

Science Subject Choices among Secondary School Students in Ilala-Dar es salaam: The Influence of School-Based Social and Personal Guidance

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Abstract

This study examined the influence of School-based Social and Personal Guidance (SBSPG) provided in schools on science subjects' choices among students. Three categories of respondents were involved, including 389 secondary school students, 82 science teachers, and 10 teacher counsellors who were subjected to a Self-Report Questionnaire (SRQ), a Focus Group Discussion (FGD) and a Semi-Structured interview. A Binary Logistic Regression Model was employed to analyse quantitative data collected through SRQ, while thematic analysis was applied for FGD and interview data. The findings indicated that SBSPG was found to have significant positive influence on students' science subjects' choices for both male and females with odds ratio (OR) 2.04 ($p=0.004$) for males and 1.70 ($p=0.005$) for females. Therefore, the study recommends that the Ministry of Education Science and Technology to strengthen the efforts to ensure that comprehensive SBSPG fully provided in secondary schools. This could add up the ongoing efforts to bridge the existing gender gap in Science, Technology, Engineering, and Mathematics (STEM) in Tanzania for sustainable development.

Keywords: *School-based social and personal guidance, subject choices, science subjects, secondary school students*

INTRODUCTION

Choosing subjects is one of the most significant decisions and yet a challenging task since it signifies a person's profession in the future. It involves a series of self-assessments, acquiring knowledge about the world of work, and being aware of the connection between the subjects under study and the future career of interest (Singh & Jagdev, 2018). It

involves a series of self-assessment, acquiring knowledge about the world of work and being aware of the connection between subjects under the study and the future career of interest (Singh & Jagdev, 2018). It is at this point that making a connection becomes a challenge for most youth, especially those with little career information and limited access to career guidance (Braza & Jr., 2015). One may wish to become a medical doctor in the future; unfortunately, you may find such a person taking subjects that cannot lead him or her to become one. Cases of this nature have been observed in most students in secondary schools where their career interest mismatch with subjects they take in school (Tesha, 2020). As theorized by Frank Parson (1990), career decision should not be made unless one has successfully gained self-understanding, knows what the labour market requires, and, lastly makes an objective and logical judgement of the two (self-understanding and the requirements of the labour market). Therefore, one needs appropriate guidance to choose subjects that definitely project future careers of interest. This is where career guidance has become vital in secondary schools to assist students not only in choosing subjects but also in achieving their social, personal, and educational goals (Zafar, 2019).

In Tanzania, students normally choose subjects of specialization as they transit from form two to form three at the secondary education level. The National Education and Training Policy of 2014 clearly stipulates that career guidance and counselling services should help students to select wisely the relevant subjects for their future and observe the importance of such subjects to themselves and national development (MoEST, 2014). Likewise, Tesha (2020) asserted that students should be assisted in making an informed decision during subjects' selection, as this is a very important stage of their career trajectory. Failure to make a wise subjects' choice may lead to job dissatisfaction and poor performance in the future (Hipkins & Vaughan, 2020; Rukewe & Oats, 2020). This is because, subjects that students take at secondary level determines not only programs to be taken at the college and university levels but also their future careers. Therefore, if the choice was not informed and wise enough, there is a high likelihood of incongruence between the individual's personality characteristics and the requirements of the particular job or career. Hence, SBSPPG services are vital to students, especially when they are at the stage of making decisions that affect their career trajectory, society, and their lives in general.

The movement to encourage students to learn science is not only a national concern but also the worldwide agenda. International policies and research such as the Sustainable Development Goals 2015-2030, insist on investing more efforts in scientific fields for sustainable development. This is clearly observed in goals 6, 7 and 9 which focus on clean water and sanitation, clean energy, industry, innovation, and infrastructure. However, the implementation and achievement of these goals may be a challenge if countries do not have enough human resources in the scientific fields. Again, the World Economic Forum (WEF) report 2022 shows a great need to encourage more girls and boys to participate in science since the representation in these fields is still questionable. For example, taking into account graduate from all fields in 2020/2021, the percentage of male and female graduate in Information and Communication Technologies (ICT) was 8.2 and 1.7 respectively, while in engineering and manufacturing, men were 24.6 and women were 6.6 percent (WEF, 2022). These two documents provide a big picture of the importance of encouraging students to learn science, and in the context of this study; SBSPG services may serve the intended purpose. In the same vein, various studies conducted worldwide show the importance of motivating students to learn science. For example, the report by Archer et al. (2020) in London concluded that participation in STEM (Science, Technology, Engineering and Mathematics) is widely recognized as highly important for national economic competitiveness, upward social mobility, and active citizenship. This is in line with the studies by Hafkin (2016); Huyer (2018); and Toolo (2018) in Sub-Saharan African Countries, who maintained on the need to close the gender gap in science subjects to achieve a greater representation of boys and girls in STEM careers and occupations.

In Tanzania as well, various initiatives undertaken to ensure that student learn science. The Tanzania National Five-Year Development Plan (2021/2022-2025/2026) recognizes the importance of science, technology and innovation to ensure that the country is not lagging behind in the current competitive market. The document evidently stated on the need to attract more students to learn science by improving science learning infrastructure in secondary schools such as providing ICT teaching and learning tools and supplying science laboratory equipment (Ministry of Finance, 2021). Again, the Education and Training Policy (2014) also put an emphasis on science and technology education where one of its

objectives is to have adequate number of citizens educated in science and technology to meet the national development needs. This goes hand in hand with the National development vision (2025) which emphasises on the restructuring of education system to foster creativity and problem solving skills (Ministry of Finance, 2000). In the 2022/2023 academic year, Dr Samia Suluhu Hasan, the president of the Republic of Tanzania also provided scholarship to students who performed well in the form six national examinations 2021/2022 in science combinations: PCB, PCM, PGM, CBG, PMC and CBN to join University's science programs. This is a very important effort to ensure that more students are motivated to learn science to achieve the national agenda by having enough human resources with science, technology, and innovation skills.

Despite the government's efforts to encourage students learn science, various studies also have been conducted in the area (Kinyota, 2020; Mabula, 2012; Mwenga, 2015) focusing on the role of science teaching and learning environment. Specifically, Mabula (2012) and Mwenga (2015) insisted on teacher-students interaction and student approach in teaching and learning science while Kinyota (2020) put emphasis on the full engagement of students in scientific inquiring to improve students' interest to learn science. Mkimbili (2018) as well emphasized on the realization of learner-centred approach in community secondary schools in Tanzania as a means to improve teaching and learning of science subjects. However, most of the efforts focused on improving teaching and learning of science subjects' environment. The gap of students taking science against those in arts and other subjects still exist and calls for extended efforts to attract more students to learn science (Mwenga, 2015).

The Influence of SBSPG on Students' Science Subjects Choices

Choosing subjects is not an easy task for many youths as stated earlier. Students need to be well guided in the whole process so that, their decisions reflect their career interests in the future. Ntawigaya (2021) reports that among 135 students involved in the study, 60 percent of them were not aware of the subject combination they were studying and not comfortable with what they were studying. This indicates that, there is a danger to let students decide what subjects to take and wait until things become confusing to them. Therefore, the need to strengthen career guidance services in schools cannot be denied due to its important roles to support teaching and learning as well as assist students to make

appropriate decisions (Harry & Hafidhuddin, 2020; Zafar, 2019). Correspondingly, Amani and Sima (2015) proposed increasing access to career guidance and counselling in schools and higher learning institutions to assist students in various areas including self-awareness and career decision making. This is because there is no doubt that when students are well guided and adequately informed, the likelihood of having great self-awareness will be high to the extent that, in one way or another, facilitates decision-making. This is also revealed by Tesha (2020) thus, career guidance in schools help students to identify their career aspirations and understand career opportunities available in relation to their subjects' choices. Hence, the intention of this study to examine the influence of SBSPG in science subjects' choice remains valid.

This study was guided by one key question namely: What is the influence of School Based Social and Personal Guidance (SBSPG) on science subjects' choices among secondary school students? However, the key question was supplemented by a sub-question on the practice of subjects' choices in secondary schools.

METHODOLOGY

This study was conducted in ten (10) public and private secondary schools in Ilala municipality, Dar es Salaam. It was important to conduct this study in Dar es Salaam because Dar es Salaam has high enrolment rate in Tanzania mainland compared to other regions. In 2019/2020 academic year the Dar es Salaam region had a total of 231,612 students enrolled in both public and private secondary schools (MoEST, 2020). Consistently, Ilala led all other municipalities in the city, where the enrolment rate in 2020 was 79,265 while Kigamboni was 12,712; Kinondoni 40,776; Temeke 60,166; and Ubungo 38,693. Therefore, Ilala MC had a wide chance of being selected for this study. Three categories of participants were involved, including form three and four students, science teachers, and teacher counsellors from ten (10) public and private secondary schools. The selection of form four and three students was based on the fact that at this level, students had already selected their subject streams, and therefore, they were in a good position to reveal about their science subjects' choices with reference to the SBSPG provided. Science teachers and teacher counsellors were involved bec use

of their responsibilities in teaching and guiding students to achieve their academic goals and handle life challenges in general.

Yamane (1967) formula: $n = \frac{N}{1 + N(e)^2}$ was applied to determine sample size of the students since their population was already known by the researcher (Singh & Masuku, 2014). Thereafter, stratified sampling techniques were employed to obtain various strata based on class level (form four and form three) and gender (male and female) students. After the formulation of these strata, a simple random sampling technique was performed in which pieces of paper labeled numbers one and two were randomly distributed for inclusion and exclusion criteria. Hence, those who picked number one were included, while those with number two were excluded. The stratified sampling technique enabled the researcher to study differences that existed between various subgroups of the population (Ary et al., 2010). Criterion-purposive sampling was employed to select schools, science teachers, and teacher counsellors whose enrollment rate was the criteria for schools. While teaching and guidance responsibilities were the criteria used to select science teachers and teacher counsellors, respectively.

A Mixed methods research approach employed a guided data collection process, analysis, interpretation, discussion, and reporting of the findings. The ultimate purpose of adopting a mixed-methods approach is based on the fact that the key variables – the subjects' choices and SBSPPG – cannot be well investigated by a single approach. Therefore, blending the quantitative and qualitative approaches provided an opportunity for breadth and in-depth investigation of the phenomenon under study. In terms of the quantitative aspect, ex-post facto design was employed to investigate the existing cause-and-effect relationship as proposed by Ary et al. (2010). This is because the students who were the key participants of the study had already chosen their subjects; therefore, it was important to investigate the existing influence of SBSPPG in their subjects' selection. On the other hand, a multiple-case study design was employed to collect in-depth qualitative data from students who were also subjected to FGD, science teachers, and teacher counsellors on the same research question. Yin (2014) argues that a multiple-case study design is an empirical inquiry that investigates a contemporary phenomenon within its real-life context in which multiple sources of evidence are used. Therefore, the choice of this design allowed the researcher to explore the experiences,

perceptions, and opinions of teachers and teacher counsellors on students' science subject choices in relation to the SBSPG provided. Table 1 presents the sample size of the study.

Table 1: Selected Sample for the Study

Schools involved		S.A	S.B	S.C	S.D	S.E	S.F	S.G	S.H	S.I	S.J	Total
Students	Form IV	18	20	18	16	20	20	20	18	13	20	183
	Form III	20	20	22	24	20	20	20	20	20	20	206
Science teachers		6	7	8	6	8	8	9	10	10	10	82
Teacher counselors		1	1	1	1	1	1	1	1	1	1	10
Total		45	48	49	47	49	49	50	49	44	51	481

Source: Field data (2022)

Data Collection Instruments

In the process of data collection, Self-Report Questionnaire (SRQ) was used to collect quantitative data, while semi-structured interviews and Focus Group Discussion (FGD) guides were employed to collect qualitative data. Thus, SRQ was designed for students who were also involved in the FGD. Again, teacher counsellors participated in the semi-structured interviews while science teachers were involved in the FGD. The SRQ consisted of thirty (30) items with five-point scales ranging from 1 (Strongly disagree) to 5 (Strongly agree). However, before administering the questionnaire, item and reliability analysis were performed to evaluate the quality of the questionnaire, and the results are as presented in Table 2:

Table 2: Results of Item and reliability Analysis of School-Based Social and Personal Guidance Measurement

Item	Sign	Item-rest correlation	alpha
sece_1	+	0.566	0.9583
sece_2	+	0.719	0.9571
sece_3	+	0.715	0.9571
sece_4	+	0.5165	0.9587
sece_5	+	0.3954	0.9596
sece_6	+	0.4424	0.9592
sece_7	+	0.3835	0.9597
sece_8	+	0.7622	0.9568
sece_9	+	0.5293	0.9586
sece_10	+	0.4743	0.959
sece_11	+	0.5062	0.9587
sece_12	+	0.4517	0.9591
sece_13	+	0.4428	0.9592
sece_14	+	0.7477	0.9569
sece_15	+	0.5914	0.9581
sece_16	+	0.7596	0.9568
sece_17	+	0.8078	0.9564
sece_18	+	0.7576	0.9568
sece_19	+	0.7964	0.9565
sece_20	+	0.7873	0.9566
sece_21	+	0.8155	0.9563
sece_22	+	0.7791	0.9566
sece_23	+	0.8065	0.9564
sece_24	+	0.7571	0.9568
sece_25	+	0.737	0.957
sece_26	+	0.6664	0.9575
sece_27	+	0.7025	0.9572
sece_28	+	0.6561	0.9576
sece_29	+	0.7467	0.9569
sece_30	+	0.6415	0.9577
Test scale			0.959

Table 2 shows the results of the item and reliability analysis of the school-based social and personal guidance (SBSPG) measurement scale. The analysis was conducted to assess the psychometric properties of the scale, including the item-rest correlation and the internal consistency of the scales. The results showed that all 30 items of the SBSPG scale had a positive item-rest correlation, ranging from 0.3954 to 0.8155, which was

greater than the cutoff of 0.3. This indicated that all items measured the same underlying construct, which is SBSPG. Higher correlation indicates that the items strongly correlated with overall scale score. Besides, the results showed that the alpha coefficients measure of the internal consistency of the scale was high (0.959). This suggests that the scale was reliable and consistent in measuring the SBSPG construct. Generally, a coefficient alpha between 0.6 to 0.7 is considered acceptable for research purposes, while a coefficient of 0.8 or higher is considered good in practice. On the other hand, semi-structured interview and FGD guides, and expert reviews were conducted to ensure that the questions were relevant and reflected the content intended to be measured. Thereafter, the SRQs were given to form three and form four students, and the response rate was about 95 percent. Eight (8) semi-structured interviews and seven FGDs were conducted in the selected secondary schools with the help of the assistant researcher.

Data Analysis Procedure

Quantitative data were analysed through both descriptive and inferential statistics with the help of Statistical Package for Social Sciences (SPSS IBM) version 25. Specifically, frequencies and percentages were obtained through descriptive statistics while a Binary Logistic regression analysis was performed to determine the influence of SBSPG on science subjects' choices. In the case of qualitative data collected through FGD and Semi-structured interviews, thematic analysis was used, in which the six stages suggested by Braun and Clarke (2006) were adhered to. Thus, data were familiarized by the researcher familiarised himself with the data, followed by transcription and translations since FGD and interviews were conducted in Swahili. Thereafter, initial codes were generated, followed by defining and naming the themes and sub-themes.

FINDINGS

This section presents qualitative and quantitative findings regarding the specific research questions on the influence of SBSPG on science subjects' choices among secondary school students.

Subject Choices in Secondary Schools

To get insight on the influence of SBSPG on science subjects' choices, it was thought important to determine the existing practices of which secondary school students used to select subjects as they transit from form

two to form three. The researcher asked a key question that was anchored by follow-up questions in the FGD with teachers and semi structured interview with teacher counsellors. The key question asked was: what is the practice of subjects' choices in your school? With this question, the researcher wanted to understand what teachers consider by the time students choose subjects. Among 82 science teachers involved in the FGD 75(91.46%) had the opinion that academic performance was considered the most in placing students in either science, arts or other subjects' streams existed in a particular school. Others said on students' interest, family influences and peer pressure. Table 3 presents the summary of the data collected through FGD with science teachers and few examples of their responses.

Table 3: What Teachers Consider to Guide Students in Subjects’ Choices

Theme	Sub-theme	FGD-Responses (Examples)	Frequency
Academic performance	Form two national results	In most cases, we consider students results from form two national examination. Those who score many A’s in science subjects we advise them to go to science class while others go to either arts or business subjects	35
	Annual examination results	We normally assess individual students’ results from annual examinations. What we do here is that, those in top ten are actually placed in science classes while others are advised to go for arts and other subjects’ areas.	30
	Midterm examination results	Sometimes, midterm tests and examinations results are used as the base to advice students on what subjects to choose. This is because, a student may underperform in the final exams but when you track his or her continuous assessment; you find that, the progresses in particular subjects are not bad.	10
Interest	Class-attendance	Some students clearly show interest in certain subjects. For example, we have those who frequently attend classes, they never miss classes for subjects they like and they actually have good scores in those subjects. Others may tell you that I like biology and chemistry or English and geography; therefore, in this kind of situation, we just follow what student is interested.	5
	Good marks		
Family influence	Parents relatives	Family members such as parents and relatives sometimes influence students to choose certain subjects. I have witnessed this in our school where some students take let say science or arts just because their parents said so.	4
Peer pressure	Friends	Some of our students have friends whom they trust so much. Therefore, when it comes to subjects’ choices, they sometimes follow what their friends have chosen. We have such students here whom they are in either science or arts because of being pressured by their friends and peers	3
	Class mates		

Source: Field Data November (2022)

Similarly, during interview with teacher counsellors, academic performance was mentioned as the most factor considered to guide students in subjects' choices. For example, one teacher counsellor from school D had this to say:

Normally, we track students' academic performance in various examinations specially form two national examination results. Because these results are the ones that give us the clear picture of students' academic ability. However, sometimes you may find students scored excellent but he or she may refuse to take those subjects. I had one student in the session last year where he had good A's in science subjects but he chooses to go for business class where he was interested. (School D-FGD conducted in November 2022)

Correspondingly, another teacher counsellor from School B said:

I have been teaching in secondary schools for more than ten years now and seen that academic performance determines what students should choose. For example, if it happens that a student has A's in both science and arts subjects, we advise him or her to take science because most of our students get low marks in science especially mathematics. Therefore, when we find such student, we never miss the chance to have him or her in science classes. (School B-FGD conducted in November 2022)

Apart from academic performance in various examinations taken by students, some of teacher counsellors involved in the interview also reported on students' interest, family influence, and peer pressure. For instance, one teacher counsellor from School H narrated that:

Students' interest matters a lot during subjects' selection. Besides examinations' results of a particular student, we check whether that student is interested in such subjects or not. This is very important because, if he or she does not have interest in let say mathematics, it will be difficult to him or her to do better in science. Therefore, to me interest is a good guide for subjects' selection. (School H-FGD conducted in November 2022)

Again, another teacher counsellor from school A added that:

Our students are sometimes told by their parents or relatives to choose certain subjects because of plans they have for them. For example, most of our students come from families involved in entrepreneurship activities. Therefore, they also want their children to be involved in those activities that are why they tell them to choose commerce and bookkeeping, which are business kind of subjects. (School A-FGD conducted in November 2022)

The Influence of School Based-Social and Personal Guidance on Students’ Choices in Science Subjects across Gender

In this aspect, the researchers wanted to find out the extent to which SBSPG influence students to choose science subjects. Self-report Questionnaires (SRQ) and FGD were employed to collect quantitative and qualitative data from students. The quantitative results are presented in Table 4.

Table 4: The Influence of School-Based Social and Personal Guidance (SBSPG) on Students’ Choice in Science Subjects Across Gender

Variables	Males			Females		
	OR	SE	P-Value	OR	SE	P-Value
SBSPG Score	2.03567	0.5007	0.004	1.7007	0.3222	0.005
Age	0.7644	0.5055	0.685	0.3136	0.2872	0.205
Ownership						
Public	Reference			Reference		
Private	0.0005	0.0014	0.007	0.0007	0.0020	0.01
Class Level						
Form Three	Reference			Reference		
Form Four	0.3429	0.6564	0.576	1.5087	3.2903	0.85

Source: Field Data November-February, (2022) **Notes:** OR-odds ratio, SE-standard error.

Table 4 presents the results of the Binary logistic regression model on the influence of school-based social and personal guidance (SBSPG) on students’ choices in science subjects across genders. The analysis was performed on the aspects of age, school ownership, and class level of the students. For males, the SBSPG score had a statistically significant positive influence on their science subjects’ choices, with anratio (OR) of 2.04 (p=0.004). In contrast, for females, the SBSPG score had a significantly positive but weaker effect as compared to males with an OR of 1.70 (p=0.005). Regarding school ownership, attending private school had a significantly negative effect on students’ choice of the science subjects for both males and females, with ORs of 0.0005 and 0.0007, respectively (both p<0.001). Besides, age and class level had no significant effect on students’ choice of science subjects. Overall, the results suggest that School-based Social and Personal Guidance can play an important role in promoting students’ choice of science subjects, regardless of gender.

On the other hand, the FGD results from students' choices of science subjects indicated that about 86 percent of females compared to 68 percent of males reported their choice of science subjects to be highly influenced by SBSPG provided by their teacher counsellors. This is in contrary to data from questionnaire where the effect of SBSPG found to be higher to males than to females. For example, during FGD one female student from School B said that:

When I was in form one, I did not have a plan to take science, but because our teacher counsellor used to insist on the importance of science in the future employment market, it was so easy for me to choose science (School D-FGD conducted in November, 2022)

Similarly, another female student from School A added that:

For sure, if it could not be my teachers' guidance and advice, I could not take science because, at first, I thought science subjects are very difficult as others used to say. However, since in many occasions our teachers encouraged us not to be afraid of science, it motivated me a lot and I chose science. I really enjoy doing calculations in math and physics (School A-FGD conducted in November 2022)

DISCUSSION

This study examined the influence of School-based Social and Personal Guidance (SBSPG) on science subjects' choices among students in secondary schools. One key research question and a sub-question were addressed regarding the existing practice of subjects' choices and the influence of SBSPG on science subjects' choices in secondary schools. In the case of subjects' choices, the findings indicated that academic performance, students' interest, family influence, and peer pressure are the factors considered by teachers to guide students during subjects' choices. However, academic performance represented almost 91 percent of the science teachers involved in the FGD. This implies that in order for a student to take certain subjects, he or she must have good marks in those subjects. This is determined either in the form of two national examination results, annual examination results, or midterm tests. These findings contradict other researchers' arguments in developed countries on the aspects that teachers observe in guiding students' subjects' choices. For example, Archer et al. (2020) in England found that students' confidence and interest in certain subject areas predict their choices. This is also observed in New Zealand by Hipkins and Vaughan (2020) who argue that academic achievement is not the only basis for students to

choose STEM subjects; however, other factors such as career intention and students' interests are very much regarded by career counsellors in New Zealand. This is to say that subjects' choice is not a straightforward procedure; one needs to assess various aspects for the decision to be meaningful. As confirmed by Njeri (2020) in Kenya, academic performance, availability of resources such as science laboratory equipment, and family influence were considered reasons for students to choose science subjects. However, career development scholars hold the opinion that an individual's personality characteristics and future career plans are very important to look upon to assist students in making appropriate career decisions (Lent & Brown, 2019; Leung, 2008). The reason for this argument could be the fact that one might have good A's in certain subjects, but he or she may not have the plan to pursue a career in such an area.

On the other hand, SBSPG was found to have positive influence on science subjects' choices among male and female students. However, the effect reported was higher for males than females. The reason for this may be due to the number of students who received SBSPG services. Before administering the questionnaires, the researchers first determined the number of students who received SBSPG and found that among the 40 students who filled out the questionnaire at each school, 65 percent of the male students received SBSPG while females received only 35 percent. However, during FGD the magnitude of the SBSPG effect changed, and the effect was found to be higher for female students compared to their male counterparts. These findings indicate that the provision of SBSPG plays an important role in subjects' choices. This is in line with Dela Fuente (2019) in the Philippine who argued that teachers' guidance had an influence on students' science subject choices. In South Korea as well, Shin et al. (2017) documented that formal career motivation and guidance had a significant positive influence on students' decision-making and science learning. This is also true in Kenya, where Njeri (2020) advocated that 66 percent of the students involved in the study declared career guidance useful during subjects' choices, while 34 percent observed career guidance as not useful. Thus, based on the findings of this study and those from previous studies, it can be argued that guidance and support are very important by the time a student is in the process of making an important decision that has long-lasting effects. Choosing subjects is an essential decision, and students need close

support throughout the process since many of them may lack insight into what to choose for their future career plans. Therefore, in these kinds of situations, schools have no choice but to ensure that comprehensive SBSPG is well provided to students to increase the number of science subjects' choices by considering not only their academic performance but also their interests and future career plans.

CONCLUSION AND RECOMMENDATIONS

This study aimed to shed light on the importance of SBSPG on science subjects' choices in secondary schools. In particular, the focus was on the existing practice of subjects' choices and the influence of SBSPG on science subjects' choices. In all 10 secondary schools visited, academic performance was reported to be a highly influential factor in guiding students to choose science, arts, or business subjects. Other aspects, such as students' interest, family influence, and peer pressure, were also presented by a few science teachers and teacher counsellors involved in FGD and semi-structured interviews, respectively. Correspondingly, students subjected to SRQ and FGD hold the same opinion that SBSPG had a significant positive influence on their science subjects' choices. However, the magnitude of SBSPG effects varied across genders (male and female). Questionnaire results showed that SBSPG had a high positive effect on male students' science subjects' choices, while the effect was weaker for females. This is contrary to the FGD data, where most of the female students involved revealed that their choices were highly influenced by the SBSPG provided to them.

Based on the findings of this study, it is recommended that academic performance should not only be regarded as a guide for students to choose subjects. Other aspects, such as interest and future career plans, may also be observed. The Ministry of Education Science and Technology has to widen its efforts to ensure that students are well provided with SBSPG in secondary schools. The belief holding this argument is that when students' doubts and negative perceptions of science subjects are well addressed, it facilitates science subjects' choices and eventually bridges the existing gender gap in STEM. Thus, another study may be undertaken to find out why male students seem to have more access to SBSPG than females. In addition, the question of how family, peers, and gender influence students' choices may be investigated since it was not the focus of this study.

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