technical, social, and critical thinking skills through education so as to adapt and work flexibly in the work place. Yuzhuo (2013) stipulated that education provides marketable skills and abilities relevant for job performance. For this reason, a progressive nation should take employment and job creation as the highest priorities for growth and sustainable development.

Job creation according to Ande (2008) is defined as a deliberate efforts made by individuals, corporate bodies and government in generating employments of different types for the unemployed citizens. Government policy on job creation is to reduce unemployment, lower taxation, reduce regulations, lessen expenditure and increase the employment rate for national output. Georgieva (2017) posited that at least 600million more jobs will be created for productive employment and decent work for all by 2030 to achieve the UN's sustainable development goal. Anakpua and Nzeakor (2019) posited that creating more or better quality jobs will boost economic growth, reduce poverty and increasing social interaction. Which means, creating jobs in Nigeria will reduce poverty, reduce unemployment, increase welfare and public services, maintain stable economy and empower the youths.

In order to ensure that students graduate from trade/ entrepreneurship skills for useful living, job creation, wealth generation and poverty eradication, Nigerian government introduces secondary education (Ogwu, Omeje & Nwokenna, 2014). Notably, secondary education is aimed at preparing an individual for useful living within the society and offers a diversified curriculum consisting of many subjects including mathematics as one of the compulsory subjects offered by the students. Park, Brombacher and Brocardo (2021) see mathematics as a fundamental part of human thought that provides an effective way of building mental discipline and encourages logical reasoning. Mathematics contains deepest, powerful and exciting ideas where learners can gain qualitative and intuitive understanding of concepts like pattern, symmetry, structure, proof, paradox, recursion, randomness, chaos, infinity and others (Ernest, 2013). Mathematics as an integral part of job creation can be seen from the objectives of secondary school

mathematics curriculum which according to National Policy on Education (FME, 2013) is to generate interest in mathematics, provide a solid foundation for everyday living, develop computational skills, develop precise logical abstract thinking, stimulate and encourage creativity. It is unfortunate that the secondary school mathematics curriculum objectives have not always been achieved by the government and teachers especially as it concerns skills in approaching the mathematics examination questions by the students. The chief examiners of WAEC (2015 and 2017) reported inadequate skills in approaching the mathematics examination questions especially in circle geometry, 3-dimensional problems, algebraic problems, and word problems. Lack of application of basic skills in teaching and learning of mathematics will mar achieving mathematics objectives and adopting basic mathematical skills will enable both students and teachers achieve secondary school mathematics objectives for gainful employment.

Studies have shown some factors jeopardizing the realization of mathematics objectives which invariably affect students' job opportunities. For instance findings by Back (2014) showed that teaching and learning process of mathematics is still void of the experiences, innovations and creativities needed to motivate the young and energetic minds into exploring the vast field of mathematics. Khaleduzzaman (2020) attributed the weakness in mathematics to lack of skilled and trained teachers who are not familiar with the modern methods and approaches of teaching. Findings by Jahan (2010) and Stiggins (2016) showed that mathematics teachers depend on the lecture method and rarely follow other modern methods of teaching like use of technology, activity – based learning, games and simulations, discussion, demonstrations, inquiry and blended learning. Finding by Longo (2014) showed that teachers are not involving students in creative activities and inquiry approach of teaching mathematics. To minimize the factors that affect students' and youths job opportunities, *Blazer (2011) opined that mathematics should be presented in a way that students should be allowed to think critically, make decisions, explore possible solutions, practice different techniques, and* possess employability skills.

Employability skills are knowledge, skills, and competencies needed by the employee to improve ability, keep job, progress at work place, face changes and get into labor market. Robinson (2000) defined employability skills as transferable core skills that represent functional knowledge, and attitudes required by the 21st century workplace. Knight and Yorke (2003) see employability skills as the set of achievements, understanding and personal attributes that make individual more likely to gain employment and become successful in the chosen career. Knight and Yorke (2004) posited that employability skills will not only broaden the attributes required to be successful within the employment circle but also include the attributes required to manage one's career development. Huge success are recorded in acquiring employability skill but youths are lagging behind in acquiring such skills. This can be seen in the findings by Bennett (2006) which showed that the biggest challenge in education today is to generate graduates who will have academic skills, master technical skills and balanced employability skills.. Similar report by World

Bank Group (2015) showed that more than 50% of stakeholders could not find the right competencies in job seekers due to lack of employability skills. Mourshed, Farrell and Barton (2021) revealed that employers complained of insufficiency of skills among the workers and also found out that approximately 75 million young people in developing countries are unemployed with youth unemployment rate higher than adults. Which means, the need to teach employability skills during mathematics delivery for job creation is paramount.

This study on employability skills is in line with the USEM account of employability model which is an acronym for four inter-related components of employability where U stands for Understanding which corresponds to the student's mastery of his or her subject of study and the ability to transfer that to other contexts; S stands for skillful practices which is the procedural knowledge of the student; E stands for efficacy beliefs which is inspired by self-theories and M stands for metacognition which is awareness and understanding of one's own thought processes (Yorke & Knight, 2004). This study collaborates with Schultz's Education and Economic Development Theory which stated that the basic theory of education and economic development use physical capital as a function of human capital. Schultz (1961) and Becker (1964) advocated that education increases individuals' productivity and consequently enhances job performance. Schultz (1961) theory of education and economic development portrayed that education presents a wide and important factor in the economic development and also emphasized that if human capital does not rise alongside with physical capital, the result would directly affect the economic development. Jackson (2015) endorsed Schultz's theory of education and economic development as a valid theory because it establishes the balance between education, employment and mastery of new skills for graduates' employability.

Studies on employability skills emphasized more on employee's personal attributes, knowledge, understanding, qualities and skills needed to realize aspirations and potentials in work. No evidence of employability skills needed in the 21st century secondary school mathematics delivery for job creation were established, there is no study on the impact of employability skills in mathematics delivery for job creation no study captured the extent to which mathematics teachers apply employability skills for job creation. Since employability skills broaden one's attributes and manage one's career development, therefore, this study explored the employability skills needed in the 21st century secondary school mathematics delivery for job creation.

Statement of the Problem

The unemployment rate among the graduates are high due to lack of *critical thinking, inability to make decisions, lack of exploring possible solutions, inability to practice different techniques and lack of knowledge.* It is unfortunate that most youths graduated from school without the requisite skills or competencies to function in today's

emerging society. In the mathematics classroom, the rate of mathematics failure is high and mathematics teachers are always been accused of ineffective use of teaching materials, methods, strategies and skills in the teaching and learning of mathematics. Studies in mathematics showed only the factors that jeopardize the realization of mathematics objectives which invariably affect students' achievement in mathematics and job opportunities. There is no reflection of the studies on the employability skills needed in the 21st century secondary school mathematics delivery for job creation, the impact of employability skills in mathematics delivery for job creation was not captured and no study stated the extent to which mathematics teachers apply employability skills for job creation. Since the employers of labour in the 21st century need reliable and responsible workers who will possess employability skills to face the job challenges, the need to acquire employability skills are paramount. Therefore this study is on exploring the employability skills needed in the 21st century secondary school mathematics delivery for job creation.

Purpose of the study

The purpose of the study is to explore the employability skills needed in the 21st century secondary school mathematics delivery for job creation

Specifically, to explore

1. The employability skills needed in the 21st century secondary school mathematics delivery for job creation.
2. The impact of employability skills in the 21st century secondary school mathematics delivery for job creation.
3. The extent to which mathematics teachers apply employability skills in the 21st century secondary school mathematics delivery for job creation.

Research questions

1. What is the employability skills needed in the 21st century secondary school mathematics delivery for job creation?
2. What is the impact of employability skills in the 21st century secondary school mathematics delivery for job creation?
3. To what extent do mathematics teachers apply employability skills in the 21st century secondary school mathematics delivery for job creation?

Methods and Materials

Design of the Study

This study employed descriptive survey design which explored the employability skills needed in the 21st century secondary school mathematics delivery for job creation. Descriptive research design describes and interprets the conditions, relationships that exist, opinions that are held, processes that are going on and trends that are developing in research study (Akuezuilo & Agu, 2003).

Area of the Study

Mathematics teachers in Onitsha Education zone of Anambra State were involved in the study.

Population of the Study

A population of 154 Mathematics teachers in Onitsha Education zone of Anambra State was involved in the study.

Sample and sampling Technique

There was no sampling due to the manageable size of the mathematics teachers in Onitsha Education zone of Anambra State.

Instrument for Data Collection

A 30-item questionnaire having three sections titled "Questionnaire on Employability Skills needed in the 21st century Secondary School Mathematics Delivery for Job Creation (QESSSMDJC), "Questionnaire on the Impact of Employability Skills in the 21st century Secondary School Mathematics Delivery for Job Creation (QIESSSMDJC) and "Questionnaire on the Extent of Application of Employability Skills in the 21st century Secondary School Mathematics Delivery for Job Creation(QEAESSSMDJC)" was used. 4- point likert scale of strongly agree having 4 points, agree 3 points, disagree 2 points and strongly disagree 1 point were meant for first and second questionnaire while the options of Very often (VO), often (O), occasionally (OC) and Never (N) were for the third questionnaire.

Validation of the Instrument

The instrument was face and content validated by three experts in the Department of Science Education (one lecturer in Measurement and Evaluation and two lecturers in Mathematics Education) all from Chukwuemeka Odumegwu University Uli. The adequacy and correctness of the questionnaire items were incorporated into the final draft of the questionnaire.

Reliability of the Instrument

A trail test was conducted using 28 mathematics teachers in Awka North Local Government Area of Anambra State. Data collected were analyzed using cronbach alpha and reliability co- efficient of 0.74 was obtained.

Method of Data Collection

The researchers sent the questionnaires to the respondents by hand, through whatsapp and e – mail. The phone numbers, Whatsap numbers and email address of the respondents were gotten from Onitsha Education zonal office, statistics department after strict verification of the researchers' identity and purpose of use. The questionnaires were given to 50 mathematics teachers by hand, 96 mathematics teachers received the

questionnaires through Whatsapp while 8 mathematics teachers received the questionnaires through emails. Fortunately 154 copies of the questionnaire were returned without misplacement.

Method of Data Analysis

Research questions were answered with mean, percentage and chart. A criterion mean of 2.50 was used in taking decision on the research questions. Item with the mean score of 2.50 and above were accepted while mean below 2.50 were rejected.

Results

Table 1: Mean response rating of the respondents on the employability skills needed in the 21st century secondary school mathematics classroom for job creation

S/N	*Item Description*	*SA*	*A*	*D*	*SD*	*N*	*X*	*Decision*
1.	Use of problem solving skills. *Accepted*	*35*	*73*	*24*	*22*	*154*	*2.55*	
2.	Use of effective communication. *Accepted*		*42*	*80*	*10*	*17*	*154*	*2.89*
3.	Use of creativity in mathematics *Accepted*		*48*	*63*	*18*	*25*	*154*	*2.87*
4.	Emphasis on evaluation. *Accepted*		*44*	*69*	*18*	*23*	*154*	*2.87*
5.	Maintaining student – teacher relationship. *Accepted*	*70*	*59*	*11*	*14*	*154*	*3.20*	
6.	Use of critical thinking. *Accepted*		*53*	*85*	*9*	*7*	*154*	*3.19*
7.	Use of different teaching method in the mathematics class. *Accepted*		*43*	*76*	*17*	*18*	*154*	*2.94*
8.	Adapting to innovations in the mathematics delivery. *Accepted*	*81*	*57*	*7*	*9*	*154*	*3.36*	

9. Use of team work.	*55*	*91*	*3*	*5*	*154*	*2.95*
Accepted						
10. Use of computations in solving mathematics	*87*	*43*	*5*	*19*	*154*	*3.29*
Accepted						
Grand Mean						***3.01***

Strongly Agree (SA), Agree (A) Disagree (D), Strongly Disagree (SD)

The data in Table 1 showed that mathematics teachers accepted all the items having the mean values greater than 2.50. The grand mean of *3.01* indicated that the respondents agreed that all the items were the employability skills needed in the 21st century mathematics delivery for job creation.

Table 2: Mean response rating of the respondents on the impact of employability skills in the 21st century secondary school mathematics delivery for job creation

S/N	*Item Description*	*SA*	*A*	*D*	*SD*	*N*	*X*	*Decision*
1.	Application of employability skills Enforce innovations in mathematics delivery.	*48*	*75*	*5*	*26*	*154*	*2.94*	*Accepted*
2.	Emphasis on employability skill fosters problem –solving approach.	*62*	*80*	*39*	*9*	*154*	*3.29*	*Accepted*
3.	Employability skills embrace teamwork in the mathematics class activities.	*39*	*77*	*18*	*20*	*154*	*2.76*	*Accepted*
4.	Use of employability skills help in solving real-world problems.	*51*	*67*	*22*	*14*	*154*	*2.94*	*Accepted*
5.	Employability skills help to develop lifelong learners. *Accepted*	*37*	*112*	*2*	*3*	*154*	*3.19*	
6.	Application of employability skills in the mathematics class enforce collaborative learning approach.	*45*	*67*	*25*	*17*	*154*	*2.87*	*Accepted*

7. Use of employability skills promote logical reasoning in the mathematics. *Accepted*	*45*	*76*	*17*	*16*	*154*	*2.87*	
8. Employability skills enforce effective communication skills in the mathematics class.	*51*	*53*	*32*	*18*	*154*	*2.89*	*Accepted*
9. Application of employability skills Enhance proper evaluation of mathematics activities.	*47*	*65*	*24*	*18*	*154*	*2.92*	*Accepted*
10. Application of employability skills foster students – centred learning in mathematics activities. *Accepted*	*68*	*53*	*18*	*15*	*154*	*3.13*	
Grand Mean						***2.98***	

Strongly Agree (SA), Agree (A) Disagree (D), Strongly Disagree (SD)

The data in Table 2 showed that mathematics teachers accepted all the items with the mean values greater than 2.50. The grand mean of *2.98* indicated that the respondents agreed that all the items were the impact of employability skills in the 21st century mathematics delivery for job creation.

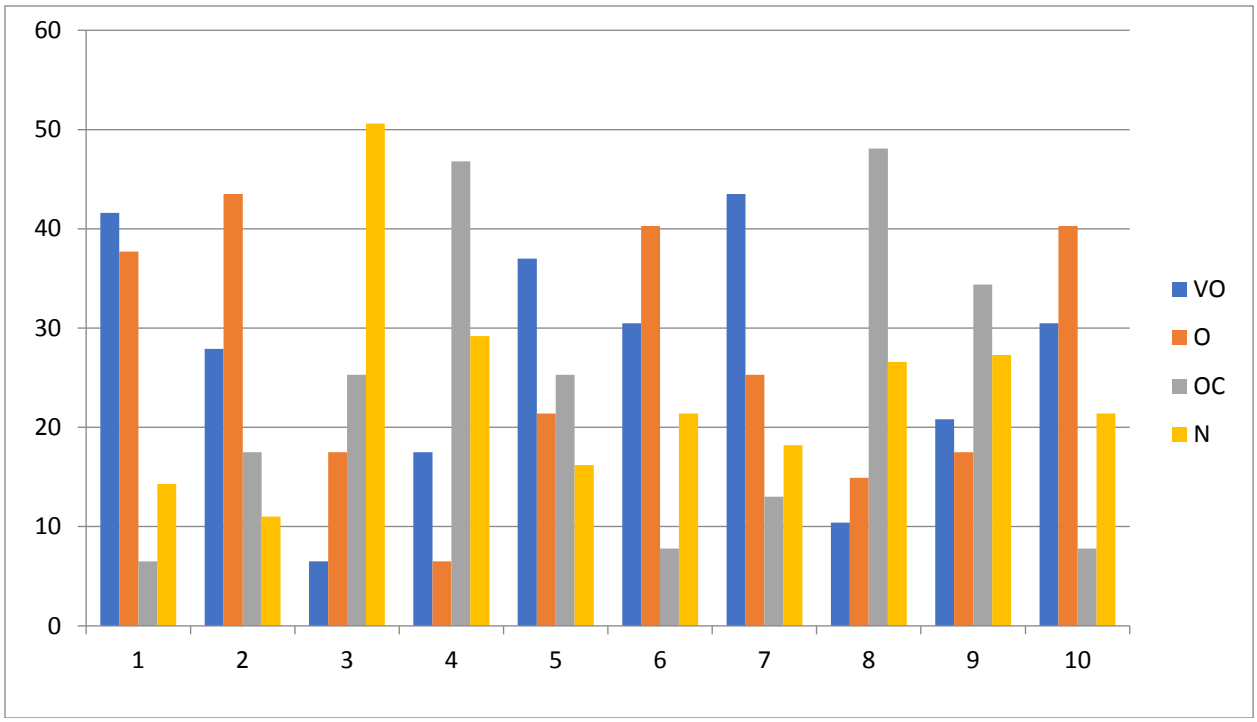
Table 3: Mean response rating of respondents on the extent to which mathematics teachers apply employability skills in the 21st century secondary school mathematics delivery for job creation

S/N	*Item Description*	**VO**	**% VO**	**O**	**% O**	**OC**	**%OC**	**N**	**%N**
1.	Use of problem solving skills. 14	64	41.6	58	37.7	10	6.5	22	
2.	Use of effective communication. 17 11		43	27.9	67	43.5	27	17.5	
3.	Adapting to innovations in mathematics delivery (ICT								

	and technology).	10	6.5	27	17.5	39	25.3	78 50.6
4.	Use of creativity in mathematics.	16	10.4	23	14.9	74	48.1	41 26.6
5.	Emphasis on evaluation.	57	37	33	21.4	39	25.3	25 16.2
6.	Maintaining student – teacher relationship.	47	30.5	62	40.3	12	7.8	33 21.4
7.	Use of critical thinking.	67	43.5	39	5.3	20	13	28 18.2
8.	Use of different teaching method in the mathematics class.	32	20.8	27	17.5	53	34.4	42 27.3
9.	Use of computations in solving mathematics.	27	17.5	10	6.5	72	46.8	45 29.2
10.	Use of student-centred learning	47	30.5	62	40.3	12	7.8	33 21.4

Very often (VO), often (O), occasionally (OC), Never (N)

Percentages(%) **Multiple Bar Chart**



Items

Table 3 showed the numbers and percentages of mathematics teachers that applied employability skills in the 21st century secondary school mathematics delivery for job creation. Thus, 64(41.6%) mathematics teachers use problem solving skills very often, 58(37.7%) often, 10(6.5%) occasionally and 22(14.3%) never use problem solving skills in mathematics delivery. 43(27.9%) mathematics teachers use effective communication very often, 67(43.5%) often, 27(17.5%) occasionally and 17(11%) never use effective communication in mathematics delivery. 10(6.5%) mathematics teachers adapted to innovations in mathematics delivery (ICT and technology) very often, 27(17.5%) often, 39(25.3%) occasionally and 78(50.6%) never adapt to innovation (ICT and technologies) in the mathematics delivery. 16(10.4%) mathematics teachers use creativity in the mathematics delivery very often, 23(14.9%) often, 74(48.1%) occasionally and 41(26.6%) never use creativity in the mathematics delivery. 57(37%) mathematics teachers emphasis on evaluation very often, 33(21.4%) often, 39(25.3%) occasionally and 25(16.2%) never emphasis on evaluation in mathematics delivery. 47(30.5%) mathematics teachers maintain student-teacher relationship very often, 62(40.3%) often 12(7.8%) occasionally and 33(21.4%) never maintain student – teacher relationship. 67(43.5%) mathematics teachers use critical thinking. very often, 39(25.3%) often, 20(13%) occasionally and 28(18.2%) never use critical thinking in mathematics delivery. 32(20.8%) mathematics teachers use different teaching methods in mathematics delivery very often, 27(17.5%) often, 53(34.4%) occasionally and 42(27.3%) never use different teaching methods in mathematics delivery. 27(17.5%) mathematics teachers use computational skills in mathematics very often, 10(6.5%) often, 72(46.8%) occasionally and 45(29.2%) never use computational skills in mathematics delivery. 47(30.5%) mathematics teachers use

student-centred learning very often, 62(40.3%) often, 12(7.8%) occasionally and 33(21.4%) never use student-centred learning in mathematics delivery.

Discussion

The result of this study showed that the employability skills needed in the 21st century secondary school mathematics delivery for job creation are problem solving skills, effective communication, adapting to innovations in mathematics delivery (ICT and technologies), emphasis on evaluation, maintaining student – teacher relationship, critical thinking, teaching method, computation skills in solving mathematics and student-centred learning.

Findings of this study related to the result of Okeke (2015) which showed that employability skills needed by graduates are problem solving, analytical and critical appraisal skills, use of available information, capacity for inquiry, logical thinking, critical examination, inductive and deductive reasoning. *This study collaborates with the result of* Lovejoy (2000): Nurita, Shaharudin and Ainon (2004) which showed that employers are looking for graduates who have strong academic skills, thinking skills, technical skills and abilities in communication, collaboration, problem solving, good academic achievement and critical thinking. Maintaining student – teacher relationship as employability skills needed in the 21st century mathematics delivery for job creation relates to *the result of Hattie (2009) which showed that teachers who create positive teacher-student relationships* help students recover from traumatic experiences. Finding of this study is in line with the result of *Radford (2000) which showed that environments where students communicate mathematical thinking give students the opportunity to relate ideas clearly and enhance deeper understanding of mathematics concepts rather than just teacher's instructions.*

The result of this study showed that the impact of employability skills in the 21st century secondary school mathematics delivery for job creation enforce use of innovations (ICT and technologies), use of problem –solving approach, foster teamwork during mathematics delivery, encourage solving of real-world problems, develop lifelong learners, enforce collaborative learning approach, enhance logical reasoning, foster effective communication skill, maintaine proper evaluation and foster students – centred learning in mathematics delivery. Findings of this study showed that innovations (ICT and other technologies) promote active and creative learning which involves interaction between student- instructor, student-student and student's content . This finding coincides with the result of Khandve and S. M. E.(2016) which showed that the use of blended learning involving ICT, improves students' employability skills. Simmons (2010) opined that effective teaching in the 21st century requires more than just a basic understanding of educational theory and classroom management but also incorporation of the use of innovations in the teaching and learning of mathematics. Nwachukwu, (2009) made it known that the use of innovative teaching strategies help to foster the adjustment of students, match curricular offerings to students' levels of mental development, make

students understand basic cognitive and social problems and motivate the students in the learning of school subjects.

Problem solving as an impact of employability skills in the 21st centurysecondary school mathematics delivery for job creation supported the finding by Fuchs, Fuchs, Finelli, Courey, and Hamlett (2004) which showed that problem solving has proved to be very potent, efficient and productive in the mathematics classroom. Anakpua and Nzeakor (2019) opined that if students can adopt problem solving strategies in solving mathematical problems, they can as well solve the daily life problems thereby empowering themselves and others. This study identifies with Gestalts' support of problem solving strategy due to its reorganization and restructuring of the elements of problem. Finding of this study relates to the result of Jackson (2013) which showed that employability skills harbor team work, communication, self-management, analysis and critical thinking. Also supports the result of Paad (2014) which showed the characters of employability skills include teamwork, effective communication, adaptability to change, positive and flexible attitudes, continuous learning, self-confidence, willingness to take risks, and commitment to personal excellence. Developing lifelong learners is in line with the finding of D2L (2018) which showed that education system prepares the graduates to face workforce. Paad (2014) posited that people need to develop the culture of lifelong learning, not only in the workplace or in universities but also in the communities to uplift social standard and gain experiences in different situations.

The findings obtained from the extent of application of employability skills in the 21st century secondary school mathematics delivery for job creation showed that most mathematics teacher use problem solving skills, effective communication, student – teacher relationship and student-centred learning very often. Meanwhile, some mathematics teachers occasionally use creativity and different teaching method and never adapted to innovations (ICT and technologies) in the mathematics delivery. It is quite unfortunate that most mathematics teachers have never used ICT in mathematics delivery. This is justified by the findings of Back (2014) which showed that teaching and learning process of mathematics is still void of the experiences, innovations and creativity needed to jolt and motivate the minds into exploring the vast field of mathematics. This result supported Khaleduzzaman (2020) who attributed the weakness in mathematics to lack of skilled and untrained teachers who are not familiar with the modern methods and approaches of teaching. The need of use of technology in learning is justified by the finding by Jailani, Wan Mohd Rashid, Noraini and Wahid (2005) which showed that a high level of technology is a necessity to compete in the global arena. Also finding by Brewer (2013) showed that team work, use of Information and Communication Technology (ICT), problem solving and communication skills enable people to adapt to the changes in the world of work. Which means, lack of ICT usage and other technologies in the mathematics class will hamper job opportunities meant for the youths and graduates.

Conclusion

Based on the result of this study, it is obvious that problem solving skill, effective communication, use of innovations in mathematics delivery (ICT and technologies), emphasis on evaluation, maintaining student – teacher relationship, use of critical thinking, use of different teaching methods, use of computations in solving mathematics and student-centred learning are the employability skills needed in the 21st century secondary school mathematics classroom for job creation. Further findings of this study showed that employability skills help in solving real-world problems, develop lifelong learners and promotes logical reasoning. This study has implication for the students, mathematics educators, graduates and government because application of employability skills in the 21st century secondary school mathematics delivery for job creation will reduce unemployment rate among the youths and graduates.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Teaching and learning of mathematics should be students – centred .
2. The education system needs to provide students with direct learning which reflects real-world problems and work opportunities.
3. Mathematics teachers should use problem solving skills in the mathematics delivery.
4. Mathematics teachers should evaluation mathematics activities.
5. Mathematics teachers and students should apply the use of critical thinking in answering mathematics questions.
6. Mathematics teachers and students should apply creativity in the teaching and learning of mathematics.
7. Mathematics teachers and students should adopt innovations (ICT and technologies) in the mathematics delivery.
8. There should be cordial relationship between mathematics teachers and students.
9. Mathematics teachers and students should be ICT compliance.

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