Does Mathematics Self-Efficacy Influence Students' Career Choice in Science Related Discipline?

Onoshakpokaiye E. Odiri*
Institute of Education, Delta State University, Abraka, Delta State, Nigeria
Email: onos68@yahoo.ca
* Corresponding Author

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Abstract

Mathematics is a necessary subject for all students, but scientific students especially need to know it. Most students view mathematics as a terrifying subject. Many students felt they lacked the skills necessary to be successful in mathematics, which has influenced their decision to pursue a career in the sciences. The purpose of this study is to look into how diploma students' self-efficacy in math affects their decision to pursue a profession in a science-related field. One hundred and forty (140) students from diploma year two at Delta State University, Abraka, were chosen at random to serve as the study sample. To direct the study, two hypotheses and two research questions were stated. SPSS was utilized for data analyses. Self-efficacy, mathematics self-efficacy, career conceptions, social cognitive career theory, mathematics self-efficacy and selecting a profession in the sciences, and gender and mathematics self-efficacy were all examined in this study. The outcomes showed that students' job choices in science disciplines are influenced by their mathematical self-efficacy. Additionally, researchers found no significant differences between male and female students' mathematics self-efficacy in regard to their career choices in science-related fields. Some recommendations were made.

Keywords: Mathematics self-efficacy, Influence, Students, Career choice, Science

1. Introduction

Choosing a career is a very important aspect of life because it has a long way in affecting the students' future life. In choosing a vocation in science discipline, there are important subjects which the students should be capable of knowing, such subject is mathematics. Many students in schools believe that mathematics is a challenging subject. Students' perceptions of mathematics difficulty have an impact on their interest, tenacity interest and self-efficacy beliefs in the subject matter (Ahmad, 2022). The reason for this perception is as a result of math phobia. Math phobia is a term used to describe a state of anxiety, tension, or panic that impairs mathematics ability (Prasanta, 2020). Math phobia is characterized as an anxiety-producing feeling that prevents an individual from effectively solving mathematical problems. It can also be characterized as apprehension, tension, or fear that interferes with math performance (Ahmad, 2022). Numerous

factors can contribute to mathematics phobia, such as a lack of knowledge about various aspects of teaching and learning, such as effective student-teacher relationships, the use of innovative and student-centred teaching methods, counseling, a positive attitude toward mathematics, improved curricula, breaking topics down into units, and the use of ICTs in the classroom.

Math phobia, also known as math anxiety, can negatively impact students' learning and performance in the subject. A student who suffers from a math phobia may not be incompetent in the subject; rather, the associated symptoms of worry prevent the students from reaching their full potential (Prasanta, 2020) Math anxiety affects people all around the world and is not limited to specific situations or individuals. Students who are afraid of mathematics have a bad attitude toward the subject and find it difficult to concentrate on the task they are working on (Ahmad, 2022). A student who fears mathematics is also more likely to become anxious, especially before an exam or assessment. The influence of parents, instructors, peers, and seniors might lead to a fear of mathematics. Similarly, a fear of mathematics can also result from a bad impression of mathematics. The main causes of math phobia are school facilities, teachers' performance, curriculum structure, and instructional techniques, use of tools and technology, and assessment systems(Ahmad, 2020). Similarly, inadequate rewards for math teachers and the unfavourable attitudes that both teachers and students have about the subject matter are significant contributors. Therefore, the primary causes of mathematics phobia are exams and tests (because of the pressure to perform well), people (parents, teachers, and peers) because of low proficiency, teachers' inadequate delivery of knowledge, and peers' negative attitudes toward mathematics and its nature. Math phobia may also be brought on by the following factors: i) Unable to work out mathematical puzzles ii) Teachers' combative, demanding, and grating personalities iii) Ineffective teaching strategies and inadequate grounding in mathematics iv) Unhealthy teacher-student connections iv) Not being able to complete math problems v) The teacher's use of derogatory language vi) A classroom that is not student-friendly vii) Not being able to comprehend arithmetic in class

According to Okafor and Anaduaka (2013), a lot of students are afraid of mathematics since they think it's the hardest subject. Because of the educational system's propensity to generalize students' skills, mathematics is perceived by students as the most difficult subject. Students who are exposed to an overly rigid learning method may develop phobias (Dhita & Mahardika, 2023). Due to its significant impact on human existence, mathematics is a very significant branch of science. Learning may be made more meaningful by creating an atmosphere that helps students advance their knowledge. The usage of punishment by teachers during instruction is one of the factors contributing to students' acquiring a math phobia (Arthur, Addo & Annan, 2015) When a teacher is using a punishment, either verbally or nonverbally, it might cause unreasonable anxiety and impair their ability to be creative. Most students are afraid of mathematics due to math phobia and for this specific reason they hate the subject mathematics not knowing that mathematics is the bedrock for making career choice in science. Students avoid science related career due to mathematics involvement. For the students to study this subject they need encouragement. Students' Self-efficacy in mathematics is related to a variety of beneficial learning outcomes or experiences, such as students' improvement in mathematics accomplishment and successful development of mathematics skills. It also influences students' success at various levels of their educational pursuits, such as decision-making and motivation (Onoshakpokaiye, 2021).

Self-efficacy

Self-efficacy is defined as a student's confidence in his or her own capacity to plan, develop, and carry out a specific task in order to accomplish desired results (Bandura, 1977, Moran & Sarit, 2019). According to Bandura (1986), a student decides to start a specific task or tends to avoid it based on his or her confidence in their capacity to do, finish, or complete that specific task. Therefore, self-efficacy can be seen as a domain peculiar to tasks (Tang, Pan & Newmeyer, 2008). According to Bandura (2001), mentioned in Joel, Peter, and Samuel (2017), self-efficacy is the conviction that one can successfully execute a task in a certain field. It can be characterized as students' belief in their ability to bring about desired results via their activities, which will motivate them to take action and help them persevere through difficult times (Bandura, 1977, OECD, 2013).

Previous research showed that students with high levels of self-efficacy were more likely to experience more stressful academic challenges than students with low levels of self-efficacy (Tang, Pan & Newmeyer, 2008; Yuhsuan & Jodie,2014, Joel, Peter & Samuel, 2017). The concept "self-efficacy" in an academic context refers to a student's self-confidence or beliefs in his or her own capacity to carry out or progress in particular academic activities or tasks (Bandura, 1986; Pajares & Graham, 1999, Kwon, Vela, Williams & Barroso, 2019). According to Bandura, there are four (4) main information sources that can be used to develop self-efficacy beliefs: one's own performance achievements, vicarious learning, social persuasions, and physiological and emotional conditions. These dynamic self-beliefs are linked to the environment and related to the specific activity or the kind of task that the student is about to complete. When a student has strong confidence in his or her ability to complete a task or academic activity, that student may anticipate a successful outcome. If a student is expected to perform well, they may grow more self-assured and make sure that their actions have the desired effect. Self-efficacy, according to Tang et al. (2008), is how students feel and think about themselves, and it influences how they behave, particularly in challenging circumstances (Bandura, 1977). Self-efficacy demonstrates how effectively students motivate themselves to persevere through a challenging academic task. It has an impact on students' emotional lives and decision-making towards fulfilling their academic obligations (Bandura, 1997; Wigfield & Eccles, 2000).

Mathematics Self-efficacy

Students' self-efficacy in mathematics refers to their perception of their capacity to carry out or conduct a specific sort of activity that involves solving mathematical issues (Bandura, 2012, Son, Watanabe & Lo, 2017, Moran & Sarit, 2019). Self-efficacy in mathematics is defined as the student's level of confidence in his or her own ability to manage, cope with, and effectively solve mathematical issues as well as be able to overcome mathematical challenges. Students' confidence in their own mathematical talents and their ability to complete a task successfully at a certain level is referred to as mathematics self-efficacy (Schunk, 1991, OECD, 2013). It speaks to students' ideas or beliefs about their mathematical prowess (Bandura, 1997). From understanding mathematical concepts to solving mathematical problems, students' confidence in completing or performing various assignments or tasks in mathematics can be inferred to be a measure of their mathematical self-efficacy (May,2009).

Students who find it frustrating and persevere through difficult or demanding math problems typically have higher self-efficacy in math (Pintrich & Schunk, 2002, Moran & Sarit, 2019). Shannon and Allen (1998), who are quoted by Alaina (2010), find that students who struggle with mathematics have self-doubts about their capacity for problem-solving. Self-efficacy in mathematics is related to the perception that one is incompetent or inefficient in

performing a mathematical job. Students with poor mathematics self-efficacy may believe they are incapable, ineffectual, and incompetent when executing mathematical activities and they may also lack mathematical reasoning skills (Alaina, 2010). When it comes to a student's success in mathematics, self-efficacy is crucial since students who lack confidence in their mathematical abilities may struggle because they didn't put in as much effort to master the material out of boredom or lack of drive. Students' confidence in mathematics has an impact on their ability to solve mathematical problems and their academic performance (Onoshakpokaiye, 2021).

Concepts of career

Career is defined as "an occupation or a vocation that typically entails particular training or formal education" in Wikipedia, the free encyclopedia (2020). A person must go through some type of specialized training before picking a career. The individual may also receive educational training in a formal school setting. According to Olaosebikan and Olusakin (2014), a career is the culmination of one's life experiences, including paid and unpaid job, volunteer work, family responsibilities, and community involvement. A person's career decision-making process is extremely important and has a significant impact on their entire lifespan. A career is a profession that a person is trained for and chooses as a lifetime calling, according to Merriam-Webster (2020). Every person has a unique calling, and in order to follow that calling, that person needs to undergo training for a while. This training can either be informal or formal education.

A person's lifetime of decisions and accomplishments, particularly those that are related to their jobs, can be referred to as their career. It includes titles obtained, positions held, and long-term work completion, rather than merely mentioning one position (Business dictionary.com, 2020). A person's career is a lifetime decision that determines their advancement and activities over the course of their lifetime. The career a person chooses has an impact on their lives, whether that impact is positive or negative. When chosen poorly, it has an unfavourable impact on the individual.

Students' choice of a STEM job can be influenced by a variety of factors, including their sense of identity, values, and level of self-efficacy (Estrada, Hernandez & Schultz, 2018, Kwon et al, 2019). There are factors that influence choosing a career or occupation. "Sociologists emphasise the dynamics in our society as the key determinants of vocational choice," according to Olaosebikan and Olusakin (2014). The educational opportunity that affects occupational choice is another factor that determines a profession or vocation. For instance, a student with a math phobia or who is not naturally attracted to math may doubt their abilities, which could impede their performance in the subject. Because science-related courses need mathematics, students who have a math phobia and lack confidence may opt to pursue careers that are not math-or science-related instead of taking science-related courses.

Social cognitive career theory

The Social Cognitive Career Theory (SCCT), which was based on Bandura's Social Cognitive Theory and other career theories, was created between 1981 and 2002 by Lent, Brown, and Hackett. The SCCT focuses mostly on the process of choosing a vocation, performing well, and developing interests (Hackett, 2013, Career development, 2015). The SCCT explores how learning experiences affect students' behaviour toward a certain job, keeping in mind students' abilities, interests, and values, as well as how these factors relate to one another (Lent, Brown & Hackett, 2002, Career development, 2015). The theory of Social Cognitive Career is a professional theory that is very dynamic, extensive, and all-inclusive, and it covers many aspects of career development (Lent, Brown, & Hackett, 1994). The SCCT,

which derives from Bandura's Theory of Social Cognitive, highlights the significant role that self-efficacy, has in a student's behaviour choice.

The SCCT proposed that career interests and outcome expectations shape students' behaviour and that career self-efficacy serves as a bridge between students' backgrounds, their expectations for their careers, and their interests (Lent et al., 1994, Tang, et al, 2008). According to Bandura, cited in MARCR (2020), self-efficacy is a subjective assessment of a student's ability to carry out and finish tasks or a course that are necessary to handle situations. The primary goal of SCCT is to identify the connections between students and their settings for making career-related decisions in order to take into account the full environment (MARCR, 2020). The SCCT, which is based on Bandura's (1986) social cognitive theory, places a strong emphasis on a number of student cognitive variables, including goals, expectations of outcome, and self-efficacy, as well as how these variables relate to other areas and their environment, including gender, ethnicity, barriers, and social supports, in order to help modify career course improvement.

The combined effect of these elements, according to Psychology (2018), makes it possible for students to look for careers that are the best fits for them. Every student's options are influenced from within and without, which either encourages or dissuades the student. Students may have a variety of possibilities at their disposal, but because they may not be confident in their abilities to make the best decision, they may choose a career that is not math-related. Making a professional decision based on the possibilities present can have unfavorable effects on the numerous options the student will have in the future. There are instances when students make decisions based on many criteria, but they may come to regret them later in life, particularly if their chosen profession is not a good fit. They frequently express remorse by saying, "I would have become a doctor, if not for my fear of math or my lack of competence." When choosing a career path, students must take a number of considerations into account. Before picking a vocation, a student must first assess whether he or she has the interest, requisite abilities, or qualifications for the career.

Everyone is born with a certain set of abilities or qualities that will help them function normally or perform better in the vocation they choose (Psychology) (2018). Due to these factors, the majority of students with low mathematics self-efficacy shies away from careers involving math or computations and instead goes for fields where they believe math is not necessary and where they may apply their skills. When choosing a career, students are influenced by a variety of factors, including their self-perceptions, health, genetic makeup, gender, learning experiences, and family history. According to Tang et al. (2008), a student's learning experiences are influenced by their background, career model, and self-efficacy, which in turn affect their expectations for outcomes and interests and, ultimately, their choice of vocation. According to Career Development (2015), the four primary sources of beliefs have an impact on students' career decisions and the Social Cognitive Career theory. According to Bandura's self-efficacy hypothesis, these ideas can be picked up through verbal or social influence, observation of others, learning from past performance, and physiological states and reactions. When students feel they lack the capacity to complete a particular task or project, they often shy away from or avoid it (Career development (2015). Even when a student has demonstrated mastery in the tasks or skills in the past, certain conditions can lead to students' expectation of unfavourable outcomes, lowering their self-efficacy. Age, social level, gender, and ethnicity of the student are examples of such variables. The SCCT contains one noteworthy or intriguing feature. Being so dynamic and different from previous career theories, it stands out because it takes into account the social and economic aspects that influence career decisions as well as the student's evolving self-beliefs and self-efficacy (Career development, 2015).

Mathematics self-efficacy and science career choice

Students can increase their self-efficacy in a variety of ways, including verbal persuasion, past experience, vicarious experiences, and physiological clues. Due to many factors, such as students' self-beliefs or concept that mathematics is difficult and is only appropriate for the talented, interest among students in mathematics in primary or elementary schools and postsecondary institutions is declining. This has had a significant impact on students' decision to pursue careers in science and mathematics. According to Crisan and Turda (2015) and Joel, Peter, and Samuel (2017), self-efficacy in job choice refers to students' confidence in their ability to engage in the activities associated with selecting the appropriate professional path. According to a study by Tang, et al. (2008) and mentioned in Nauta and Epperson (2003), the number of school years students spent in high school and the range of science and mathematics courses they took had a beneficial impact on their decision to major in science and mathematics in college.

Students' self-efficacy in math, science, and college prerequisites were found to be positively correlated with sticking with the course they have chosen. Most students steer clear of math-related occupations, including those in the STEM fields. If immediate action is not taken, it will eventually have an impact on the number of students entering STEM fields in the near future (Halim, Rahman, Ramli & Mohtar, 2018). The students had the opinion that since they lack the aptitude to study and succeed in mathematics, this belief plus their fear of mathematics causes them to choose less demanding courses. Since math is involved, if the student plans to pursue a career in science, this may eventually influence his or her decision.

Given that mathematics is a prerequisite for all science-related courses and careers, a student who has doubts about their mathematical prowess cannot select a profession in the sciences. However, studies show that students' positive learning outcomes as a result of their high mathematics self-efficacy influence their decision to enroll in advanced mathematics courses and to pursue a certain vocation (Lopez, Lent, Brown, & Gore, 1997; Pajares, 2005, Kwon et al, 2019). According to the study, there is a significant link between students' mathematical self-efficacy and their performance in secondary school (Onoshakpokaiye.2020). According to studies, self-efficacy is one of affect's most potent subcomponents when it comes to influencing a student's achievement in secondary school mathematics and science (Kesan & Kaya, 2018, Kwon et al, 2019). Before pursuing a profession in math or science, a student must have a high level of mathematical self-efficacy and be proficient in the subject in order to understand scientific terminology. The achievement of students in science courses and their overall career path are greatly influenced by their level of science and mathematics self-efficacy (Kwon et al, 2019). There is a correlation between students' self-efficacy in mathematics and their interest in STEM careers. They are connected to one another by a number of other student-variable connections. According to several experts, mathematical self-efficacy and accomplishment are related (Kesan & Kaya, 2018, Kwon et al, 2019). According to several academics' findings, students' proficiency in mathematics predicts their perseverance and success in other STEM-related courses (Rask, 2010; Singh, Granville, & Dika, 2002; Tyson, Lee, Borman, & Hanson, 2007).

Students' interest in choosing a STEM-related career is highly influenced by the correlations between these characteristics, mathematics achievement, success, self-efficacy in mathematics, and persistence in STEM courses (Tyson, Lee, Borman, & Hanson, 2007; Rask, 2010; Kesan & Kaya, 2018; Wang, 2013). Self-efficacy in mathematics is essential for selecting a career in science because it is the basis for such decisions. According to Kwon et al. (2019), children with high mathematical self-efficacy have been shown to have higher mathematics achievement, show more perseverance in STEM-related courses, and do better in STEM than students with average or low self-efficacy. According to research studies, high mathematical self-efficacy is linked to choosing a career in science, and it influences students'

career decisions in scientific-related fields (Hackett & Betz, 1989 in May, 2009). Hackett and Betz (1989), who were cited in May (2009), found that students' levels of self-efficacy in mathematics are a better predictor of their choices in career than the students' past mathematics performance. For this reason, it is important to motivate and encourage students to take mathematics seriously, especially those who want to pursue a career in the sciences or mathematics-related fields. This study is based on the social cognitive career theory, which identifies interest and self-efficacy in mathematics as the two most important elements in selecting STEM occupations. These two factors also serve as predictors of one's future career choice.

Self-efficacy in mathematics and gender

According to Byars and Hackett (1998), cited in Tang et al. (2008), gender influence may have an impact on vocation self-efficacy, outcome expectations, as well as choice of vocation and modification. Many female students assumed that mathematics was only for men and that it was gender-oriented. Females believe they lack the aptitude and skills necessary to master or excel in mathematics. In an effort to explain why women were underrepresented in science and mathematics, Betz and Hackett (1981) proposed that women avoid specific areas where men predominate because this causes women to lose confidence in their abilities in those occupations. Numerous studies undertaken so far have demonstrated the importance of students' self-confidence and belief in their abilities to make decisions and persist in pursuing careers in science, technology, and mathematics for women (Tang, et al, 2008, Zeldin & Pajares, 2000, Smith-Weber, 1999; Church, Teresa, Rosebrook & Szendre, 1992;). Moran & Sarit (2019) cited Hackett and Betz (1981) for expanding Bandura's self-efficacy theory on mathematics and mathematics self-efficacy. Their research showed that males had larger expectations for their mathematical self-efficacy than females do, and that these expectations are related to choosing to specialize in the sciences for one's future profession.

2. Statement of the problem

For students, picking the appropriate career is very important. However, there are many factors to consider while choosing a career. Due to their misconceptions about mathematics, many students avoid studying subjects that are connected to science. These ideas have a big impact on the careers that students pick. Low math self-efficacy students prefer to avoid or avoid math-related classes, which may hinder them from selecting a career in the sciences or math-related courses. The following questions the researcher will need to address. Does mathematics self-efficacy affect students' decisions to pursue careers in science-related fields? Does the self-efficacy of male and female students in mathematics differ when it comes to choosing a career in a science-related field?

3. Research Objectives

The major goal of this study is to examine how diploma students' mathematics self-efficacy affects their decision to pursue a career in a science-related field. Diploma is a two years programme which on completion the students are awarded diploma certificate

4. Methodology

A descriptive survey was used in the investigation. The second-year Diploma students from Delta State University in Abraka, Nigeria, were used for the study. 140 students were chosen at random to make up the study sample. A questionnaire was utilized to gather the data. The questionnaire is divided into two parts: the first section asks about the students' confidence in their mathematical abilities, and the second part asks about their preference for a career in a

science-related field. While SPSS was used as the tool for data analysis, there were two research questions and two hypotheses provided.

5. Hypotheses

1**)** Students' mathematics self-efficacy (MSE) and career choice have no discernible relationship in fields of study relevant to science.

2**)** When choosing a career in a science-related field, students' mathematics self-efficacy does not significantly differ between male and female students.

6. Research questions

The following research issues were posed to direct the investigation.

1) Does a student's level of mathematics self-efficacy affect their decision to pursue a career in a science-related field?

2) What differences in self-efficacy in mathematics exist between male and female students choosing careers in science-related fields?

Research question one: Does a student's level of mathematics self-efficacy affect their decision to pursue a career in a science-related field?

Table 1: Students' career choices in science-related areas and their self-efficacy in mathematics

	Mean	Std.	N
MSE	23.5857	3.74355	140
MSECC	25.2357	5.13643	140

According to Table 1 above, there was a mean difference of -1.65 between students' math self-efficacy (MSE) and students' math self-efficacy career choice (MSECC), favouring MSECC since MSECC mean was greater than MSE. This suggests that students who want to pursue careers in science-related fields need to have a strong mathematical self-efficacy.

Research question two

What differences exist in the mathematics self-efficacy of students choosing careers in science-related fields between male and female students?

Table 2: Students' mathematics self-efficacy in choosing a career in a science-related field for male and female students.

MSECC	MALE=1 FEMALE=2	N	Mean	Std. deviation	Std. Error Mean
	1	**34**	**24.6471**	**4.99019**	**0.85581**
	2	**106**	**25.4245**	**5.19147**	**0.50424**

Table 2 indicates that, on average, female students were more confident in their ability to use mathematics to choose a career in a science-related field than male students were.

Hypothesis one: Students' mathematics self-efficacy (MSE) and career choice have no discernible relationship in fields of study relevant to science.

Table 3: Career preferences for students in science-related disciplines and their mathematics self-efficacy (MSE).

		MSE	MSECC
MSE	Pearson correlation	1	0.334**
	Sig. (2-tailed)		0.000
	N	140	140
MSECC	Pearson correlation	0.334**	1
	Sig. (2-tailed)	0.000	
	N	140	

** Correlation is significant at the 0.01 level(2-tailed)

The connection between students' career choice and their level of mathematics self-efficacy is 0.334**, which denotes a moderately positive correlation. The correlation's p-significant value was determined to be 0.000 ($p < 0.01$). This indicates that the correlation was statistically significant. The null hypothesis was therefore rejected. It suggests that students' mathematics self-efficacy (MSE) and career choice in science-related fields have a substantial impact.

Hypothesis Two: When choosing a career in a science-related field, students' mathematics self-efficacy does not significantly differ between male and female students.

Table 4 Shows the differences in the mathematics self-efficacy of male and female students while choosing a career in a science-related field.

		F	Sig	T	Df	Sig(2-tailed)	Mean difference	Std Error difference	Lower	Upper
MSECC	**Equal variances assumed**	**0.071**	**0.791**	**-0.767**	**138**	**0.444**	**-0.7775**	**1.0139**	**-2.7822**	**1.2272**
	Equal variances not assumed				**57.703**	**0.437**	**-0.7775**	**0.9933**	**-2.7660**	**1.2111**

There was no significant difference between the MSECC of male and female students, according to the results in Table 4 above, where the p-significant value was discovered to be 0.444 ($p > 0.05$). According to this, there was no statistically significant difference in the MSECC scores of male and female students. The null hypothesis was therefore accepted.

7. Discussion of the findings

The MSE and MSECC of the students were related, as shown in table 1, indicating that mathematical self-efficacy is required for students to pursue a profession in a science-related area. According to the data in table 3, students' mathematics self-efficacy (MSE) has a substantial impact on their decision to pursue a career in a science-related field. When choosing a career in science, one cannot disregard mathematics because it forms the fundamental building blocks of science courses. Students require good mathematical self-efficacy in order

to choose a science or a career in science. This backs up Nauta and Epperson (2003) findings from their longitudinal study, which were mentioned by Tang et al. (2008). They found that the number of scientific and math courses students were offered in high school was positively connected with their decision to enroll in those courses. They discovered that a student's self-efficacy in science and mathematics is positively associated to their ability to stay in their chosen profession or vocation. In support of the finding that mathematics self-efficacy influences career choice in science, Halim, Rahman, Ramli, and Mohtar (2018) argued that if immediate action is not taken to promote or improve students' mathematical learning, it will eventually result in a decline in the number of students who choose careers in STEM. A student who intends to pursue a profession in science should have strong self-efficacy in mathematics; otherwise, when that student eventually decides to do so, he or she will struggle to adapt to or thrive in the chosen career.

Students' misconceptions about their mathematical aptitude are the cause of their lack of interest in pursuing careers in science. Since self-efficacy refers to a person's level of confidence in the activities they are about to undertake or engage in, it is important for students to have when choosing a job (Crisan & Turda, 2015, Joel, Peter & Samuel, 2017). According to past research (Lopez, Lent, Brown, & Gore, 1997; Pajares, 2005), students with strong mathematics self-efficacy are more likely to choose occupations in science-related fields, which supported the outcomes in table 3. According to (Kwon et al., 2019), scientific self-efficacy and mathematics self-efficacy are taken to be highly vital and that they influence students' achievement in science disciplines and their overall career growth. This finding was supported by numerous studies.

It is impossible to overstate the impact of mathematical self-efficacy on the decision to pursue a career in science. To bolster this, (Kesan & Kaya, 2018, Rask, 2010, Tyson, Lee, Borman, & Hanson, 2007, Wang, 2013) noted in their study the relationship between mathematics achievement, mathematics self-efficacy, success and persistence in STEM-related courses, and the significant role they play in influencing the students' development of interest in choosing a career related to STEM. Hackett and Betz (1989), who were mentioned in May (2009), discovered that higher levels of students' mathematics self-efficacy predict better results in their career choices in science. Mathematical self-efficacy is crucial for career choice since it affects students' career decisions in the sciences; as a result, it should not be neglected for fear of a scarcity in careers involving the sciences. Mathematics education among the students should be promoted.

Table 4 above, when taken into consideration, showed that there was no statistically significant difference in the MSECC of male and female students. Regarding a career-related field in science, there is no difference between the self-efficacy of male and female mathematicians. There have been numerous studies that have suggested that men are more confident in their mathematical abilities than women are, but there have also been research that have found the opposite. However, it was found in this study that there is no appreciable difference in the self-efficacy of female and male students in mathematics when it comes to choosing a profession in science. Contrary to Moran and Sarit's (2019) findings, they contend that among male students, their expectations for their self-efficacy in mathematics are higher than those of female students and that these expectations are linked to their decision to pursue a career in science. This conclusion indicates that there is no difference between male and female students' mathematical self-efficacy when it comes to choosing a career in a science-related field, suggesting that there is no discrimination between the sexes. Since there is no statistically significant difference, as shown in table 4, we cannot draw the conclusion that male students choose careers in science more frequently than female students. This demonstrated that students of both sexes select careers in science equally.

8. Conclusions

Since mathematics is the fundamental building block of science courses, it should be strongly stressed. Self-efficacy in mathematics is crucial while deciding on a scientific career. When a student has low self-efficacy in mathematics, that student will never succeed in the sciences. Sensitizing kids to the importance of mathematics is necessary since mathematics self-efficacy affects career choice in science-related fields. Teachers have a responsibility to make sure students are motivated to enjoy the subject.

Some students ignore math because of their dread of the subject and their perception that it is a difficult subject. Due to the importance of mathematics in selecting a career in the sciences, the researcher recommends that students' mathematical self-efficacy be increased in order to foster a love of learning and study. There shouldn't be any gender discrimination since both men and women select science careers, so both male and female students should be driven to study mathematics.

Teachers of mathematics should consider it their obligation to inspire students and help them grow interested in the subject through effective instruction. I also urge more research to be done to determine whether gender really does influence job choices in the sciences.

Students should be enlightened that Math is not a hard or unlearnable subject, thus teachers should portray it that way. Students should be taught that math is a creative subject.

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