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DEPARTMENT OF CURRICULUM STUDIES AND EVALUATION

SPECIALITY: PSYCHOMETRICS

Development of an assessment tool for career counseling in some selected high schools in Yaoundé municipality

A Thesis from the Department of Curriculum and Evaluation, submitted to the Faculty of Education in partial fulfillment of requirements for the award of the Degree of Doctor of Philosophy (PhD) in Psychometrics at the University of Yaounde I

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DECLARATION

I the undersigned, Norbert Wirsiy Nyuyki, declare that the piece of work entitled 'The place of assessment tools in educational counseling in some selected Higher institutions in Yaoundé Municipality' is my original work under the supervision of Professor **Maureen Ebanga Tanyi** conducted under the auspices of The University of Yaoundé 1, in partial fulfillment of the requirements for the award of a PhD in Psychometrics.

Supervisor: Student:

CERTIFICATION

This is to certify that this entire document is the original work of Norbert Wirsiy Nyuyki conducted in partial fulfillment of the requirements for the award of a PhD in Psychometrics.

Department of Curriculum and Evaluation

DEDICATION

To

My daughter Ghansenyuy

Acknowledgements

ABSTRACT

The strides to emerge Cameroon by 2035, have placed accent on key areas and sectors of development, such as the need to develop the labor sector or man power requirements, which is the responsibility of the Education Sector. Much progress has been made in this sector over the years, butin spite of the thousands of students enrolled in our schools, a chunk of the students in the grammar schools do not have specific career orientations, leading to a lot of wastage of skills in the long run. As such, there is need, to focus on orienting these students to take up STEM roles (Science and Technology, Engineering and Mathematics), to complement sector development plans for Cameroon. With this in mind, the study was embarked on producing a Students Career Orientation Inventory that will enable Career Guidance Counselors to discharge their duties effectively. Questionnaires were used in a survey research design to collect data from 403 respondents. The basic issues raised to develop this tool were; the career needs of students in High school, the procedure to produce a valid and reliable test and the extent to which the test could identify students with STEM interest. The Delphi technique was employed in the survey research design, to establish a pool of items through a cyclical process and ascertain their reliability through the split-halve method. Cronbach Alphas for the test components for VIP (Values, Interests, Personality) for $p<0.05$ and reliabilities of at least $>.3$ were accepted. The tool was recommended for use at the entry stage of career counseling, to identify students with STEM interest and find appropriate ways to motivate them to pursue such roles in their careers. The study recommended that a comparative study between grammar and technical colleges should compare their attitudes towards the instrument to verify the extent to which lodging of students in particular careers influences their career aspirations. Furthermore, other researchers should develop a program to motivate or encourage students to offer science related fields in Cameroon Grammar schools, in order to boast the provision of man power requirements, needed to emerge Cameroon by 2035 to a middle income economy.

Key words: assessment, STEM, career, counseling, reliability.

CHAPTER ONE

INTRODUCTION

The word career refers to one's profession or progress through life. It refers to something that one works with permanently through life. Someone could become a teacher, lawyer, accountant, pilot, surgeon, stage director, poet, editor, cook, tailor, priest, and carpenter for example. One is not usually born as any of these. It is in life that one would have to decide on which path to follow. The choice is usually made in early years of life. Although some career choices can be made later on in life. Whatever one decides to become in life, there is usually some preparation that has to be done prior to assuming such an occupation.

People spend some time learning a trade or learning skills required for a particular profession. Some careers require lengthy preparation and learning or training. Others require less preparation. Many require many years of formal education. Some careers do not require any serious formal education, but will need that someone learns just a basic skill. If one decides to become a medical doctor, then that person has to do a good number of years in a medical school. If you decide to become a professor, you must spend many years in a university, studying. However, if you decide to become a hotel attendant, you could succeed in such a career by learning on the job site. To become a pilot or an astronaut, for instance, you would have to go to school and you must be financially viable.

Some people decide very early in life, what they want to become, and work very hard to achieve their dreams. Others do not make serious choices about careers. You cannot get up anytime in your life and decide to join some careers. You would not decide at age 40 that you want to join the military or priesthood for instance. Again, it is hard to find a taxi driver who is a female in Cameroon. Some careers are dominated by a single sex. Other careers have strict age regulations. Some people usually have to make a decision on what they want to become in the early years of life, generally, as students, in their early school years especially in countries with compulsory formal education. Even in communities without formal education, a child would have to learn a trade. What makes a student to decide to join a particular career? In spite of lengthy preparation that people go through to join some careers, some eventually leave such careers to pursue different ones. Students who study in the same classroom usually have different careers interests from each other even if they study under the same conditions. This means there are major factors that affect what students want to

become in life. The researcher decided to find out what makes students pursue a particular career.

Many primates live in social groups in which it is possible for each adult to meet most of his or her own needs. The adults find their own food, prepare their own sleeping places, and, with the exception of infant care, mutual grooming and defense related activities, generally fend for themselves. This is not true of human groupings. In all societies-from the simplest bands to the most complex industrialized nations, groups divide responsibility for completing necessary tasks among their members. This means that humans constantly must rely on one another; hence they are the most cooperative of all primates. (Henry, 2002)

The variety of ways in which human groups divide their tasks and choose the kinds of tasks they undertake reflects differences in environment, history, and level of technological development. Yet there are certain communities in the groups with regard to labor. All cultures distinguish between females and males (gender), adults and children (age) and competence (education) (Henry, 2002).Taking a job involves more than finding a job. It means stepping into a new social context with its own statuses and roles, and it requires that a person be socialized to meet the needs of the situation. These may even include learning how to dress appropriately. For example a young management trainee in a major cooperation was criticized tor wearing his keys in a ring snapped to his belt. 'Janitors wear their keys', his supervisor told him, and 'executives keep theirs in their pockets'. The keys disappeared from his belt.

Aspiring climbers of the occupational ladder ever may have to adjust to their personality to fit the job. In the 1950s and 60s corporations looked for quit, loyal and tradition oriented men to fill their management positions; men who would not upset the status quo, and not certainly women (White, 2001).However nowadays, especially in high-tech industry, the trend has been towards recruiting men and women who show a drive at initiative and capacity for creative thinking and problem solving, (U S Bureau of Labor Statistics, 2006).

Some occupations require extensive re-socialization. Individuals wishing to become doctors or nurses, for example, must overcome squeamishness about blood, body waste and genitals. They must also accept the undemocratic fact that they will receive much training while caring for poor patients, usually ethnic minorities (White, 2001).The armed forces use basic training

to socialize recruits to obey orders without hesitating and to accept killing as necessary part of their work. For many people, such re-socialization can be quite confusing and painful.

For some individuals, career and identity are so intertwined that job loss can lead to personal crises. This can be true for people who are downsized or 'encouraged' to retire. For many, losing a job means reevaluation and a new direction. For others, it means spending months looking for a job and feeling a profound feeling of self-identity. Education is the sum total of one's life experiences (Tchombe, 2004;2006). In order words, education is socialization that begins from birth to death. Through socialization, individuals in a society tend to understand themselves and others in a social context, given that no one is an island. Humans survive through learning (Fonlon, 1969). At the point of birth, the erogenous child has potentials that need to be developed (Freud, 1935). However, there is a lot that the being will have to learn, in order to cope with the environment.

Children begin their socialization in the family or at home (Frances, 2001). Later on, these children may begin formal education, through the school. Although other agencies of socialization such as the church support the education of human beings, it is generally accepted that it is in school that formal learning takes place (Frances, 2001). In the school, children begin to identify with various roles in life. If you asked some students in secondary school, they would be very clear in what they want to become (Ornstein & Hunkins, 2014). As such, the issue of occupation, vocation and profession begin very early in life, and affect people into late adulthood.

However, people may not be sure about the meaning of those occupations. Despite this uncertainty about the future, some students are so determined in what they want to become that they begin discussing it with their parents, teachers, peers and significant others (Mohan, 2018). For some students, they have the opportunity to discuss what they want to become with a guidance counselor in school, and this helps them to gain tremendous insight of what the profession entails(Ornstein & Hunkins, 2014).

The guidance counselor can really be of help, if they 'understand' these students or clients. People can get advice from anyone, but by consulting a guidance counselor, the student seeks professional counseling based on what students need. What students need here refers to the problems that they seek to address; the problems that brought them to the counseling. If these problems are adequately addressed by the student and counselor, this places the students in a

better position to develop knowledge, skills and attitudes that are congruent to the students' future dreams and aspirations in the world of work.

The fundamental question is to what extent can educational stakeholders rely on the counseling given to kids in schools by EGCs? The answer to the question lies in the evidence. In football, a coach that wins the match is a better coach than one who does not. Therefore, an EGC who can help the child to achieve their fullest potential is a more reliable one. The issue now is, how do we know that children can attain full potential in one discipline and not another. Logically, because career choice is based on variables such as interests, values, achievements, aptitudes and motivations (Stiggens & Cappius, 2005).

In order to have an understanding of the child in terms of their car, relevant information needs to be analyzed. One way to do this is by the use of an appropriate tool such as a test. Some tests assess student's achievements (achievement tests), some assesssstudent's ability to acquire a new skill (aptitude tests), while others actually are just interested in the child's motivation (Stiggens & Cappius, 2005). Meaning that some tests are predictive (aptitude tests), others are retroactive (achievement tests), while others just find out the child's interests and motivation (psychological tests).

The need to find out the child's interest and motivation cannot be over emphasized. A student who observes a dying patient who is saved by physician and decides to become a medical doctor is intrinsically motivated. However, if a child decides to become a medical doctor after realizing that they have a lot of money, the child is extrinsically motivated (Freire, 1984). The priority of this study is to design an instrument with a Trait and Factor Theory (T&FT) background that integrates interests, values, motivation, and personality to work environment, to improve career counseling in English High Schools (EHSs) in Cameroon.

Enterprise and workforce in Cameroon

According to the Strategy Document for Growth and Empowerment (DSCE), a reactive labor market is prerequisite to move Cameroon from lower-middle-income to full-fledged middle-income status. It is important to therefore examine briefly, the emerging trajectory of the economy, the training and education of the present labor force, employment by economic sector and programs in place (Government of Cameroon, 2009). By assessing the stock of workers and their skills, skills mismatch and labor supply constraints, the career counselor has an added advantage on the orientation for enrolments.

The World Bank and International Finance Co-operations and partners across geographical regions conducted Demographic and Health Surveys, Household Surveys and Enterprise Surveys in Cameroon in 2014 to understand the factors that shape the business climate. By so doing, they projected constraints and accommodations required to prosper Cameroon. It cannot be overemphasized that a private sector which is more productive expands employment, and fund investments in the Health and Education sectors through taxes.

A close look at the enterprise and work force characteristics by region, size and number of workers, brings a clearer glimpse to the status quo in 2009.

Table 1

Work force by sector and region in Cameroon

Region	Primary sector (%)	Secondary sector (%)	Tertiary sector (%)	Undeclared (%)	Number of enterprises	Share of total (%)
Douala	0.2	11.8	86.1	2.0	33,004	35.1
Yaoundé	0.1	14.5	84.1	1.3	22,436	23.9
West	0.6	16.1	81.3	2.0	8,327	8.9
South-West	0.6	15.1	83.7	0.5	6,866	7.3
North-West	0.3	16.7	82.3	0.7	6,487	6.9
Adamaoua	0.6	8.2	90.7	0.5	2,740	2.9
Center (excluding Yaoundé)	1.1	7.4	90.4	1.2	2,695	2.9
East	0.6	6.0	93.1	0.3	1,736	1.8
Far North	0.5	7.5	90.8	1.2	2,585	2.8
Littoral (excluding Douala)	1.5	10.7	84.8	3.0	1,704	1.8
North	1.3	14.9	82.8	0.9	2,942	3.1
South	0.4	9.0	90.2	0.4	2,447	2.6
Total	345	12,154	80,109	1,361	93,969	100
(%)	(0.4)	(12.9)	(85.3)	(1.4)		

Sources: INS 2009b; World Bank 2009b.

Examination of the table reveals that regions in the English part of the country appear to be more entrepreneurial and inclined towards private sector employment while the French part

except Yaoundé, orients towards public sector employment. Most enterprises are tertiary (85.3%), seconded by secondary (12.9%) and then primary (0.4%) with the rest undeclared. Interestingly enough, microenterprises (those with less than 5 employees) covered ¾ of the total population of enterprises. Men helmed 2/3 of these enterprises of which only 25 had more than 1000 employees.

Observe that permanent and temporary employees in micro and small enterprises was just a few thousand less than that in medium and large enterprises. The gap between men and women in all categories was wide, glaring in large enterprises. Females accounted for 27% of permanent employees and 24% of temporary employees.

Table 2

Defining enterprises by size

Enterprise size	Definition		Share of enterprises (%)
	Number of employees	Annual earnings (CFAF)	
Micro	5 or fewer	Less than 15 million	75
Small	6–20	15 million to 100 million	19
Medium	21–100	100 million to 1 billion	5
Large	More than 100	More than 1 billion	1

Sources: INS 2009b; World Bank 2009b.

Table 3

Permanent and temporary employees; Distribution of employees by gender

Sector	Subsector	Permanent employees			Temporary employees		
		Men	Women	Total	Men	Women	Total
Primary	Agriculture	20,361	6,169	26,530	772	122	894
	Livestock management	405	144	549	42	36	78
	Silviculture	6,533	254	6,787	289	29	318
	Fisheries	30	9	39	9	3	12
	Subtotal	27,329	6,576	33,905	1,112	190	1,302
Secondary	Mining	953	209	1,162	25	3	28
	Food industry	15,208	4,239	19,447	6,604	123	6,727
	Other manufacturing industries	39,843	10,150	49,993	4,608	1,727	6,335
	Electricity, water, and gas	6,378	2,152	8,530	1,055	32	1,087
	Construction	7,389	1,368	8,757	2,383	238	2,621
	Subtotal	69,771	18,118	87,889	14,675	2,123	16,798
Tertiary	Commerce	84,907	20,551	105,458	3,756	1,382	5,138
	Transport	12,346	2,695	15,041	634	110	744
	Banking and insurance	7,072	5,512	12,584	257	290	547
	Other services	77,382	51,462	128,844	12,554	6,304	18,858
	Subtotal	181,707	80,220	261,927	17,201	8,086	25,287
Undeclared		2,184	358	2,542	90	18	108
Total		280,991	105,272	386,263	33,078	10,417	43,495

Sources: INS 2009b; World Bank 2009b.

Women made up to 75% of the workforce in 3 sectors; banking, insurance and transport.

Education, gender and workforce

It was projected that by 2020, there would be 800000 salaried employees in the formal sector (DSCE, 2009). There were only 386, 263 permanent employees and in the private sector in 2010, with about 281000 (73%) male and 105000 (27%) female. 73% of active force, mostly men are permanently employed and drawing a regular salary, reflecting the absorption capacity of the enterprises in Cameroon. Most of these are workers with no formal education or those who have not completed primary education working in agriculture and industry. And these are non-wage jobs. Those who earn wages are those with post-secondary education, not in technical, industrial, vocational and entrepreneurial training.

Observe that few employees with incomplete primary education work in the public section. Those more likely in government are those with secondary and post-secondary education. Most of the workforce is in the informal sector and are underemployed. Most

women do multiple jobs that are low paying and are in the informal sector, putting them in a more precarious situation. Most (87%) of these women have no professional address.

Figure 1

Visible and invisible underemployment, 2005 and

Underemployment in Cameroon

g. Percentage of visible underemployment by residence

h. Percentage of invisible underemployment by residence

i. Percentage of visible underemployment by sector of activity

j. Percentage of invisible underemployment by sector of activity

k. Percentage of visible underemployment by institutional type

l. Percentage of invisible underemployment by institutional type

■ 2005 ■ 2010

Sources: INS, EESI 1 2005 and EESI 2 2010.

For women, visible and invisible underemployment is high. This refers to people employed, but whose wage is less than the minimum wage. In 2010, visible underemployment was highest among those with university education (Government of Cameroon, 2012). Those with no education had the highest invisible underemployment. Same year, visible underemployment was highest among rural areas lowest in urban centers, while being most prevalent in the South West region and lowest in Adamaoua and West regions. With primary sector having the least, it was most prevalent in the public sector and informal agricultural sector.

It was hoped that by 2020, underemployment in Cameroon should have declined from 76% of 2005 to 50%. It however dropped by 5% between 2005 and 2010. The recommendations from experts were that structural transformation projects would sustain the decline. The changes in education between 2005 and 2010 were both qualitative and.

Enterprise level constraints in Cameroon

The enterprises mostly lie in the informal sector. The major constraints are practices in the business environment; high taxes, widespread corruption, problems accessing credit, excessive bureaucracy, unfair competition, poor infrastructure, high frequency costs, little dialogue to promote collective action, transportation challenges, a cumbersome judiciary system, problems with skills and training and an inadequate labor legislation (World Bank, 2009).

Figure 2

Main barriers to entrepreneurship in Cameroon

(% cited by entrepreneurs)

Barrier	%
Tax system	~58
Corruption	~51
Access to credit	~37
Bureaucracy	~35
Unfair competition	~26
Infrastructure	~19
Cost of financing	~18
Absence or inadequacy of sector dialogue	~16
Energy and water	~12
Transportation	~11
Justice system	~11
Training/Skills	~10
Labor legislation	~8
Supply of raw materials	~6
Opportunities	~6
Other	~3
Preferential schemes (free zones)	~1
No obstacle	~1
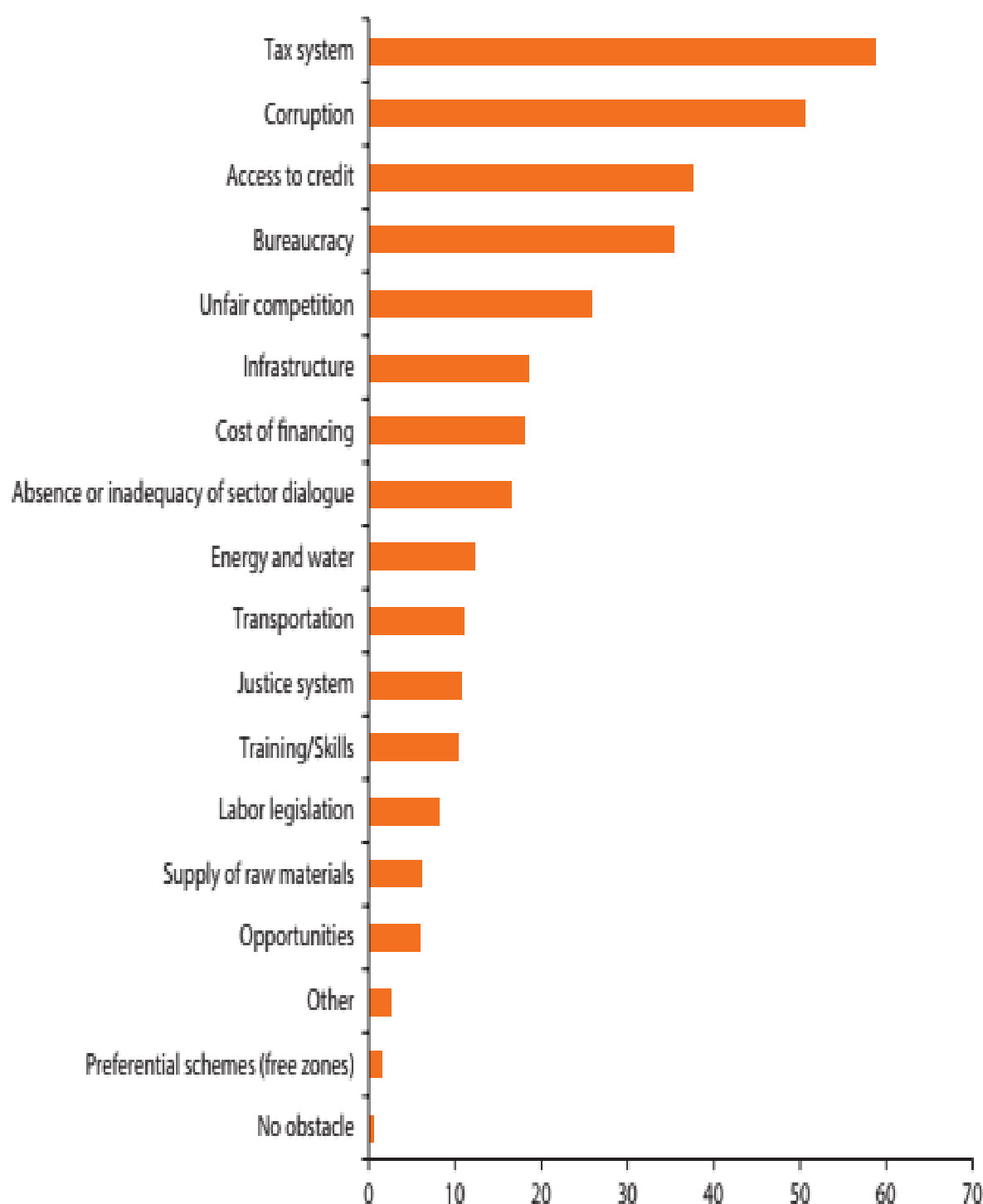
Source: Government of Cameroon 2010, 66; World Bank 2009b.

These disadvantage the country from competition in the global market place. It is emphasized that until the human dimension is addressed, an increase in capital investment and finance will not increase productivity (World Bank, 2009). It is to say that, economic development for Cameroon entails improvement in various respects. However, as pointed out severally, the issue of man power requirement cannot be overemphasized. The school system in Cameroon provides the most of those who take up formal jobs in the public service. There are schools referred to as specialized schools, those that train people for particular trades. For example, the Advanced School for Interpretation and Translation (ASTI), Teacher Training Colleges (TTCs), and engineering and medical schools. The Military Academy (EMIA), the advanced management schools like ENAM are fine tuned for particular profiles.

In the secondary education in Cameroon, there are schools referred to as Technical and Vocational or Industrial Colleges. The schools of concern are the schools referred to as general schools. These school grammar schools form the baulk of colleges in Cameroon. Of course, in any society, there are such schools that teach fundamental studies or provide general education. However, the schools should be as 'useful' as need be, given that those students do not end up in the school that are specialized, which often than not, are usually in the tertiary sector. So the concern is that although these schools were meant to provide general education, meaning that specialized education was to come later, is often than not, the only type of education for most citizenry. It is for this reason that CGC must combine this general education to the industry and other specialized services through a concerted framework. Without this, government resources are not being put to full use.

Education and Infrastructure

Statistics show that most entrepreneurs in Cameroon are contented with the quality of skills imparted by the country's institutes of technical education. Noting that skills prominent in commerce and business management, business economics, taxation and project management, accounting, specialized software for accounting, auditing, record keeping were critical for the fork force. Civil engineer inspectors on industry standards, project managers, human resource managers, accountants and auditors are needed (ILO, 2010).

Areas such as; carpentry, masonry, electricity, plumbing, painting and roofing need a host of

specializations. On the job training has been recommended given that most multinational co-education level of infrastructure workers, 2005operations have not been willing to transfer technical knowhow through transfer of knowledge. Infrastructure is gradually being computerized and shifting from labor intensive to capital intensive. More engineers are needed, but most of them available are unskilled. There is evidence that structural transformation will require skilled workers with engineering science and backgrounds in STEM

Table 4

Work force distribution by level of education

(%)

Level of education	Technical personnel/ concept stage	Technical personnel/ rehabilitation	Specialized workforce	Workforce without specific qualifications	Share of total
None			5.6	3.9	4.7
Primary		5.4	46.2	39.6	42.2
1st cycle general secondary		7.8	13.9	22.4	16.9
2nd cycle general secondary	10.5	3.3	7.0	6.3	6.7
1st cycle secondary technical		16.0	14.6	17.8	15.6
2nd cycle secondary technical		42.8	8.1	8.6	8.7
Higher education	89.6	24.7	4.6	1.4	5.1
Total	100.0	100.0	100.0	100.0	100.0

Sources: ILO 2010; National Institute of Statistics and International Labour Organization staff calculations.

Of priority are civil, mechanical, sanitation, water, plumbing, electrical technology. Also, Computer Aided Designs (CADs) and computerized managements are needed. The ILO (2010) found paradoxically that the most educated and illiterate found employment last in the infrastructural sector, mostly between 25 and 34. A more vibrant workforce would attract foreign investment.

Table 5

Training institutions and location by program

Institute or program	Location
Centre de formation Professionnelle lassalien Van Haygen	Bertoua
Centre de Formation Professionnelle aux Métiers d l'Industrie de Nyom (CFMIN)	Yaoundé
Centre de Formation professionnelle aux Métiers Miniers (CEPROMINES)	Yaoundé
Techniciens Génie Civil Réunis formation (TGCR)	Yaoundé
Professionnal Excellency Training Center (PTEC)	Edéa
Centre de Formation Professionnelle Continue de la Salle (CFPC)	Douala
Centre de Formation Professionnelle Amour Fraternité (CEFOPRAF)	Douala
Techniciens et Ingénieurs en Agro-Alimentaire (TINAGRI)	Ngaoundéré
Homelex Sarl	Douala
Matgénie	Yaoundé
Technical training colleges	
Lycée Technique	Edéa
Lycée Technique	Kousséri
Lycée Technique	Sanmélima
University-affiliated colleges/institutes	
École de Géologie et des Mines (EGEM)	Maiguenga
École Nationale Supérieure des Sciences Agro Industrielles (ENSAI)	N'Gaoundéré
Institut Universitaire de Technologie	N'Gaoundéré
Institut Universitaire du Sahel	Maroua
Les organismes d'Intervention en Hygiène Sécurité Environnement Barakat SA	Douala

Source: Government of Cameroon 2013b.

Summarily, the extent to which; infrastructure, wood processing, cotton textiles, palm oil and tourism can serve as potential for job creation depends on governments capacity to minimize capital intensive investments to improve structural transformation of production processes. To this effect, the work force has to be developed to enhance production, and inclusive growth. Government civil service reform and decentralization are key players in this process, to de-paralyze the efforts. The primary education reform started in 2016 and the pledge to prepare TVET and programs in universities are some positive strides already. It becomes imperative due to its stakes in this study, to look at the issue of skills flow in the proceeding section.

Cameroon workforce and skills

'Will the flow of potential workers have the skills and competences needed to increase economic productivity and contribute to growth'? Recognizing that investing in skills is costly, and that few governments can finance the quality of skills required, Ansu, Yaw and Tan (2012) proposed two steps to curb this problem. Firstly, economic development, such that employers immediate demand for skills is met, and secondly, the long term plan would be to increase the numeracy and literacy skills of citizens, and orient the population towards STEM. This would increase the countries competitiveness in the working world, especially in tertiary education (Ansu, Yaw & Tan, 2012). Like aforementioned, the baulk of students in the English Education Sub-system (EES) offer arts. There should be classical reasons for this. For example, it is more expensive to offer science in high school than arts. But then, if government needs to orient more students to STEM related fields, then there must be a conscientious effort to motivate learners and prepare accommodation in the sciences. This entails among others, improving the quality and quantity of teachers, ICT equipment, laboratory infrastructure and so on to accommodate the changes.

The more the number of STEM related fields and students, the higher the chances to get the best out of it. From basic to secondary and tertiary education, the extent of skills accommodation and flow can be regarded from the reference of age based educational attainment. Trends in the supply of labor and changes that have occurred in the education as well as the returns in education have been studied and simulations in models have been done (Ansu, Yaw& Tan, 2012). It is therefore imperative to review how institutions and programs in technical, vocational and entrepreneurship contribute to skills building.

System of education

Two systems of education operate in parallel, EES and the French sub-systems (The Constitution of the Republic of Cameroon (1996); The Law of Orientation of Education in Cameroon (1998). These are run by the following ministries; the Ministry of Basic Education, Ministry of Secondary Education, Ministry of Technical Vocational Education and the Ministry of Higher Education. Pre-Primary education lasts two years and the overseer is the Ministry of Basic Education. The primary education is overseen by the same ministry and lasts 6 years ending with the FSLC. End of primary school marks entry into vocational training or entry into secondary school.

The Ministry of Secondary Education is responsible for secondary education. For gross enrolments in public and private education and training, see figure for 2000/2001 and 2010/011. Due to the 'no child left behind' policy, repletion rates reduced with net increase in enrollments in spite of the fact that girls' completion rates grew less in the Education Priority Zones (EPZs).

Strides have been made in the Far North, North, North West and East Regions in disadvantaged pockets in spite of the fact that else where it is slower. In 2007, completion rate in primary rose from 51% to 80% in 2011, but from 38% in 2007 to only 47% in 2011 for girls. Government had ambitiously set the target to 84% for 2016 which was not realized. Unfortunately, the satisfaction from the National Statistical Yearbook and Demographic Health Survey showed students decline factoring dropout and repetition rates. There was adisconnection between jobs and educational level of graduates. Educational attainment has

Table 6

Level of education and structure of employment, 2010

Education level of graduates			Access to employment			
Education level	Number	% of total	Activity	Employment	Number	% of total
University complete	16,782	3.6		Senior management	13,444	2.9
University incomplete	50,723	11.0		Mid-level management	14,156	3.1
Upper secondary complete	29,425	6.4		Skilled employees	23,505	5.1
Upper secondary incomplete	78,467	17.0		Unskilled employees	36,496	7.9
Lower secondary complete	55,389	12.0		Informal nonagricultural	119,001	25.8
Lower secondary incomplete	96,930	21.0		Informal agricultural	115,047	24.9
Primary complete	46,157	10.0	Unemployed		6,445	1.4
No schooling and primary incomplete	87,699	19.0	Inactive		133,479	28.9
Total	461,573	100.0	Total		461,573	100.0

Source: World Bank 2013a.

risen over the decades (from 53% in 2001 to 80% in 2011).

Figure 4

Primary completion rates 1991-2011
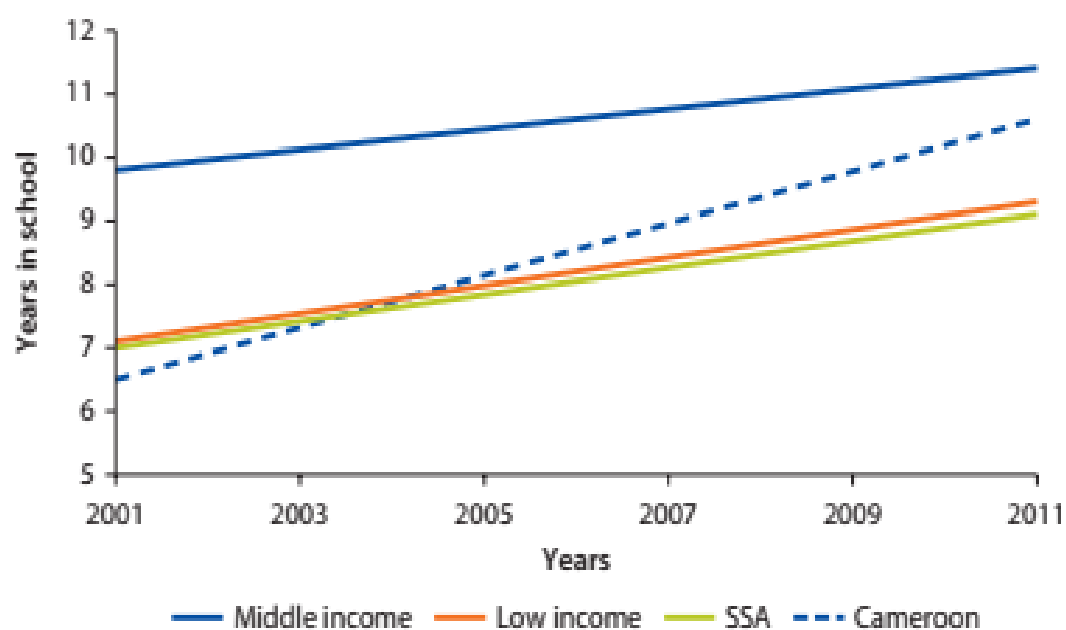
Source: World Bank 2003, 2013a; UNESCO Institute of Statistics.

School life expectancy 2001-2011

The school life expectancy also increased by 4 years. These could be accounted for by abolition of school fees in 2000, drastically increasing enrolment and improved delivery of

Figure 5

School life expectancy 2001-2011
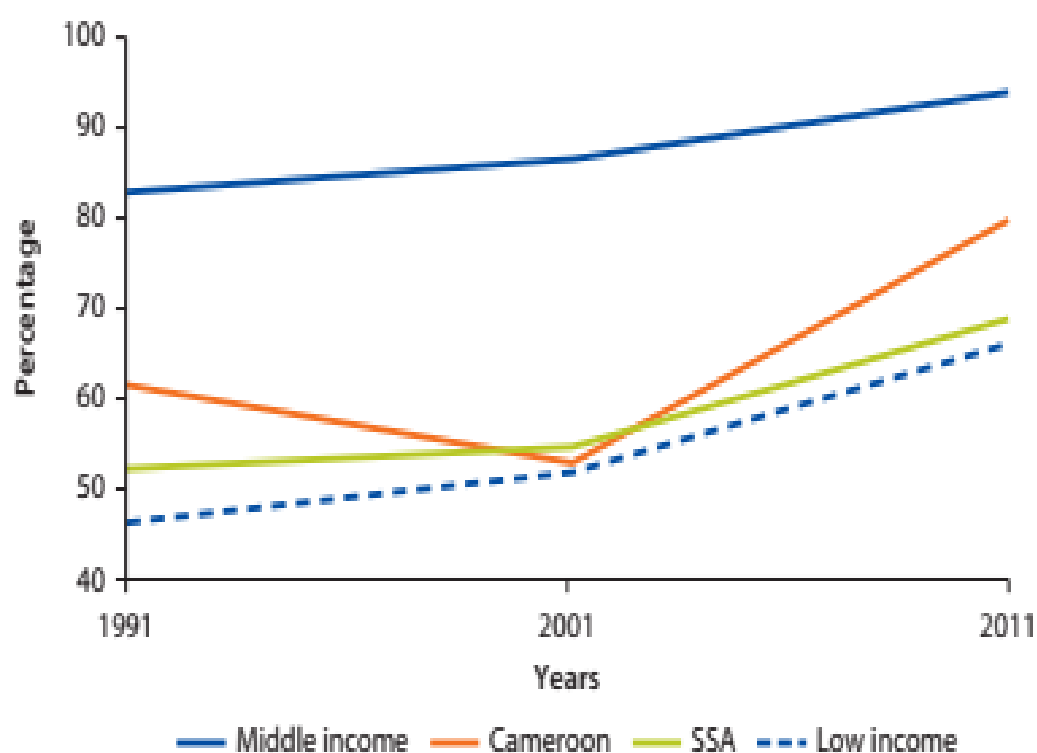
Source: World Bank 2003, 2013a; UNESCO Institute of Statistics.

services accounted for by the contracted teachers in 2007-2011. In secondary school, enrollments doubled, over the past two decades, with about 1.3 million students in 2001. Life expectancy in secondary school also increased by 2.5 years. On average, total schooling has risen for primary and secondary among the working population 15 to 64 years.

This age group has halved its number of uneducated just within 20 years to under 20%. More and more workers are completing secondary education. Although the increases, there is a decrease in the quality of education (UNESCO Institute for Statistics; World Bank, 2018). Budget cuts of 1990s reduced gross enrollment in primary from 94% to 84%, revealing uneven evolution in education. Fewer teachers were recruited and in 1993, civil servants had a drastic deduction in their salaries. This is a factor in the increase in class size to above 60.

It is evident that Cameroon has to increase educational investment to reflect the enrolment rates.

Table 7

Education and enrolment 2010/2011

Level of Education	Enrollment in 2010–11 (thousands)	Share in private education (%)
ECD	339.6	61.9
Primary	3,576.9	22.2
Secondary general	1,386.0	
1st cycle	1,005.5	24.1
2nd cycle	380.5	30.5
Secondary technical	356.1	
1st cycle	254.0	16.8
2nd cycle	102.1	26.4
TVET	39.5	69.9
University	189.8	14.6

Sources: Annual statistics from the Ministries of Primary Education, Secondary Education, and Higher Education; staff estimates for general secondary 1st cycle and secondary technical 1st cycle; World Bank 2013a.

Between ages 5-24, enrolment decreased from age 10 in 2011 with significant number of out of school, not completed primary school. Contrary to 2000, the decline in enrolment in 2010 can be factored in terms of increase in cost of education. The greater number above 12 is not in school and only few have general education. Many have a secondary general education as said, that is not in position to prepare them for functional employment and few have higher education (World Bank, 2013).

The chunk complete primary, but most do not reach high school, and the few who reach are in general education. Although schools are said to be free, there is rising cost for families as bureaucracies compel them to buy textbooks, pay some teachers, pay PTA levy, although some households refuse to do so. The first consequence is that teachers have low incentives and motivation and student textbook ratio of 12: 1 is lowest in sub-Saharan Africa. The second consequence is a fall in educational standards especially disadvantaged areas. These

areas include boarder areas, urban pockets of poverty, rural areas, the Zones of Educational Priority. The increase in access to education has not been complemented by increase in quality, although government is making effort with development partners to improve the trend.

Although enrolments in secondary education improved, they are low compared to peer countries; The Democratic Republic of Congo, Eritrea, Guinea, and Liberia in 2008, had similar gross enrolment ratio with Cameroon but below Ghana, Kenya, and South Africa by far. Secondary education has two streams, general and technical, but technical has less than 20% of the enrolment (World Bank, 2013). It is therefore a call for concern. These above 80% of the student population will not reach upper education; more so, they are receiving education that does not point of particular instruction. It is for this reason that while expecting educational reforms and policies that could curb the crises, there is dire need for educational CGC to make the most efficient orientation for students' enrolments after high school to various fields.

Vocational schools focus mostly on construction (25%) while ignoring other important fields such as tourism (3%) and agriculture (1%). It is noting that an agricultural economy like Cameroon would have such low enrolment orientation towards agriculture at this level. The lack of a framework to partner training centers with apprenticeship make it difficult to provide the needs of private employers given that this can only be done informally. Most youth therefore especially those of the northern region do not seem to have any professional training.

In higher education, enrolments have doubled since 2005, following the creation of new universities. The allocation of students however, by discipline still points to a gab given the needs of the economy. The highest ratios are in arts, with acute shortages in many fields in the engineering sciences. It is to say that there is dire need to focus on STEM related disciplines. No one has washed down the importance of arts and other fields of study. But the insistence is on the fact that low STEM related graduate turn over reduces likelihood to attract foreign investment given that most foreign investments need qualified technicians.

Of course, the enrolments of 5% in engineering in 2010 did not predict any support for Cameroons plans to invest in large energy and transport projects.

Figure 6

Enrolment in higher education 2010
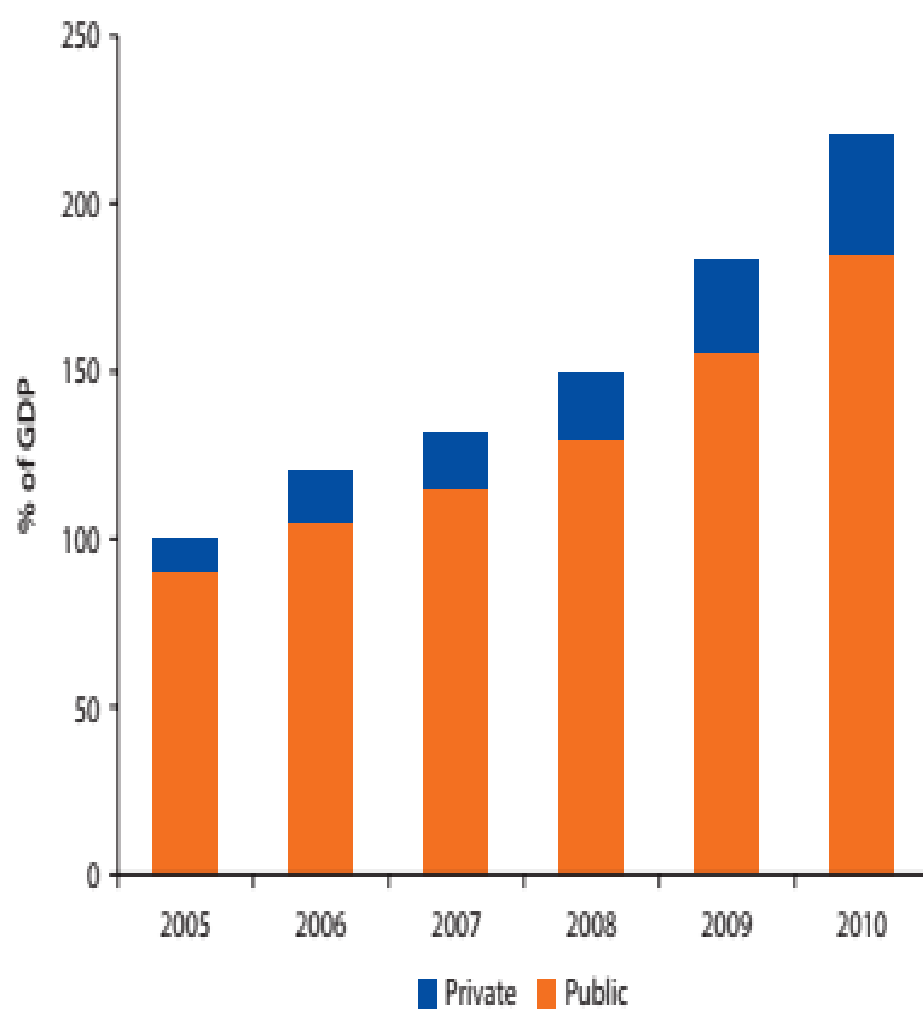
Source: NIS, 2005; World Bank, 2012a

Figure 7

Enrolment by discipline (excluding teacher training) 2010
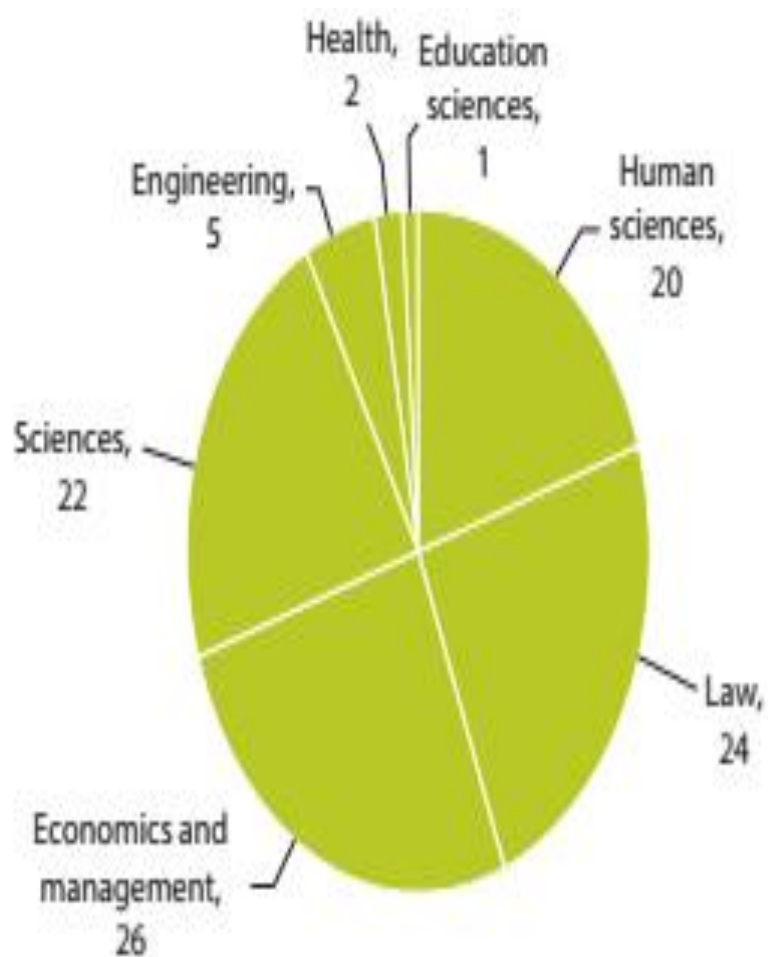
Sources: INS 2005; World Bank 2012a; World Bank staff calculations.

In terms of reforms in education, the higher the level of education the higher the likelihood for the employee to affect the decisions of the employer and command higher salaries. See table below on returns on additional schooling in sub-Saharan Africa.

Figure 8

Educational rate of return in sub-Saharan Africa
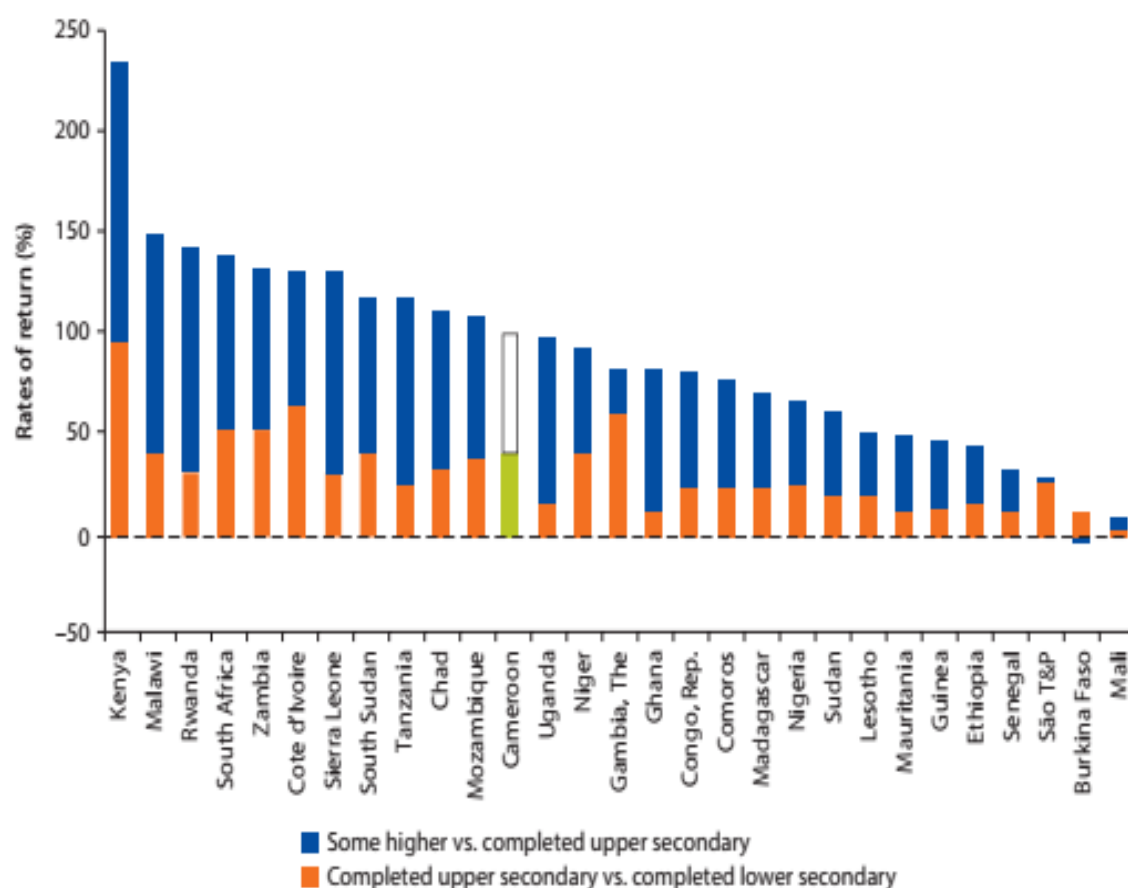
Source: World Bank staff estimates using the Household Survey 2007 for Cameroon and similar household surveys for other countries: Burkina Faso (2010), Chad (2011), Comoros (2004), Côte d'Ivoire (2011), Congo Rep. (2011), Ethiopia (2011), The Gambia (2010), Ghana (2010), Guinea (2012), Kenya (2008), Lesotho (2011), Madagascar (2010), Malawi (2010), Mali (2010), Mauritania (2008), Mozambique (2009), Niger (2011), Nigeria (2010), Rwanda (2010), São Tomé and Príncipe (2010), Sierra Leone (2011), Senegal (2011), South Africa (2012), South Sudan (2009), Sudan (2009), Tanzania (2010), Uganda (2010), and Zambia (2010).

 A better educated citizenry contributes better to GDP and global competiveness, provided there is a good and sound macroeconomic policy (Ameida et al, 2012). Using discrete choice and limited dependency variables, Ameida et al, (2012) observed the same effect using separate models. In the survey of employment and informal sector report (Government of Cameroon, 2010b), ¼ youths are in vocational training program of which 4 in 10 are in urban

and 1 in two are either in Yaoundé or Douala. But only 2 in 10 and up to 1 in 20 are in the far north in rural communities.

It should be in note that in 1991, only about 9000 students were enrolled in higher education. It rose to 70000 in 2001 and 207887 in 2011 by a factor of above 3 in just 10 years or 12% per year. Between 2008 and 2009, additional 40000 were enrolled. These students pointed that being bilingual and completing the course program were the most important factors in securing a job. It is interesting what their response was, given that the purpose of going to school itself is to acquire skills (Njobo, 2013).

Educational anticipation in Cameroon

Reforms in education have involved reduction in spending for households and most especially for disadvantaged people. The number of PTA to contract status, improving literacy and numeracy, provide textbooks, combine primary and lower secondary to span 9 years as basic education (Government of Cameroon, 2010b). The intention to conduct reading assessment as fundamental to other skills started in 2016 and expected to retain enrolment and also encourage out of school students to enroll. Government planned to increase investment in TVET and alternative pathways to general education. This should improve the alignment between education and training and labor markets.

Summarily, rationalizing government spending on education to increase efficiency, decentralizing educational budget to improve school based projects and improve sector governance are three things evidently needed to adjust. Education and training can contribute to increase and diversify the type of employment available in Cameroon. Education and training can contribute to increase and diversify type of employment available in Cameroon. Education and training must become an independent factor for development only when they are used in production. 'for education and training to have significant influence, the skills and competences acquired by workers need to be relevant to the labor market' (Anderson & Arnold, 1963; World Bank, 2013a).

The intention of this chapter has been to appraise the status quo in terms of the present study. Like earlier mentioned, man power requirements entail that employers are exposed to a citizenry that is well skilled and able to attract foreign investors. More so, there is need for the study programs to enroll students based on the immediate and long term goals of the establishments and various sectors. Again, there is need to encourage Cameroonian youths to pursue studies in STEM related fields; this is where more investments need to come in to

provide the infrastructure for development, and an area where Cameroon needs to focus on. Be it health, education, medicine, fisheries, tourism, engineering and tourism, there is enormous infrastructure that has to be developed. These are the key players that will drive the citizens to upper middle income and fully emerge Cameroon by 2035 (Ministry of Economy, Planning and Regional Development, 2009).

The background to the study is subdivided into historical, conceptual, theoretical and contextual, in order to ease understanding of the work.

HISTORICAL BACKGROUND

This section summarizes different epochs that have characterized Cameroon's system of education over the years. It is important to go down the lane in order to understand how various influences have characterized the education system in question (Ministry of National Education ,1995). Therefore, this historic write up focuses on key players, their purpose and educational landmarks. Prior to the introduction of Western Education in Cameroon, we like other parts of Africa had our indigenous education system. The main pedagogic method was through modeling, where children eventually became what they 'saw' their parents and family members doing. That is why it was common to hear of 'the wine tapper', 'the drummer', 'the healer' and so on.

Due to the fact that the westerners didn't understand that system of education, they termed it 'primitive' on their arrival. However, the system was very effective as these indigenes were entrepreneurial and there were few jobless people compared to today. The purpose of education at this time before the arrival of the westerners was to socialize children in their cultural contexts (Fonkeng, 2007). In so doing, the curriculum included; construction, farming, weaving, pottery, carving, hunting, fishing and so on. Furthermore, there was a serious sense of consciousness as concerned morality. Character and self-discipline, vocational development and a sense of belonging characterized the status quo of the indigenous system of education.

The transmission of cultural heritage from one generation to another was a priority in the indigenous system of education (Fonkeng, 2007; Falola, 2000). Furthermore, the task of socialization involved an approach of collectiveness, in which the process of scaffolding through modeling was at the fulcrum. It cannot be prematurely emphasized that the indigenes socialized their children to solve immediate needs in their context. As such, they used direct but more so, indirect teaching methods and strategies such as storytelling, role play, collaborative learning, and many hands on activities in a non-formal process to educate their young ones. It would appear though, that the educational reforms and policies that came later on didn't acknowledge fully, the existence of an already existing educational and cultural heritage (Tambo, 2000, 2003, 2012; Tamanji, 2011). It was in subsequent times that the collaboration between colonial Governments and the missionary resulted in the creation of

formal schools in Cameroon, earmarking the epochs of formal education in Cameroon around 1844 (Tamanji, 2011).

EDUCATION IN PRE-COLONIAL ERA (1844-1884) IN CAMEROON

The arrival of the Baptist Missionary Society (BMS) in 1844 marked the beginning of formal education in Cameroon (Shu, 2003; Ihims, 2003 in Kibinkiri, 2014). The opening of the first primary school in Bimbia by the Reverend Joseph Merrick in 1844 was a landmark in education (Rudlin, 1968; Tamanji, 2011). This school had an initial enrolment of 62 pupils. Although Merrick and then Alfred Saker pioneered (Fonkeng, 2007), the system of education in Cameroon steadily sprouted into a complex network that had private, denominational and government schools.

The Bethel was the second formal school built in 1845 by Saker who began school networks in Douala this year. During the year 1845, most schools were to be found only in the coastal towns of Douala and the then Victoria (Tamanji, 2011). The founders were focused on primary education with emphasis on reading, writing, arithmetic, drawing and Bible studies as their curriculum. Ardener (1968) however noted that the bible was never distributed to the indigenes. The purpose of educating them paradoxically was so that they could read the bible. There was no focus on providing training that could cater for the societal needs of the indigenes. So the focus was to win souls for Christ.

GERMAN EDUCATION (1884-1914) IN CAMEROON

The German speaking missionary society; the Basel Mission succeeded the BMS in 1884 to continue the work began in 1886. Both the British and Germans made effort to annex Cameroon. It was however the Germans who won in the effort on July 12th 1884 (Tamanji, 2011; Ihims, 2003; Ngoh, 1996). In order to introduce German culture in Cameroon, the Germans used the 'divide and rule' policy whereby they created friction among the chiefs in order to control them. By taking over schools from the London Based BMS, the Germans introduced didactic materials and tools to help in pedagogy. The emphasis was on Germanic studies.

The German Baptist Mission, the American Presbyterian Mission and the Pallotine Mission were those who overwhelmed the affairs of education during the epoch of German education. However, education slowed down and government was not fully involved fully in the running of schools during this epoch. The German government however in order to

promote German culture, gave grants to schools that followed the prescribed syllabuses (Ihims, 2003).

Although technical and vocational education was limited, following German demarcation of the country, schools went further inland. The language of instruction was switched to German; hence the English Speaking Missionary Society was replaced by the Basel mission. The German government took over control of schools and designed syllabuses. Unfortunately for Cameroon, it had to be partitioned between Britain and France resulting from the defeat of Germany in the First World War in the period 1914-1922. This slowed educational strides in Cameroon, given that the priority was to switch from German to French in East Cameroon and English in West Cameroon respectively. This period was marked by administrative reorganization and was at a stand-still (Fonkeng, 2007).

EDUCATION IN THE JOINT MANDATE (1922-1946)

After the take-over of French Cameroon, the French administered her territory autonomously under the colonial empire; French Equatorial Africa (Ihims, 2003). The British Southern Cameroons was administered as part of Nigeria. Between 1916 and 1954, British Cameroon and Eastern Nigeria were administered as part of Eastern Nigeria. The British got one-fifth and the French got the remainder of German Kamerun (Fonkeng, 2007).

EDUCATION IN BRITISH CAMEROON

All westerners had an agenda to expand their global economies. Their three main tools encompassed the missionaries, education and direct trade. While the French administered their educational policy from Yaoundé, the British administered their own educational policy from Lagos-Nigeria, rather than Buea, the capital of west Cameroon. It is for this reason people regarded British Cameroon as a colony of a colony (Ngoh, 1996). The British had as policy; 'indirect rule', which implied using indigenous native authorities to exert their influence. As such they ruled through traditional authorities rather than have direct contact with the people. It is partly for this reason that most of the traditional make up and culture of the British occupied territory remained unchanged.

The schools which they ran included Government schools, Native Authority Schools, Assisted Schools, Unassisted Schools and Post Primary Schools. Assisted mission schools were those that succumbed to the official school program and syllabuses. Unassisted mission

schools were those that were substandard and didn't meet the norms. In 1924, education became unanimous and children enjoyed free education.

Government schools in Buea, Mamfe, Kumba, Bamenda and the then Victoria were the six government schools that served as models (Tamanji, 2011). Rather than directly run the schools, the British used traditional authorities to run schools through their policy of 'indirect rule' (Fonkeng, 2007). Native authority schools trained children who were gradually absorbed by the government schools which were located at Divisional headquarters. The French called these schools village schools.

Although at the end of World War II, there weremainly primary schools in British Cameroon, government opened an elementary teacher training college that was later transferred to GTT center at Kake in 1932 (Tamanji, 2011; Ngoh, 2003). This school was later on transformed to the GTT Center Kumba in 1646 where grade II Teachers and grade III Teachers were trained. In 1944 a Teacher Training College was opened in Nyassoso by the Basel mission while the Catholic mission opened the Teacher Training Colleges in Njinikom and Baseng. Few years later in 1950, the TT Center of Great Soppo was opened by the Baptist (Tamanji, 2011; Ihim, 2003; Ihims, 2011).

A landmark occurred with the creation of the St Joseph's College Sasse as the first secondary grammar school by the Catholic Mission in 1939. A decade later (1949), the Cameroon Protestant College Bali came into existence. It is worthy to note that English was the language of instruction in these schools. The Catholic, Presbyterian and Baptist ran most of the schools and received support from Government. In St Joseph's College Sasse, Grade II Teachers taught the lower classes while Grade I Teachers taught the upper classes and were supervised by the MilHil fathers and the Dutch. Latin was a compulsory subject in Sasse College while French was a compulsory subject in CPC Bali.

The University of Cambridge School Certificate exam syllabus was employed by those schools alongside the West African School Certificate Exam Sylabus. In this curriculum, students could choose subjects from three content areas; Language, Maths, Social Studies and Science. The pass in this exam was a modulation which required a student to pass subjects from each of the four content areas with a satisfactory average. The average score classified the candidate as either a Grade I or a Grade II Teacher.

However, in 1955, preceding independence, the Cambridge and West African School Examination were replaced by the University of London General Certificate Examination

Syllabuses. The British had as main mission in their education to train responsible citizens and teachers who could be fed into the school system to expand the system. This mission however was in the hands of the church however, that was rather interested in winning souls for Christ.

BRITISH AND FRENCH TRUSTEESHIPS (1946-60/61)

At the end of World War II (1939-1945), the United Nations Organization was created to replace the League of Nations which became obsolete (Ihims, 2003). The trusteeship council was obligated with supervision of former territories of the League of Nations, with particular focus on secondary and professional education. Resulting from the McPherson constitution that gave Southern Cameroons an autonomous status, an independent education board was created in Buea. Although enrolment in primary schools tripled in the French and English Cameroons, emphasis on education at this time was at post primary and professional levels.

There became need during this era to train people who could run the affairs of the country. As such, there was focus on higher education resulting to the creation of the first higher institution; the Advanced Teacher Training College in Yaoundé in 1961. This was closely followed by the creation of the first university in Cameroon; the University of Yaoundé in 162. Following these developments, there were great strides and changes in secondary education resulting from an increase in supply of teachers and expansion of schools. The logical consequence of this was that Grade I & II Teachers began drifting towards primary schools while the graduates from these higher institutions took over positions as teachers in secondary and professional schools. It would be noted that teachers in these higher institutions were mostly those who studied out of the country. In order to supplement the English education system, the Higher Teacher Training College was created in Bambili in 1967 as annex to the Advanced Teacher Training College Yaoundé.

EDUCATION IN POST INDEPENDENT CAMEROON (1961-Present)

The educational trajectory of Cameroon runs along parallel lines given that she had two colonial masters who left behind two distinct cultures. French Cameroon acquired independence in 1960 while British Cameroon did so in 1961 (Ngoh, 2006; Fonkeng, 2007). Following their union, the country adopted both English and French as official languages (The Constitution of the Republic of Cameroon). The issue of bilingualism therefore emerged due to the dual colonial heritage. The country was called a Federal State between 1961 and 1972, became a Unitary State between 1972 and 1982 and now a Republican State since

1982. Paul Biya took over office in 1982 from Ahmadou Ahidjo who had run the country from 1961 to 1982 (Ngoh, 2006).

During the Federal period; Harmonization, Ruralization and Bilingualism were major curriculum themes in Cameroon. In terms of Harmonization, the focus was on having equivalent education in English and French systems while simultaneously maintaining the two identities and cultures. As such equivalent certification boards had to be created running from primary to post-secondary education.

Ruralization had more to do with the Government policy to encourage agricultural initiatives and entrepreneurships. The idea was that this initiative would lead to the creation of jobs in the remote areas and reduce the rural exodus that was en vogue. On the other hand, bilingualism was consensus on language policy in which Cameroon as a country is bilingual and her citizens are expected to use either English or French and understand the other speaker's language preference too.

Experts look at bilingualism from different points of view. However, state bilingualism or official bilingualism in Cameroon entailed that English and French be given an equal status and that official documents will be made available in English and in French. Individual bilingualism however entails that each Cameroonian should be able to understand both languages and speak at least either. Many strides were noted in Cameroon educational system in the 1970s, so much so that the Cameroon/World Bank reported that Cameroon had one of the most effective systems of education in Africa in the1970s and 1980s (The Unitary period). According to this report, completion rate in primary school increased from 59% in 2004 to 72% in 2008 while repletion rate reduced from 22% to 18% respectively.

Preceding 1961, Cameroons educational philosophy has metamorphosed to present date. Although not explicitly written in a concise document, the decrees continue to shift in focus on the purpose of education. Pending the colonial period as afore mentioned, the purpose of education was to read. The technocrats during colonial era were expatriates who would eventually deport to their countries leaving behind lacunae in various works of life they occupied.

However, after independence, there became need to train people who would replace those expatriates that were returning home in their numbers. As such the focus on higher education and professionalization intensified. With this in mind, the Advanced Teacher Training College Yaoundé was created in 1961in collaboration with other governments and

volunteers. Parents' position in school affaires was formalized given that government alone would not have the wherewithal to run schools alone.

Law no 98/004 of April 1998 and law no 005 of 16th April 2001 further specified the purposes of higher education and guidelines for running affairs in higher education. Following these orientation laws and the need for professionalization of education, many educational policies have emerged. One educational policy has been the introduction of Guidance Counseling in Schools, whose role among others is to help students in collaboration with other staff and administration to cope with their personal, career and academic needs. The introduction of Guidance counseling in part was due to the increase in social, personal, academic and career problems that students continued to face.

THEORETICAL BACKGROUND

Lev Vygotsky's Social Development Theory (1978)

Scaffolding occurs when a more knowledgeable, experienced or skilled person helps one who is less knowledgeable, experienced or skilled to achieve a task, be it the acquisition of knowledge, skills or attitude; better than they would have in the absence of the status quo. Looked at in this way, guidance counseling can be looked upon as scaffolding. Indeed, the students are the clients and they seek scaffolding from guidance counselors (Vygotsky, 1978).

On their own, students are not 'tabula razas', rather, they have a rich repertoire of knowledge skills and attitudes that need to be harnessed in the right direction (Tchombe, 2019). This thing called direction is what is referred to in the current study as career. In order words, an engineer will learn to measure angles and a poet will learn to construct sentences. It is important to point to the fact the EGC is necessarily none of what he/she is helping students to become. Rather, they are the human resource that brings together material resources that the students need to succeed. A group of classroom teachers build an engineer, whereas on their own they are not.

In this regard, the counselor's prerogative is to 'understand the students' needs' and then advice and counsel them on how to attain these needs. But then, it cannot be unsaid that the students' needs cannot be divorced from their socioeconomic, political, religious, and educationaland eco-sociocultural backgrounds of the child in his or her current context (Tchombe, 2019). Of course, the child needs to be understood at three major levels; the

family, the school and society. These can be considered micro, meso and macro levels respectively. It is understood that in some circumstances, the EGC may not be motivated, given a situation in which their recommendation and position are compromised for various reasons. Notwithstanding; the difference that the EGC makes in the lives of students is the very foundation on which their inevitability is built.

Furthermore, the EGC needs grounding in developmental psychology in order to understand issues that classroom teachers may overlook. The EGC is supposed to be a keen observer. In fact, the counselor is an external eye and should professionally conduct their activities in school in such a way that all stakeholders believe in them. When the counselor makes a difference in the lives of students, they can't go unnoticed. Indeed, the debate has continued as to whether there is any difference between students who have access to a counselor and those who do not. But mixed perspectives about this may be due to in inefficiency in some facets of counseling but more so, due to handicapping on their part and glass ceilings that they encounter in the school set up.

To scaffold, the 'scaffolder' must be abreast with the needs of the 'scaffoldee'. It is important that the scaffold sees the significant other as a helper, collaborator and facilitator (Tchombe, 2019). Both are in a transaction or project as parties whereby the consent and inputs from both parties are extremely crucial. Since African children learn basically by imitation, modeling and cooperation (Nsamenang, 2006), it is important that the inputs of the child are clearly identified and acknowledged by so doing. By identifying the child's inputs in terms of attitudes, achievement and aptitudes, their harnessing in the right direction can be maximized. The direction is what is called career in this work.

Bandura's Social Learning Theory (BSLT) (1977)

The second theory that this study employs is Banduras Social Learning Theory (BSLT). The relevance of this theory lies in the socialization process of African children where learning is hardly too direct, but by use of social structures (Nsamenang, 2006). Learning principles involved in this theory are modeling, intrinsic reinforcement and modeling (Nabavi, 2014)

BSLT has observation, imitation and modeling as three core principles in SLT. Indeed, the relevance of this theory to the present study stems from the ardent fact that children learn better what they see others doing and when they have the opportunity to practice or imitate what they observe 'influential' people doing. These influential people here referred to are

people whom the learner places high in their value systems (Muro & Jeffrey, 2008 in Ornstein & Hunkins, 2014). The basic premise is that meaning is construed in a social context through interacting with others. Accordingly, when we observe desirable behavior, we assimilate and imitate such behavior especially if it is demonstrated by people we value or our models.

Desirable behavior is that which is followed by positive consequences (Bandura, 1977). By imitation, the observer reproduces the motor activities that he or she observed. The implications of this theory for the present study lies in the manner in which career guidance and counseling programs are construed and structured, with special focus on how the learner's trajectory corroborates their potentials, aptitudes and motivations.

By observation, this implies a keen attention to the environment. Learners do not pay attention to all stimuli. They receive a lot of stimuli, but attain only to those that intrigue them through the process of selective perception. According to the Cognitive Load Theory (CLT), learners have a limited ability to pay attention to limitless stimuli (Sweller, Ayres & Kalyuga, 2011). As such, they only select or chose to attain to the most captivating stimuli. The implication for teachers of course is that by identifying the learner's motivation, it becomes easier to provide appropriate stimuli that correspond to their value system and more creative and critical learning can take place. If carefully designed, the CGC program can enable structuring of school programs in such a way that children are encouraged to be glued to their career environments, although without neglecting prevalence elsewhere. By career environment, it refers to the knowledge, skills, competences, attitudes as well as human and material resources required to succeed in a particular profession.

Therefore, that a student is taught to observe, the teaching methods and assessment strategies need to align in such a way that they are contextually relevant to the learner's environment. As such, learners are given the opportunity to observe demonstrations through appropriate teaching methods such as role plays, laboratory work, and dramatization and so on (Tambo, 2003). During career days, schools would not lag in their efforts to invest in human and material resources such as acquiring laboratory equipment or chemicals for a science sphere or inviting a renowned personality in a particular profession to talk to the students.

The impact that inviting resource persons regularly has is far reached. Firstly, they serve as firsthand experience to the students. A student who is motivated to become a medical

doctor would connect to when differently from a student whose interest is to become an electrical engineer for example. But most importantly, inviting a lawyer, priest, police officer, engineer, medical doctor, professor and so on to talk to different orientations of students is a practical way to motivate students.

The second fact in this BSLT is imitation. Like earlier said, if the medical doctor who was invited is well dressed, the children will see why they are asked to dress in a particular manner since it makes meaning to them. People cannot imitate if they do not have the opportunity to do so. It implies among others that the career guidance program can make use of school programs such as school clubs, in which students are given an extra opportunity to practice what they learn in their 'classrooms'. The classroom in order words should disease from being a place to being any organized avenue where learning can take place (Tambo, 2003; Tchombe, 2006).

According to the behavioral point of view, learning takes place when there is an observed permanent change in behavior. However, cognitivist divert from this observation that learning must always lead to an observable change in behavior. The case of the bobo dull experiment is a staggering example. When children faced a similar situation, they behaved according to what they observed. Children who were enclosed in a room where the model was aggressive to the dull were also aggressive and vice versa.

It is therefore to be said that practice makes perfect. As such, if the children are not given room to practice or imitate what they observe or learn, it befits the purpose. It is through imitation and practice and hands on activities that these children can meaningfully develop their KSAs and competences in contextually relevant ways. A child cannot learn to grow tomatoes in an area where there is neither land nor water, seeds and appropriate weather etc. However, by providing the child with the land, water, seeds and techniques in an appropriate weather, what they learn is incomparable to reading about tomato cultivation from a book only. For sure, it is impossible to provide all the requirements to do imitation. As such, simulations, illustrations and pseudo experiments can be great strategies to bring up learners in various fields.

During exams therefore, assessment should be cognizant of the way through which the learning took place. This said because research has shown that some exam settings and formats completely ignore the nature of KSAs being tested and the way in which they were learnt (Nenty, 2006). One can assess if children have learnt an attitude such as cleanliness or

respect by writing about it. Rather, a more appropriate way could be to assign portions in the school for them to take care of their sanitation. By so doing, the assessment becomes authentic as it ensures that the KSAs are actually imbued in the learner and that they can translate to new situations. This integrates career formation and functional education in a meaningful way.

Many graduates have cried foul of an education system in Cameroon that does not provide them with jobs. In December 2019, a list of PhD holders was published for recruitment into public service. A strike followed this publication in which a lady attempted taking her life by taking excess tramadol. This is an illustration of how frustrated some graduates have become. If gold should rust, what more of iron. We therefore observe that there is need for a paradigmatic shift in the function of education where students are 'trained' to solve problems in their environment rather than preparing themselves to work for 'someone'.

If assessment strategies are not in phase to the expected learning outcomes, then it befits a purpose. For example, you could give a written test on cleanliness and the highest score comes from the dirtiest student in class. This type of educational system only yields more problems in the future. It has been observed that many students have not 'failed' exams due to lack of appropriate KSAs, but rather because the examination fails to consider their learning styles and preferences into consideration.

The implications for appropriate assessment come along with the fact that must school practices are guided by the nature of assessment practices or strategies. By so thinking, if authentic assessment is reinforced, authentic learning will imply focusing on acquiring appropriate KSAs and deemphasizing performance which may increase without corroborating increase in knowledge. Therefore, SLT is an avenue that can translate complex pedagogic principles into simple realities.

The third facet in SLT involves modeling. Modeling is the process by which the learner observes a behavior that is exhibited by a model (which could be a live model) and imitates such behavior. Generally, modeling will occur if the behavior is followed by reinforces such as rewards or the removal of punishment, or when the behavior is exhibited by someone whom the learner places high in their value system.

Ideally, models will be people who possess various or particular type of power that appeals to the learner. If a behavior is followed by a desirable consequence, there is a high

probability for it to be reproduced. We cannot forget however that some behaviors are complex. As such for such behavior to be imitated, it must be disintegrated into discrete segments that form a procedure.

When children observe a journalist reading news for example, they can copy other attributes of the journalist such as dressing style and way of talking. It is said that birds of a feather flock together. As such, you would find a student who intends to become a journalist with a dictionary and one who intends to become a musician with a musical instrument. The pedagogical implications however is that when the student is made to see value in the model, they have the tendency to copy from them.

A learner will however be motivated to reproduce learned behavior. The motivation could be intrinsic like wanting to become a journalist because of how they dress, or intrinsic like wanting to become a physician in order to reduce still birth. The process through which the learner learns the modeled behavior (means) is as important as the end, which is the problem which the KSAs and competences are supposed to address. It is therefore incumbent on CGC programmers to devise ways through which they can model students into correct occupations or professions. There have been instances in which students shun a subject because they disliked the teacher and vice versa. It is through working in synergy and through basic research that the EGC can collaborate with teachers in schools and model appropriate behavior. If a teacher who smokes teaches against smoking for example, to what extent can the students reject smoking as a vice.

In order words, the models required in schools may not necessarily come from without the school, but may be members of the school community including parents and local community leaders. Inter departmental and team teaching is a single way for example, to model. Some students are frustrated when they are taught by a single teacher. But in a case where there is exchange between department teachers or even inter school exchanges, children can be greatly motivated. Teachers from other schools can challenge vice which has been overlooked in a surrogate college or appraise virtues that are worthwhile. Therefore, the principle of modeling is very important in CGC programs. Through models, children can copy appropriate behaviors and become motivated as they see the contextual link between their environment and the education they acquire in what Tchombe (2019) has referred to as eco-sociological relevance.

Summarily, SLT inculcates three principles; observation, imitation and modeling which are non-hierarchical but a reciprocal sequence to learning that can be applied in our CGC programs to motivate students to learn with a focus. It is observed from the illustrations that it employs diverse teaching approaches that see classroom teachers and EGC as partners that bring the human and material required to sustain contextually relevant attitudes in learners (Bandura, 1977).

CONCEPTUAL BACKGROUND

The main concepts that form the basis for this work are discussed in this section with respect to the background of the study, in order to throw more light on the main variables of the study. The major concepts discussed are assessment and guidance counseling with focus in Cameroon secondary schools. A good number of issues and debates have continued to plough the educational community, with testing as a topical issue. Tests have been used as a means to hold schools and students responsible for their learning and teaching (Peter, 2005).

Although a good number of dire consequences such as teaching to the test have resulted in many cases due to narrowing of the curriculum to the taught curriculum, there is every indication that testing as a phenomenon cannot be done away with from the educational system. It is of no doubt that the consequences from high stakes testing have also had negative consequences such as exam malpractice and mark inflation which do not usually imply corresponding gains in learning (Alison, 2006).

Some research has identified the lack of consistency in students' performance in terms of marks without corresponding incremental gains in the knowledge, skills and attitudes that these marks are supposed to represent. A number of classroom practices are aimed at improving test results, with the danger being in their potential to distort the education of young learners, with the result being that they leave school ill prepared for higher education and employment (Colin, 2007).

Furthermore, national results such as GCE exam results are used for a variety of purposes at national, local, institutional and individual level. However, it has been argued that though these purposes are legitimate on their right, that the current testing system may not be valid enough as a means to achieve all these purposes. While the UNESCO advocates for a clear, full and entitlement to learning for all students irrespective of background or ability, it

would be logical that the testing system be decoupled to accommodate the multiple purposes such that a single test is not sufficient to measure pupils' attainment, school accountability and national monitoring.

QUALITY EDUCATION

Following from the Historical Background in this study, one would observe that there have been paradigmatic shifts in the purpose of education in Cameroon. Shifting from 3Rs over the years, the current emphasis is on quality education and not just literacy skills. Quality education emerged as emphasis, given that some graduates and educational programs have not addressed the contextual needs and relevance on current paraphernalia that are expected to be addressed by the system of education (Tchombe, 2019).

Quality education is a dynamic concept that evolves to responds to particular contexts and time (UNESCO, 2005). It considers the economic, social and environmental contexts. Such education is not divorced from the local and contextual realities. According to Tchombe (2019), quality education is that in which school programs are displayed from the perspective of multiple intelligences and learning styles. Furthermore, such education is that which responds to the development of the learners' emotional, critical and creative intelligences (UNESCO, 2005). Again, it also implies that there is more equity of access to include learning outcomes and increased relevance (UNESCO, 2004).

Quality education according to UNESCO (2004) is one that addresses KSAs such that the aim of education of any nation or society becomes a means for the provision of human resources or man power requirements. These man power requirements are catered for through the provision of specific KSAs required for the development and enhancement of particular competences. Such school programs as career guidance is one way that these are reinforced.

Addressing quality education, (Nenty, 2006), developed a framework of seven dimensions of quality education namely; effectiveness, efficiency, equity, responsiveness, relevance, reflexivity and sustainability. According to them, effective education should be able to meet stated aims. Aims are broad statements of intended learning (Tambo, 2006). Such an educational program must consider economic factors such as ratio of output to inputs and maximize the use of resources given that some aims are not feasible.

Furthermore, quality education should be equitable. It has to be accessible to all persons irrespective of gender, age, ethnicity, disability and sexual orientation (Tchombe, 2019). It should also be responsive by meeting the needs of individual learners in terms of their uniqueness. Such education has to be relevant in the present and distant future. Such education imbues in the learners, lifelong learning, given that the only certainty is change (Nenty, 2006).

Furthermore, quality education should be reflexive and dynamic such that there should be a paradigm for precedent and unprecedented change. Lastly, the authors purport that quality education should be sustainable such that learners can take responsibility for their own learning. Sustainable skills and attitudes such as the ability to set goals, make the right decisions and actions to achieve them, and finally evaluate, should constitute part of such a curriculum for quality education (Nenty, 2006).

Quality education should also be able to address the SDGs (Sustainable Development Goals). According to Tchombe (2019), education has a central role in the attainment of SDGs.Of course, there is a lot in terms of need for CGC given the plethora of educational programs that students can pursue. It is partly for this reason that the place of CGC becomes more inevitable.

They clearly identify that education should be able to lift people out of poverty since it imbues them with the KSAs, competences and technologies required to act intelligibly. Secondly, it is through education that malnutrition can be curbed by inculcating appropriate farming practices and modern agricultural techniques. Furthermore, plethora of health related concerns such as early mortality, reproductive dysfunction, pandemics and epidemics are curbed through advancement in medicine and science.

Fourthly, through improved basic literacy for women, there is expectancy for improvement in basic skills and life chances. Again, sustainable use of natural resources and improved hygiene, better energy conservation and uptake of energy resources are expected to improve. In the seventh place, quality education is expected to improve economic activity, entrepreneurship and job market skills. By education for sustainable development, the quality of infrastructure and sustainable infrastructure is expected to improve.

Equity in education is aimed at reducing the economic inequality. Education is also expected to better prepare people in times of disaster to better take care of their villages, towns and cities. It is also hoped that education will improve production patterns through

sustainably produced goods while preventing waste. Through education, the impact in the environment with diverse implications can be reduced thereby addressing issues of climate change. Through education about pollution and waste management, there is to be a sustained use of land, water and air, thereby preserving the biodiversity, natural resources and threatened environments. Education through social learning will improve social coherence and participative and inclusive societies. Lastly but not the least, lifelong learning imbues people with the capacity to understand and promote sustainable development policies and practices.

The seventeen key areas in the SDGs present the nature of how education through specialization is expected to address these areas. This can possibly be done through a concerted effort, given that these goals span across all areas of knowledge and disciplines. As such, the place of context and relevance of educational programs cannot be overemphasized. These goals can be addressed however through drawing up school programs that are elaborate, explicit and comprehensive.

Knowledge in these areas can be developed through the cognitive, affective and psychomotor domains as in Blooms Taxonomy of Educational Objectives (BTEO). It however calls concern that the present taxonomy such as the BTEO in our school system in Cameroon has only been explored to a greater extent at the cognitive domain. However, the affective and psychomotor which are very vital in terms of realms of meaning have often not been fully exploited. Although the issue may be at the level of teacher training, there is need to exploit other taxonomies such as McRELS and Finks Taxonomy of learning outcomes that emphasize 21st century skills such as learning to learn and caring for others and the environment (Fink, 2003).

Assessment of Learning (AoL), Assessment for Learning (AfL) and Assessment as Learning (AaL)

We take a look at the differences between assessment 'of', 'for' and 'as' learning which are important paradigms in the field of assessment. Although these words share commonalities, they are distinct concepts with important implications for assessment practices. Assessment of Learning seeks to find out how much learning has taken place in the learners. As such, it can be formative or summative. In formative assessment, the learner is assessed during the learning process to find out how much learning is taking place. This helps to clarify doubts, to expand concepts, point to important issues and gives direction to

feedback. Formative assessment, in spite of sharing some characteristics with AfL is largely AoL because often than not, the intention is to get a cumulative mark that builds up as summative assessment (Nenty & Luweti, 2006).

On the other hand, summative assessment is usually done at the end of the program or lesson with the intention to document the amount of learning that has taken place, such that further decisions can be taken. Indeed, the decisions that can be taken from summative assessment such as classification, promotion and certification are largely done out of the classroom and usually have little to do with the actual learning itself (ARG, 2002).

Types of AoL formats include objective tests such as MCQs, completion formats, matching, true/false response types and sentence and paragraph completion formats. They also include essay formats and portfolios which are non-objective formats (Tchombe, 2019). In order to cut clear, the purposes of AoL are many, but largely to document the amount of learning that has taken place during or after the learning or program. In order words, AoL finds out how much performance and quantifies this performance for further decision making (McAlphine, 2015).

The common assessment taxonomy employed in AoL in Cameroon is the BTEO. This taxonomy has three main domains; the cognitive, affective and the psychomotor domains. These domains although not mutually exclusive do have a hierarchical arrangement for each. For example, the cognitive domain is subdivided into knowing, understanding, applying, synthesizing, evaluating and creating. The original version used nouns instead of verbs but was later modified by a student of Bloom with the justification that it was good to state objectives in terms of verbs such that they could be easily measured.

Although this taxonomy is common in use in Cameroon secondary schools, its application is arguably mostly cognitive. Syllabuses do have the cognitive facet clearly elaborated such that one could see what level of the domain is being tested. However, teachers find it difficult to apply the other two domains, given the structuring of the lessons. Although the affective and psychomotor seem to be given less accent in Cameroon schools, the problem may be much as in the training of teachers as it is in the availability of infrastructure required to explore these domains.

As such, learning with the fabric of this taxonomy places accent on theory at the detriment of practice. Although the 3rd categorization in BTEO talks of applying, the application often than not would entail applying theory in a theoretical manner. Such pen and

paper application of concepts does not put some learners on the advantage. Countries that have emerged rapidly such as china where kids contribute to development have a strong investment in terms of educational infrastructure such that learning is creating.

It therefore calls for the need to have adequate infrastructure in schools, such as; laboratories, sporting facilities, pilot farms, ICT centers, work-shops, pedagogic resource centers and the accompanying personnel such as teachers, administrators and guidance counselors or psychologists. Such arrangements are necessary to stir practice. For example, it is one thing to teach students how to filter water in the classroom in theory, and another to do it let them 'see' and do. As it has been argued with young learners, learning is doing. When resources are inadequate or not there, it becomes difficult for children to develop knowledge in such a way that it can be transferred to novel situations. Current taxonomies such as McREL and Finks taxonomies of educational learning outcomes are en vogue, given that they stress 21st century skills which are not very eminent in BTEO.

The second conceptual term in this category, Assessment for Learning (AfL), refers to the assessment that finds out ways through which scores can be improved. Recall that AoL measures learning in terms of performance or scores. AfL however finds out how these scores come about and how they can be improved. As such, AfL finds out ways to improve students learning (Chappuis & Stiggens, 2006).

Furthermore, AfL articulates where students are in their learning, where they need to be and what they need to do in order to get there. By so doing, AfL scaffolds students by providing a mesh to support their learning. AfL through principles such as; self-assessment, peer-assessment and metacognitive strategies, encourages and sustains life-long learning which arguably is the most important 21st century skill (Klenowski, 1996).

Chappuis and Stiggens (2006) outlined that there are important competencies for both students and teachers to be able to effectively carry out AFl. Contrary to common practice, where teachers assess students without letting them know why they are being assessed and the consequences that would emerge from such assessment, they advocate that students must be clearly made to understand why they are being assessed and how it will be done. That the students need to know the standards required of them and the skills required in meeting such standards. In otherwords, students must be assessment literate. As such, the students can set their own goals, perform the tasks required of them, reflect on their performance and are therefore inside and not outside of the assessment process.

Thirdly, Assessment as Learning (AaL) is not conceptually divorced from AoL and AfL. However, unlike the latter two mentioned, which have the teacher as key assessor, AaL has the student as the key assessor. This means that, assessment is the learning in itself. When well understood, AaL is the key to metacognitive behavior and life-long as well as sustainable learning (Deborah,2005).

Assessment of Learning no doubt, is inevitable. The problem is when it is practiced in such a way as to leave no adequate room for the other forms of assessment. Indeed, the nature of stakes involved with AoL is usually such that it creates tension and anxiety in the learners at the detriment of learning. With fewer resources and with education being earmarked as yardstick for certain privileges, AoL has even lead to undesirable consequences such as teaching to the test, exam malpractice, certificate inflation and credentialism (Illich, 2007 Nenty, 2006).

The ardent need for a paradigmatic shift to AaL stems from the precedence of learning over assessment. With fewer teachers in terms of student populations, and less adequate infrastructure, AoL is part of the solution to meaningful and quality learning. When students themselves become their own assessors, they are in a better position to make the right and informed decisions (Marzono, 2000).

Teachers during AoL and AfL although may have students involved, the extent of involvement of students is such that students are still seen as external to the assessment process since the teacher is the center of the process. However, with AaL, self-assessment is the core on which other processes are hinged. AaL is formative in nature like AfL and is based on criterion reference with little room for norm referencing. As such, the learner is concerned with what they are doing and conscious as to whether what they do can achieve intended results.

Furthermore, the student has a mastery of the objectives can vary method of learning style and preferences or study skills to achieve intended results. At the level of results, it is not an external agent that prescribes that the behavior is satisfactory, but it is the learner herself who affirms whether or not the behavior is satisfactory as per the laid down objectives and level of performance expected. Such assessment empowers students to bring in their knowledge to address the problems and decisions that matter to them. They would be able to use personal knowledge to construct meaning in a reflective fashion. They would realize when they do not understand something and instead of waiting on probing and prompting

from the teacher, they take the initiative to analyze, synthesize, evaluate and create their own meaning.

Recall that AoL is basically record keeping. However, in AaL, record keeping is a personal affaire. Unlike in AoL where the records are kept by the teacher, the records are kept by the learner. The learner decides what records to keep, and is personally involved in using those records to enhance further learning. By so doing, the records no longer intimidate them, they decide the quality of records they need and work accordingly to get them.

Summarily, AoL, AfL and AaL are paradigmatic shifts that have evolved placing more responsibility for learning on the learner. The teacher's role is inevitable, but the teacher devotes power and helps leaners take responsibility for their learning. It does not put any learner or teacher on the advantage to discard any of the paradigms, but the accent is on the proportion of each involved. While AoL could be formative or summative and guns at the students' performance through scores, AfL is intended to finding ways through which those scores can be improved. A key difference is that AaL has the student as the key assessor, unlike in AoL and AfL where the teacher is the key assessor. Therefore, the following model has been advocated by Jon (2007) based on the roles in assessment developed by Christine (2006.)

Figure 10

Traditional assessment pyramid

As

Assessment   for   learning

Of

Reconfigured assessment pyramid

of

Assessment   for   learning

as

THE NEED FOR TESTING IN CAREER GUIDANCE AND COUNSELING

In the subsequent chapter, the purposes for testing shall be discussed to complement the need for testing which is the preoccupation of this section. Equal access to curriculum and comparability of results became a norm, given that some students have stayed in school, taking exam as competitors for jobs and places in other institutions. There has been need to provide information to students, parents and teachers about what students have learnt such that students could receive special attention in areas where they have difficulties through scaffolding (Gregory,1985; Nenty, 2006).

In some countries, pupils at age 7, 11 and 14 prior to the GCSE exam at 16 have had to undergo compulsory testing. Baker proposed in 1987 that these tests be made compulsory and that the results be published since it was not possible to improve school standards without monitoring the progress of students. Although parents want access to test data, test results are one thing that schools do not usually want to publish given that some scholars have advocated that test results are usually not a good reflection of the social background of the school. Advocates such as Baker (1993) argued against not publishing school results to say that teachers, rather than looking for ways to justify students' poor performance, should concentrate on looking for ways to improve on students' performance through assessment for learning or as learning (Nenty, 2006).

Assessment of learning could be summative or formative. It entails finding out what students have learnt. When it occurs during the learning process, it is called formative assessment and summative when it is done at the end of the learning process. Recall that assessment refers to ways and means through which students learning is monitored or gauged. On the other hand, assessment as learning refers to the ways through which students learning can be improved. In order words, although assessment of learning and of learning contain common elements, assessment of learning looks at ways to get a mark that represents students learning, while assessment for learning looks at how those marks can be improved (Nenty, 2006; Tchombe, 2019).Although most researchers have advocated for written tests, they eventually regretted that those tests would not achieve the desired results when they realized that those tests had become complicated and elaborate (Deborah, 2006).

ASSESSMENT IN CONTEXT

Tests play a critical role in improving teaching and learning. They provide consistent measures that allow teachers, parents, and students themselves to monitor student progress, understand specific strengths and weaknesses, and set learning goals (Fink, 2003). They help teachers identify who needs support, who needs enrichment, and what changes in classroom instruction are needed. They inform teachers' understanding of how effectively they are advancing student learning. And, they can provide meaningful learning experiences for students. However, while tests are valuable, each test takes time and resources that could be used for other activities in the school day (Popham, 2001). Thus, it is essential to ensure that every assessment is used for an important purpose and leads to actions intended to improve student learning.

In too many schools, there is simply too much testing. In addition to nation-wide assessments, schools often require many more nationwide assessments. Students must also take classroom-based tests and quizzes that are core to the instructional process. Students take still other tests for college admissions, placement or scholarships. Over time, individual schools may add assessments championed by a specific leader, embedded in new instructional materials, or in response to a specific need such as evaluating teachers without ever taking a comprehensive look at what has outlived its usefulness. As a result, schools may have a plethora of diagnostic, formative, interim and summative assessments as well as assessments for special populations. However, delegations have significant control over which tests to administer and the amount of time devoted to testing (Fonkeng, 2007).

Unfortunately, testing choices are sometimes made without an explicit overall assessment strategy. In addition to that, without a clear understanding of the overall testing burden within the region and without an in-depth analysis of whether the time and resource costs of testing are justified by the importance of the information or experience the test provides, and the action steps taken as a result (Popham, 2007).

Of course, along with test quantity, test quality is critical. To serve students and educators well, tests must be aligned to standards, meet criteria of high quality, and provide useful and timely results. Equally important, the approach to testing should be crafted in the context of the school's overall strategy to improve student learning. Within that context, schools must consider what insight they will gain from each assessment, who will use the information, what actions they will take, how they will be supported to take action, and how

student learning will improve as a result (Tchombe, 2019). Looking across all the assessments used in the school, a consideration is whether the overall array of tests is as limited and efficient as possible while obtaining essential information that will be used for improvement. The bottom line is that any time and resources spent on nationwide assessments should provide valuable information and experiences that are not available on the state large scale assessment or in the classroom through daily instructional activities.

THE NEED FOR ASSESSMENT TOOLS

It has long been recommended that leaders take stock of what tests students are required to take and determine what these tests are designed to do. Such a review will build a shared understanding of what purposes the assessments are designed to serve, point out gaps and redundancies overall and for specific populations of students, identify lack of alignment with standards or low quality, and illuminate the costs of testing in the school, and highlight which assessments provide results that are useful to teachers and students and which do not (McREL, 1997).

Schools should take a role in this area, both in examining the state assessments and in partnering with Divisions to streamline the amount of testing and increase the coherence. However, Regional Delegates can best foster a conversation about the assessment strategy that is appropriate for their own region and lead an inventory process that streamlines the amount of testing required and work to ensure that the assessments that are in place are supported by structures and routines so that assessment results are actually used for improvement and serve the needs of the state (RC, 2009).

CONTEXTUAL BACKGROUND

Students are expected to take salient life responsibilities and roles in life as they grow. It is the responsibility of agencies of socialization such as the school to socialize the child through learning, teaching and education. In the days behind, a child could simply become a drummer or wine tapper for example, by imitating the parent. Occupations were few and required training by hands-on activities with little theorization.

However, nowadays, a child has to take off a good time of their youth to get education. This is partly due to compulsion for basic education in Cameroon among other reasons such as certificate inflation. Many companies, organizations and employers require a certain level

of formal education as part of their employment criteria. In some institutions, you would require an A/L certificate to become a driver for example.

In spite of the evidence that there is certificate inflation, given that those with more education are preferred for a skill that could efficiently be done with a person with less schooling, the complexity of society has caused a lot of changes in the nature of profession. For example, a seasoned medical doctor from Germany may not be able to communicate with a patient in Cameroon without a translator.

Take the case of a driver, with improvement in science and technology, many people now use alarm systems and chips controlled by computers to secure their vehicles, especially in the urban centers. Again, in a big city such as Douala or Yaoundé, a visitor would require a GPS to navigate through it. As such, the job of a driver will extend beyond the peripheries of driving and beyond into the ability to read GPS, use alarm systems, communicate in the boss's language and so on and so forth.

If we regard the state as a big society, then we expect that it should socialize its citizens in ways that will enable them socioeconomically insert into society, and cope with modern day challenges such as change in technology. In this light, the prerogative of the state would be in part to do an assessment for learning to see which fields require man power and at what time, then provide the required mechanism to motivate students into those fields of study. In order to cope, a professional would require learning and unlearning a skill and relearning another one with change in technology and time as some become obsolete.

With advancement in technology, it has become evidently clear that man will forever be faced with the need to learn something new. New ways of; treating illnesses, transportation, moving money, constructing infrastructure, communication have distorted the economies of many societies as they are unable to cope with international demand (SDG, 2015).

As such, children need to learn enough to assume certain life roles, but more so, they must learn to adapt and learn a new skill when new technology emerges. For these reasons, if care is not taken to take stock of societies man power requirements by the state, more of less that is consumed will be produced with the rippling effect that acute shortage in one sector of the economy at some time will destabilize the economy and continue to yield anomalies (Mahwah & Erlbaum, 2004; Mahwah& Erlbaum, 2006).

If we look at society like a chain or system, then shortage in one sector inherently would affect other facets of the system. If there is shortage of carpenters for example, the healthcare is affected whey they cannot acquire the right furniture. Therefore, students are in school to learn, but what they learn as much as how they learn it is important. However, it can be very easy to forget that how many are learning it is of utmost concern. If we continue to train people in one profession at the detriment of other professions, then there becomes an imbalance that can cause casualties to society. It is a food for thought to reflect as to whether the presence of expatriates in the helm of affairs in most mega infrastructures in Cameroon is a matter of cooperation or dire necessity for skilled man power.

These reasons mentioned before amongst others highlight the role of EGC in our schools. Educational Guidance Counseling was introduced in part in Cameroon schools, due to the ever growing complexity in what we study in school. More fields of studies and occupations have necessitated the counseling students on career choices (Ornstein & Hunkins, 2014). The importance of traditional education cannot be underscored, however, the high level of unemployment today in Cameroon may in part be due to lack of synergy between hands-on experiences in school and local employers. This is because students can more easily transit from school to work if the world of work is not too different from their previous work. (Ornstein & Hunkins, 2014).

An example is MDRCs role in providing man power partnership with the US Department of Education's Institute of Education Sciences, the US Department of Labor's office of Vocational and Adult Education, the US Department of Labor's Employment and Training Administration, the US Department of Labor'sChambers of Commerce Center for Work Force Preparation, and other departments that partner in periodic Career Academic Conversations (Ornstein & Hunkins, 2014).

Periodic career conversations permit various stakeholders to envisage their pivotal positions and responsibilities. The provision of employment as well as its creation lies somewhat in the extent to which various facets of the workforce system are stratified. Indeed, before labor is provided, the vectors to a large extent depend on the nature of inputs in terms of quantity and quality. For example, if we would have to improve or increase life expectancy in Cameroon, then in part, the training of physicians and medical personnel must be taken seriously by the authorities that be. This implies a need to work hand in gloves with not just

the education ministries, but as well with the ministries of Small and medium size enterprises, and vocational training.

Inevitably, this implies that appropriate schools must take the responsibility to train personnel with unwavering support (Rogers, 1962). However, there should be some checks to ensure and provide evidence that schools are doing what they should be doing. In the case of a secondary school, modeling will entail that right from secondary school, students are modeled to develop intrinsic motivation to become X or Y. It is this drive that should sustain and direct the educational opportunities sorted and provided to the students by the students and schools respectively.

The issue of motivation is fundamental, in that, when people are motivated, they begin to see their work place and role in society as a vocation and not just an occupation. People who work due to internal drives have a higher tendency to be more effective than those that work simply due to exterior motives. Such a drive permits virtues such as persistence, efficiency, honesty, assiduity and consciousness at work place (Gardner, 1961; Illich, 2007).

In other words, schools need to see themselves not only as educators, but must be specialized trainers, such that a child not just studies chemistry for example, but should nurse that mindset that (s)he would employ chemistry as a pharmacist, chemotherapist, in saponification and so on. By so doing, the subject matter becomes the means through which ends are met and not an end in itself. When children look at subject matter in this way, the acquisition of knowledge and skills in combination with appropriate attitudes drive them to effectiveness (Ozman & Craver, 2008).

Some students have changed their attitude towards mathematics when they came to understand that it was a prerequisite in some for admission into some departments that were of their interest. The fact is that a student can be motivated enough to improve in any subject, in spite of the myth that some subjects are more difficult than others. However, if the scope and content, the sequence, are beyond the development of the learner, then the achievement and performance may rather reflect inconsistencies in the design of the curriculum (Oinstein & Hunkins, 2009; House, 1983).

The curriculum should be such that it achieves universal objectives of education. This implies that in terms of the SDGs of the UN to which cameeroon is signatory, the curriculum experiences should be those that will help students to acquire experiences which are vital for them to socioeconomically insert into society. More so, the curriculum should also be tailored

to achieve the goals of the state. Meaning that young people need to be motivated by the Ministry of Secondary Education to take interest in Science and Technology, Engineering and Mathematics (STEM) education (Tchombe, 2019), because these have been identified as strategic areas to provide labor requirements for an emerging economy like Cameroon (WB, 2018)

The world has fast grown into a technological village. Due to the fact that STEM education seems to be precursor to most industrialized societies, Government needs to reinforce leadership in this domain, given that nations that cannot compete in this area will continue to lag and be left behind in all other sectors of the economy (Fonkoua, 2006; Illich, 2007).

Accent is increasingly placed on quality of education (Tchombe, 2019). As regards to quantity, stakeholders look at the processes, events or things in terms of their numbers. Of course, when there is cry about acute shortage of physics teachers or computer programmers in schools or in a particular field, it is understood that the paraphernalia is in terms of quantity. On the other hand, Tchombe (2019) defines quality education as one that is culturally and contextually relevant, taking the context into consideration. Again, UNESCO (2004) is clerical on the fact that quality education is a dynamic concept that changes with time and place and mitigating circumstances.

In the light of the above stance on quality education, therefore the counselor should assist other educational stakeholders to bring out KSAs in learners that consider the unique cultural and contextual relevance to the learner. Take a school girl who is oriented to study aeronautic engineering, wherein her peasant background will neither permit her to afford exorbitant tuition nor find such a school in the country. Such counseling has no quality as it lacks contextual and cultural significance to the student (Tchombe, 2019). It therefore becomes imperative that the EGC looks not just at the issues in the immediate vicinity of the child, but here and beyond the peripheries.

Quality also implies aligning current curriculum trends appropriately such that for instance, the way students are tested, also takes cognizance of how they learnt the material (Nenty, 2006). Of course, there has been decry that current curriculum trends are examination dominated (McREL, 2003; Nenty, 2006; Tchombe, 2019). This is not all too good, given that there is need to promote creative and emotional development in learners (UNESCO, 2004). By so doing, children can learn to have an open eye in their communities, identifying

problems and reflecting on what means by which these problems can be solved. Indeed, educational programs in this light are regarded as a means and not an end in themselves. This type of thinking that has been called entrepreneurship should also look at each unique school program as a patial panacea for a particular canker warm in our society.

An entrepreneurship spirit needs to be imbued in learners when they are fairly young in their learning, such that they develop critical and creative thinking meta-cognitive abilities. As such, promoting education without any barriers also implies that counselors in our schools should continue to seek ways and means through which barriers such as exceptionalities, gender, ethnicity, religion and socioeconomic and eco-sociocultural which stand as glass ceilings at the detriment of learner's aptitudes, achievements and motivations (UNESCO, 2005; Tchombe, 2019).

With these in mind, learners' interests, achievements and aptitudes would be the very pivot on which the spirit of 'Ubuntu' is instilled to call for a sense of nationalism and 'we do it for ourselves spirit'. Afrocentric perspectives in education cannot underestimate the devastating effect of the brain drain and other western influences that continue to erode our cultural values. One way we can address some of these influences is by instilling the sense of humanness, humanness and belonging such that our kids can understand that any type of development will depend on they and no one else.

However, it implies among others that EGC identify through a data bank for example, students who excel or are motivated but need extra support in order to realize their maximum potentials and provide them with scaffolds. Scholarship programs can be encouraged especially for students in Zones of Educational Priority. It is observed that some students would enroll for an arts course in high school simply because they could not afford the more expensive science course. This is unfortunate given that ignoring the aptitudes and motivations of these students and allowing their eco-sociocultural and socioeconomic backgrounds as sole determinants becomes even more expensive on government in terms of providing quality man power requirements. As such, EGC should serve as a boaster, sorting out agents and processes that can accommodate various types of learners in cognate to their developmental levels, learning preferences and styles, motivations, competences and achievements. This overarching responsibility requires ingenuity on their part and ability to simultaneously work with parents, as well as their ability to understand the cultural amplifiers that are responsible for particular career preferences in the local contexts in question.

It has been partly recommended that EGC to participate in scholarship schemes organized by the ministries and collaborate with other NGOs such that students who do not have the wherewithal be given a chance in accordance with the SDGs of equity and education for all (UNESCO, 2005). The current assessment schemes in our schools in Cameroon are focused on assessing lower cognitive attributes most often than not, at the detriment of higher order such as creative and critical skills. UNESCO advocates for 'improved' equity of access and of learning outcomes.

It has been observed that some taxonomies of educational outcomes such as McREL's and Finks Taxonomy of Educational Learning Outcomes supplement the BTEO given that the bloom is easier to assess objectives in the cognitive domains but then, leaves out a lot of domains that current 21st century skills require. Such skills as metacognition and interpersonal intelligence which are principles in Gardner's theory of multiple intelligence have been recommended as critical in order to cope with changes which globalization and technology are bringing exponentially.

As such, EGC in synergy with collaborators need to understand that 'knowledge' is not just about knowing the content, but however, that critical thinking and creative thinking excels when children are given the chance to explore their KSAs in varied creative ways. Such assessment schemes that promote creativity and critical thinking skills can include portfolios among other project and hands on activities such as laboratory work to assess students.

The emphasis on the nature of assessment stems from the fact that some educational institutions and teachers teach to the test, to cover syllabuses and according to the way learners are tested. So a bottom up approach to influencing the status quo is to reorganize assessment schemes. This in inevitably will affect the way learning takes place, in order to gain competences and not just to pass in exams (Nenty, 2006).

Although the teacher/counselor may not look influential in terms of school policy and decision making, they however are forefront liners in the implementation of educational policy. They are the ones who translate text into practice. As such EGC should look at these keenly as agents that can work in unison with collaboration to imbue in the learner's quality education through such processes as change in assessment strategies and teaching methods. This may involve more sacrifice on the parents and school as a whole, but the overriding fall outs outweigh the burdens.

Career related discrimination among sexes

In 1999 more than 60% of women in the United States of America were in paid labor. These women received 77% of what was paid to men in this year. Some people would argue that men and women concentrate on different occupations, reason why there is a pay difference. In professional occupations women are less likely employed in some field as engineers or computer scientists. (U S Bureau of Labor Statistics, 2006)

However, even when we adjust for occupation there is still a difference in earning between men and women. Women earn less than men almost for every occupation. There are differences in educational attainment between sexes, but this does not account for difference in earnings. In 1999 male high school graduates working full time received $30160 while females received $21060. College graduates working full time received $50804 and 38450 for males and females respectively that year (U S Bureau of Labor Statistics, 2006).

A possible explanation could be that less skilled jobs for men such as construction are unionized, while those for women such as waitressing are non-unionized. Women are discriminated in three ways in careers; at hiring process (less prestigious jobs are likely given to women), unequal wage policy and promotions (men are more likely promoted than women). There is no explanation for this observation. Some argue that men and women do not perform equal work so there is no equal pay. We would not argue that female bank presidents are paid less than their male counterparts, but that there are fewer female bank presidents (Provist, 2010).The table below shows sexual division of labor in the U S.

Table 8

Percentage of female workforce in 1983 and 2008

Occupation	% in 1983	% in 2008
Pre & kindergarten teachers	98.2	97.6
Secretaries	99.0	97.6
Registered nurses	95.8	92.5
Cashiers	84.4	78.2
Social women	64.3	68.4
Manager, medicine, health	57.0	79.2

Sales related occupation	58.7	72.7
Accountants and auditors	38.7	58.1
Financial managers	38.7	58.2
College faculty	36.3	42.3
Pharmacists	26.7	44.0
Computer programmers	32.5	28.5
Lawyers	15.3	26.6
Physicians	15.8	26.6
Dentists	6.7	19.8
Architects	12.7	17.5
Clergy	5.6	12.0
Air pilots	2.1	3.4

Source; US Department of Labor Statistics

These statistics are relevant in that a consciousness in the structure of labor in society which does not account for the population of women, will definitely be losing a lot, given that women constitute majority of the population in Cameroon. These statistics may not reflect the situation in Cameroon, but their purpose is to illustrate the kind of labor demographic data which is useful for students' career orientations.

It can be observed from table 8 that many masculine tasks seem sporadic, while feminine tasks are repetitive, boring and require long hours. It seemed that higher the esteem or prestige for a job, the more men in it (table 8). For example, people who work for a group are given more respect and so such social positions (chieftains, leaders of raids, shamans and witch doctors). The scarcity of valued skill, the value of a skill will ensure higher esteem. It has been assumed that anyone could learn most of the traditionally female tasks and not doing them too well will not be so costly (Lenore, 2007).

Male physical attributes-greater height, strength, speed or endurance of running-did no alone create those career non substitutable skills, rather, they were a biological foundation

on which the social training of males was created. As a consequence, even an unusually strong woman would not have the chance to show that she could substitute for a man. The powerful result is that men's activities have been ranked higher, not because of clever manipulation, but because their contribution has been viewed as crucial (William, 2010).

Table 9

Esteem or job prestige

Profession and lower white-collar occupations	Percentage
Urban university professors	93
Mathematicians	91
Physicists	89
Biologists	89
Firm lawyers	85
Lawyers	83
Journalists	82
Church university professors	77
Working Class Occupations	
Skilled printers	52
Paper worker	42
Skilled autoworker	41

Textile worker	31
Unskilled steel worker	21
Cross section	43

(Some work in America, Task force, Department of Health Education and Welfare, Cambridge, Mass: MIT, 2001 P16)

In Soviet Russia this year, 75% physicians were men and there were rarely female professors of medical specialties. Nowadays it is hard to find more than 10% professors of a major department in the US to be women (Murdock & Provist, 2014). The table below shows various countries and the % of men and women in the labor force (of age 14 and above).

Table 10

Comparison of percentage of men and women in labor in somecountries

Country	Year	%Men	%Women
Canada	1974	76.5	40.0
Czechoslovakia	1970	72.9	54.1
Egypt	1966	81.1	3.8
Finland	1970	74.3	48.8
Germany	1970	79.7	37.9
Great Britain	1971	81.3	42.5
U S A	1970	74.7	40.5
Yugoslavia	1971	77.9	40.7

(Year Book of Labor Statistics, International Labor Office).

Observe that the nations did not differ much in % of men in the labor force (72.9-81.3). However, the % of women varies considerably. In Egypt married women are not encouraged to have a career, 5.8% (see table). In communists countries like Czechoslovakia (54.1%) women are encouraged to work or have a career. However, now that more women are working; they nearly have a monopoly of some careers such as nursing, social workers

and librarianship (Year Book of Labor Statistics, International Labor Office 2007). The relevance of these statistics is to show the demographic distribution of women among countries and how their religious orientation affects the career profile of women. It is in this light that the guidance counselors should understand the impact that societal systems have on the career orientations of women, and how critical their role is as counselors. If religion can have this much influence, needless should we say that education can also have that impact, as what people believe is based on what they know.

In the subsequent paragraphs, we will look at how age, academic competence and socieoeconomic status affects career orientation. This is important to counselors as they broaden their horizons with respect to other determinants of career orientation. When they understand some of these factors, they stand a better chance to play their role as counselors in helping students make informed choices.

Age and career orientation

According to the AJOL, not many undergraduate university students in Nigeria apply to study librarianship, unless as a last resort. A study (Kin Nwalo 2008) investigated the influence of age, gender, subject background and predisposing factors on the admission choice of undergraduates in Nigerian library schools. This was to allow for a better understanding of the circumstances surrounding the admission choice of this set of undergraduates in Nigerian universities. The study adopted survey research design. In all, 1,228 students from eight, proportionally stratified Nigerian university library schools selected by proportionate sampling were surveyed; based on the population of students per library school and for every class involved in the study. Secondary data were obtained from the students' admission records. The questionnaire was validated through expert advice and pre-test. Students from the Federal University of Technology, Minna Library School were involved in the pre-test. Chi-square statistics were used to test the study. The study concluded that the choice of library and information science as a course of study was influenced more by the identified admission predisposing factors, like age, than other factors.

Furthermore, a comparison of 121 mature-age and 270 normal-age entrants who graduated from the University of Queensland Medical School between 1999 and 2009 showed that mature-age entrants were some 7 years older, were more likely to come from public (state) schools and less likely to have parents in professional/ technical occupations. Mature-age entrants experienced greater stress throughout the medical course,

especially with regard to financial difficulties, loneliness/isolation from the students and family problems (a greater proportion were married with children). While whole-course grades were similar in both groups, normal-age entrants tended to win more undergraduate honors/prizes and postgraduate diplomas/degrees, including specialist qualifications (Harth, 2009).

Evidently, age plays an important role in the career orientation of students. Programs that require more years, like medicine and aeronautic engineering, tend to have younger entrants than older entrants. On the other hand, older entrants (especially those from low SES), would most probably prefer one and two year professional certificate programs.

Occupational orientation caused by academic competence

Bandura's (1986) general social cognitive theory emphasizes the means by which individuals exercise personal agency in the career development process, as well as extra-personal factors that enhance or constrain agency. In particular, his theory focuses on self-efficacy, expected outcome, and goal mechanisms and how they may interrelate with other person (for example, gender), contextual (support system), and experiential/learning factors (Robert, 1994).

Social cognitive career theory (SCCT; Lent, Brown, &Hackett, 1994) emphasizes cognitive-person variables that enable people to influence their own career development, as well as extra-person (e.g., contextual) variables that enhance or constrain personal agency, for example, textbooks for students.

Textbooks have been said to contribute to career orientation of students. According to research perspective, 20% of illustration pictures in 1st grade textbooks were girls. 6% of these are adult women. Eventually, in 2nd grade the illustration of adult women felt to 1% in science textbooks. This may be overlooked, but the impression usually driven home is that women have no role in scientific knowledge, that all scientists are male. Girls are classified in mathematics text books as domestic or emotional (William, 2006).When boys are shown in textbooks; they are actually involved in experiments; looking through microscopes, pouring chemicals and experimenting. In contrast, when girls are shown, they observe. They are shown smelling soup and perfume, looking at rock, thermometers and their sun burns.

Although our knowledge of women in science is very incomplete-because of the burdens they have had in gaining recognition for their work-at a minimum the science books

could mention, Marie Curie and Marie Leaky. Instead sciences give children the impression that no woman has or can play a role in building our scientific knowledge. The scientific world is presented as a masculine domain: all scientists are male, only men do scientific work.

In some textbooks (mathematics) most males are shown as mathematically competent. Girls are shown as baffled, by counting to 3 or 20. These 'dumb girl' images are not only derogatory and insulting to a girl trying to learn mathematics, but they clearly contradict reality, for girls do better in mathematics than boys in elementary school. Adult women are also stereotyped: they deal only with math problems of dividing pies and shopping, and some are portrayed as mathematically incompetent. It seems ironical that housewives –who use so much math in balancing bank accounts and managing household budgets are shown baffled by simple addition (Shelly, 2014).

Socioeconomic status and career orientation

Students from low Socio Economic Status (SES) are still unrepresented in higher education, especially in universities with four year program. Students with this status are still paid less attention as research tends to focus on mainstream. Marybel Walpole carried out a longitudinal study on the effect of SES on career orientation in 2009, investigating college experience outcomes for students with low SES. Utilizing data from a longitudinal data base, she observed that students from Low SES engaged in fewer extracurricular activities, worked more, studied less, reported lower GPAs than their high SES peers. Nine years after entering college, the low SES students had lower incomes, educational attainment and graduate school attendance than their high SES peers (Walpole, 2009).

Student's socioeconomic status is a powerful determinant to their career path. Students from poor homes will less likely attain a standard educational institution. Colleges like those of piloting, dentistry, medicine, aeronautic engineering, and petrochemical engineering are expensive to afford. As such it will be less likely to find a student from a low SES in these colleges. (Leslie, 2009). After careful observation at the table 2, on job esteem, it is evident that the jobs with higher esteem require longer years of education, while those with lower esteem require less years of formal education. A student from a higher SES can 'buy' his way into becoming a medical doctor or petro chemist. Again, students from a low SES prefer to work as soon as they can, and would not be able to continue school, given

heavy financial limitations. On the other hand it is easier for children from high SES to stay longer in school (Leslie, 2009). This partly explains why people from high profile jobs are likely those from high SES (McDonough in 2010). Research also shows that the quality of parent child interaction contributes to career aspirations of the child (Leslie, 2009).

Why people change their occupation

People in modern society are generally encouraged to aim higher than what they can in fact achieve (Samuel, 2014). Though most people could achieve higher, the rewards of extra effort are not usually sufficient. When people decide that payoffs in esteem are not likely as great as hoped (earlier or later in life) several choices are open.

1. To remain in the same activity but accept the lower rank or prestige offered there
2. To move into somewhat different activity where the rewards may be about the same or lower
3. To use very different talents that may yield as high or higher rewards and esteem

- Cases in first category include employees who have no hope for promotion. The person who hoped to be governor may not leave politics but may accept a modest job in a government bureaucracy.

- People in the second category constitute majority. Someone who wanted to become an actor may move instead into the activities behind the stage. This movement allows people move to positions within their reach in society and contribute to better wellbeing.

- The third people who fail or are highly successful that may move to different and highly rewarding activities. Some scientists move out of research to higher level of university administration. An actor failing to achieve may enter politics. A plumber who is no more than adequate as craftsman may become a plumbing contractor, and success in that business brings money and greater esteem. People who succeed at first job have higher chances to move to different areas. However, people who fail at first career can equally achieve great successes at new ones. Allocation of prestige to different stages generates career shifting (William, 2002).

STATEMENT OF THE PROBLEM

Career counseling is a scientific process; having an introductory stage, working stage and a follow up stage. During the introductory stage of the career counseling, counselors are faced with trying to understand the clients, before they can progress in the working stage in which recommendations are made. However, if the diagnosis is not properly carried out, the counselor would have an incomplete picture of the clients Values, Interests, Aptitudes, and Personality (VIAPs). This would lead to inefficiency in the working stage where the counselor is expected to enable the client chose the right career pathways. There exist tools to carry out this kind of analysis, but the tools have been developed and validated with different communities. It is for this reason that the researcher dealt into the study. To produce a tool in the context of Yaounde municipality, which will be more contextually relevant by addressing local realities and to provide the counselor with a fast way of gathering information objectively about their clients.

The place of assessment tools in career guidance and counselling cannot be overemphasized. Teachers and students have one common goal in school; to enable students to acquire knowledge, skills and attitudes that can enable the students to socioeconomically insert into society. During teaching and learning, both teachers and students are concerned about what would become of the students. Namely; they need to acquire jobs, create jobs and solve problems in the environment and society at large. Generally, students would have conventional occupations in mind, which they would take up when they graduate from school. Since people retire from their jobs, younger generations also have to take up their roles as they retire.

If the number of people leaving their jobs were equal to the number of job seekers, there would be a balance and stable society in terms of jobs. However there is an imbalance due to more students leaving school or jobs seekers with respect to those leaving their jobs. The consequence partly is the stiff and unhealthy competition during recruitment processes and during launch of competitive entrance examinations into schools. Furthermore, student's performances in various fields may be compromised by lack of self-knowledge, poor motivation and their lack of knowledge about applicability of what they learn in school to various occupations. The problem here lies in the situation in which the student is unaware of the various opportunities available in their area of interest with respect to their personalities. Evidently, some people are more likely to survive in some environments than others.

Therefore, it is the place of CGC to enable to students or clients understand themselves, their environment and available opportunities for which they can become functional members of their communities.

One way to understand the client is by knowing their values, interests, abilities (aptitudes) and personalities. By understanding these VIAPs, about the client they are in a better position to be biased into career pathways that produce the best possibilities for them. Guidance counselors use various tools to assess client's attributes. These tools are sometimes validated in different contexts and populations. This necessitates that for the purpose of this population, English High School Students in Grammar Schools in Yaoundé Municipality, other tools are adapted or developed and their reliability checked, so that such a tool can be promoted or enhanced to the current work that guidance counselors are doing to help students achieve maximum satisfaction in their pursuits. If this is not achieved, Cameroon may not be able to achieve its 2035 vision to become a middle income economy, given that there will still be acute shortage of labor in STEM related occupations which are needed to build the industrial sector.

Justification for the study

This study provides a platform to address issues concerning testing such as the amount of time taken away from teaching and learning, over testing, contextual relevance, lack of readily available tests and will a readily available tool that can be used to help students correlate their aptitudes and achievements to their motivations. The SNAI and SMOPS are instruments that will take stuck of assessment strategies taking students perspective into consideration. The tools will support a process by which delegations will evaluate the assessments students are taking, determine the minimum testing necessary to serve essential diagnostic, instructional and accountability purposes, and work to ensure that every delegation-mandated test is of high quality, is providing the information needed for specific school and divisional purposes, and is supported by structures and routines so that assessment results are actually used and action steps taken that will help students. Principals will be encouraged to use this inventory to discuss the outcome with parents and the school PTA. The fouth objective of the study will illustrate the place of these instruments in addressing the issues of STEM related job vacancies in Cameroon (Giroux, 2005).

General objective:

To develop a SCAI for use in Career Counseling in Grammar High Schools (GHSs) in Yaoundé municipality.

Specific objectives:

1. To determine factors required in providing students with Career Counseling in GHSs in Yaoundé municipality, resulting in a SCAI
2. To determine the extent to which the SCAI is valid
3. To determine the extent to which the SCAI is reliable
4. To determine the extent to which the SCAI highlights man power requirements for the labor market in Yaoundé municipality

General research question:

For what use is the SCAI in Career Counseling in Grammar High Schools (GHSs) in Yaoundé municipality?

Specific research questions:

1. What factors are required in providing students with Career Counseling in GHSs in Yaoundé municipality that result in a SCAI?
2. To what extent is the SCAI valid?
3. To what extent is the SCAI reliable?
4. To what extent does the SCAI highlight man power requirements for the labor market in Yaoundé municipality?

General hypothesis:

Ho; A SCAI for use in Career Counseling in Grammar High Schools (GHSs) in Yaoundé municipality would improve career counseling.

Specific hypotheses:

Ho1; Values, Interests, Aptitudes and Personality (VIAPs) are factors that do not provide a SCAI effective in improving Career Counselling.

Ho2; The SCAI is not valid for Career Counseling in GHSs in Yaoundé municipality.

Ho3; The SCAI is not reliable for career counseling in GHSs in Yaoundé municipality.

Ho4; The SCAI does not highlight man power requirements for the labor market in Yaoundé municipality

Justification of the study

The study was necessitated by the non-accessibility of easy to use tests that have been developed in Cameroon for use in Cameroon. When tests are developed elsewhere, they can be adopted for use in other contexts. However, the training that Cameroonian guidance counselors receive may not permit them to modify these tests in ways that provide reliable information. It is partly for this reason that the SCAI was developed. Furthermore, the SCAI is an attempt to digitize counseling service and provide a data base for further research, given that instruments produce enormous data for other educational purposes. For instance, at a point in time, a school needs to have a data base of students' interest for various careers. Basing on the available tests, it was necessary to adopt some test items and verify if they operate well for students in Yaoundé municipality.

Again, it is important to tract students' trajectory because it reveals and enables educational planning in the short and long run. At a given point in time, such information should guide employers on the demand supply situation concerning the labor market. Therefore, it is hoped that EGC should combine their ingenuity with this SCAI to address deficits in STEM related occupations in Cameroon. Most importantly, the SCAI is a research provoking concepts that should serve as a basic research tool for EGC in career orientation.

Furthermore, when tests are available, they often contain copyright laws that limit their use for the purpose in question. Without this limitation, the current test will allow counselors the latitude to experiment with sections of the test to suit their intended objectives. This is possible since the test sections are disintegrated from each other and allow the possibility to use them separately for specific purposes.

Scope and delimitation of the study

The purpose of the study is to develop a SCAI which can be used for the orientation of secondary school students in Cameroon, which has a face and construct validity, and which is reliable. The study therefore looks at one function of educational counseling in secondary schools in Cameroon, career counseling. In this career counseling, the study explores the function of testing by developing an instrument to address the deficit which exists.

The research design that is employed in this current study is a cross sectional survey research design, in which the Delphi technique is used in a two cycle to design questionnaires which are used further to design the final instrument. Theories employed in the study are Vygotskys Socio-cultural Theory, as well as Item Response Theory (IRT), Reliability and Classical Test theory. These theories are explored to provide the background on which the testing practice is built. The study does not investigate the nature of counseling programs, but rather addresses the issue of testing in career counseling in secondary schools in Cameroon.

Significance of the study

The study will be of significance to the following groups of people.

Researchers

Other researchers who are interested in addressing assessment issues in EGC will find the study important as it will contribute theoretically and empirically to the literature base, providing a spring board in various domains for further research.

GUIDANCE COUSELORS

It will provide a tool; the SCAI, which will empower EGC as follows. It will help empower EGC to carry out basic research. By administering the SCAI, the EGC is provided with a platform that allows them with a repertoire of information about students KSAs. As such they stand a better position to advice and counsel students from an empirical perspective.

Secondly, the SCAI is a tool that can easily be administered to students, allowing EGC to give feedback that is evidence based. As such, the SCAI is an impetus that adds to the professionalization of career counseling. This is important when there is need to transfer a student and his or her records, as well as when students' progress to upper classes, as it provides their background information.

STUDENTS

Students will receive more credible advice from EGC. It will help gauge between students' aptitudes, achievements and motivation in relation to their present and past dispensations. The tool will reveal areas where the students' competencies tally to various realms of disciplines. Furthermore, the tendency for parents to impose on a student's career based on sentiments will be attenuated, given that there will be evidence to support the choices of both the student and the EGC.

PARENTS

The results from testing will engage both parents and their children on long term and short term planning for the career needs of the child. The tool to some extend should enable some predictions on the child's career pathway.

EDUCATORS/ADMINISTRATION

The study should help school educators to orient students in various walks of life in a concerted effort that requires information seeking about the labor market and placement of students as interns or partner-shipping with the community to provide modeling through field trips, projects, mentorship and motivational talks to boast students aspirations and make them more proficient in materializing their career dreams.

Definition of key terms

Career: refers to the path way involved in pursuing a particular profession.

Profession: a permanent occupation after training.

Guidance and counseling: refers to the professional assistance given to students at group or at individual level in schools to cope with their personal issues, academic and career aspirations.

Students Career Assessment Inventory (SCAI): this refers to a test that identifies the students' needs in terms of what to learn and what to become.

Career Guidance Counseling (EGC): refers to the kind of counseling that is geared towards addressing students' learning needs with respect to what they can become.

Chapter summary

This chapter laid the background for the basis of this study. By introducing the study from contextual, conceptual, historical and theoretical backgrounds it allowed an accommodation of readers with different backgrounds and points of views. The historical background discussed the evolution of education in Cameroon to x-ray how the educational objectives have evolved and metamorphosed over time. This places the reader on the current advocacy for a more technical approach to education which emphasizes the acquisition STEM skills to accommodate STEM related careers. The conceptual background briefly introduced the concepts employed in the study by giving brief descriptions of what they are. The theoretical

framework then briefly introduced theories that form the backbone of the work, which are expantiated in chapter two. The context of the work is discussed to show how a more scientific approach to career counseling is more beneficiary, in the planning to provide the man power requirements needed to develop Cameroons infrastructure before 2035.

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

This chapter examines the literature on the assessment of guidance and counseling needs among secondary school students. Since research on guidance and counseling needs has been conducted from different perspectives with regard to purpose, participants, design, methods, instruments, and projected outcomes, this chapter evaluates the implications of these studies. Other aspects such as the practicality of location setting, social and political systems, and even applicability of replica studies in Cameroon are also discussed.

Taking stock and then taking action requires significant commitment. A principal and/or school board must commit to the process and timeline, frame the purpose and importance of the effort for staff and school stakeholders, and support staff in prioritizing the work. While a suggested process for using the assessment inventory is described below, a few overarching issues leaders should keep in mind are:

• The inventory tool is only one element of a thoughtful longer process that both engages productively with concerns about testing and leads to real changes in testing time. The process begins before the inventory with recognizing stakeholder concerns and framing the usefulness of an inventory process. It continues afterwards with implementation of recommendations.

• The inventory tool is a suggested template, but regions are free to modify the tool to better meet their needs.

• The inventory is not a one-time event. Regions should regularly re-examine their assessments in light of changing needs and improvements in available assessments.

CONCEPTUAL FRAMEWORK

Career Development (CD)

Career content knowledge entails planning on how to equip learners with skills and attitudes that can allow them embrace and fit into various careers (Sharf, 1997). Though; planning a career identity, setting fixed goals and acquiring a plan of action, understanding shifts in career stereotypes, analyzing skills and interests required for effective school work transition, the learner develops in their career.

Learners through career development are in a position to make informed decisions. Work, community, family, leisure and study have been perceived as having an important bearing in the field of career development (Super & Neville, 1984). Through CD, students come to understand the relationships between personal qualities, education and training and the world of work. It entails nurturing the students dream and defining a pathway through which the dream can be achieved (ASCA National Model, 2003; Gyrsbers & Henderson, 2006; Paisley & Hayes, 2003).

Some authors have identified that CD involves lifelong planning which involves formal as well as informal education channels, throughout all levels of education (Feller, 2003; Obadofin, 2001). Goal setting, academic counseling groups and career center development were some strategies suggested by the ASCA Model (Fusick, 2004).

Some traditions and customs dictate the nature of CD in Africa. The impartment of moral values for example to young people is regarded as responsibility of the elderly (Mbiti, 1975), and may not put schools under the pressure to take up this responsibility. The situation in Africa has been observed to differ from that in other parts of the world. The situation in Africa characterizes a minute number of qualified counselors giving counseling which is sometimes in competition with a traditional counseling network with a deep rooted structure, extended family cultures, clans and beliefs in supernatural and medicine man (Mfofu, 1994).

As such there may still be disconnecting at establishing mainstream counseling albeit commitment to cultural traditions that are rooted in African communities (Buhrmann, 1985). Due to the disruption of African traditional institutions during the colonial era, there remained the conflict in terms of values. Some researchers have delved with the issue by trying to understand the source of conflict in values in terms of social and personal problems (Bourdillon, 1987; Mbiti, 1975).

While for example, Kenyans have contented to reserve their traditions and customs, they have seen the need to move with the changes that science and technology have brought. In establishing a counseling program therefore, there is need to first of all understand the structure of the various regions in terms of beliefs and perceptions as well as the place of economic, social, religious, customs and traditions. By considering some of these factors in developing GC programs, young people have to be understood in such a paradoxical situation.

The pressure to study in higher anxiety in Nigeria for example resulted from the challenges to strive for socioeconomic sufficiency, stability and supremacy (Ahia & Bradley, 1984). As such, the government of Nigeria responded by creating GC programs. Although there is need for contextual changes that would improve peoples' lives and make the GC programs more effective.

Career patterns in South Africa for a long time were predictive before the break-up of the apartheid era, in spite of the fact that much remains unchanged (Mathabe & Temane, 1993). The changes have occurred partly due to career commission's recommendations which continue to operationalize career development theories in terms of 'an acquisition of conglomerate of skills, functional in various life roles' (Mathabe& Temane, 1993).

Some problems encountered in the effective implementation of CG programs in South Africa included ineffective training for teachers, lack of career identity in school systems and the tendency to look at careers as a future issue, therefore bringing a disconnect with learning, as career is looked upon a future thing. There was evidently need for personal, educational and social attendance to students needs in the study conducted in high schools in Bophuthtswana in South Africa (Mathabe & Temane, 1993).

Among the needs identified, human relationships, assessment of modern and traditional values, career guidance, moral education, community identity, parental involvement, curriculum assessment and adjustment were in upper fond size. He needs of students in Nigeria, Kenya and South African students may not differ significantly given their colonial heritage. In the case of Cameroon, the dual educational subsystem places students in more rigorous career pathway. Due to the differences in cultural backgrounds resulting from the dual colonial heritage in Cameroon, the competing ground may not be similar like in afore mentioned countries in that although the two educational systems are not very parallel, both English speaking and French speaking graduates are compelled to compete on the same field.

Students Career Guidance Counseling

According to UNESCO, there are four key roles and areas that concern students CGC. These include; getting students acquire greater awareness in their values, interests, abilities and personality styles; linking students to sources in that they may become informed about occupations and professions; getting individuals fully involved such that they chose a career path that is congruent to their personality; helping individuals make balances between career transitions and becoming life-long learners in their professional development. People have chosen career counseling in order to help individuals chose and develop their careers. When students graduate from high school, it becomes confusing, especially when their points permit them to join engineering or medical departments for example.

Career development is a lifelong activity. It is important that if one has chosen a particular career, he/she has to continue to enhance the activities that keep them on the competitive advantage in that field. For example, if you have chosen teaching as a career choice, it becomes imperative to have; efficient knowledge, effective communication skills, mastery of subject matter in question, background knowledge in sociology, philosophy, history and psychology of education.

It becomes imperative in the field in question that one should become a possessor of his career path, given that it is a crucial aspect of one's life. One would need to identify goals and objectives, what you need to achieve and the passage way to do so efficiently. Furthermore,one's professional development and management skills go hand in glove and therefore one needs to develop a career plan; requirements, capabilities, interests and so on. You would need to be intelligent on carrying out effective career conversation.

Consequences of Career Guidance Counseling

CGC has metamorphosed over the years. The purpose was to assist youths to identify jobs for which they were suited. Due to the eminent fallouts, vocational guidance schemes and units were selected and added to curricular programs. Both workers and students have benefitted enormously from the CGC programs, however both groups benefit differently from

the programs (Capuzzi & Stauffer, 2012)

Career and Gender

One strong determinant of career influence is the school, through which students come in contact with peers, teachers, culture and content. There has been observation that through conscious and unconscious behavior, there has been career biasing based on gender (Francis & Skelton, 2001). School research has addressed more recently, masculinity and feminism. This understanding has broadened and deepened peoples understanding of how this construct affects the division of labor (tasks) and symbolism (some content regarded as masculine) (Cornell, 1996).

Other research has noted that home economics, business education, vocational agriculture and some classes have been biased by gender. Cooking, sewing, secretariat skills, childrearing are examples of societies' expectations for girls. On the other hand, boys were tilted towards mechanics, woodwork and related vocational skills. Customs and official school policy have promoted these segregations (Common Wealth, 2014).

The type of education pursued by boys and girls is affected by perception of what boys and girls are good at, which is affected by stereotype about gender abilities and roles. Such factors as school environment, teachers' beliefs, style of course delivery, content, syllabus, assessment procedure, educational experience and family background have continued to be strong determinants in the type of career roles and expectations in schools in Cameroon (Common Wealth, 2014).

The Common Wealth (2014) noted that the fundamental role task is for EGCs to assist students in their choice of career. This role cannot be overemphasized, given that students are usually socialized for particular purposes in society. At the time they leave school, they are expected to be shaped through the acquisition of particular KSAs. The function of the EGC involves among others, testing the students to identify their occupational preferences and attitudes as well as achievements. They also advice or counsel students on the type of postsecondary education to pursue (Eitzen 2000; Common Wealth, 2014). The orientation however has been noted to stereotype girls away from certain college courses such as mathematics, science and engineering (Common Wealth, 2014).

Aptitude tests were observed in themselves to be sex biased, labeling occupations as either male or female. The Common Wealth (2014) noted that despite changes in testing, counselors may unconsciously channel too much to traditionally gendered choices.

Parental Influence

Anderson et al (2006) observed that preferences of sons over daughters have continued to dominate in many African countries. This is usually because the son is expected to perpetrate the family name, and because girls are even thought of as belonging to a different family since they are expected to eventually marry. Although the perception is changing, its slow and boys are still likely to be sent to programs that involve more years than girls. These preferences have created sibling rivalry and psychological problems for girls (Common Wealth, 2014). Such techniques as ultrasound detection in hospitals to determine the sex of the child is among other methods that people still continue to be preferential to sex which could cause many frustrations.

Psychometric tests and career counseling

According to Super (1990), what we work for, what we work, how we work it, and the general ethos of the work are inherently us (Gini, 1998). An occupation is what we do in order to maintain a particular lifestyle. John Paul II asserted that our occupation helps us make something of ourselves. As such, they mark us, concretize us and define us (Gini, 1998).

Our occupations categorize us. We are what we do. As such our occupation determines the way we interpret the world and what we choose to see (Gini, 1998). People as such need their occupations to express themselves, in the manner that children need play to fulfill themselves. Critically, at one point in life, a child has to state that he or she is this or that (Super, 1957). As such, through career knowledge, people are able to make career choices. This is one of the most important decisions that people would have to make (Dalton, 1991).

According to Brooks (1996), career counseling should be formulated such that people acquire a way of life and not just simply a way of living. As such CC should facilitate conditions that enable the individual make best career choices (Sharf, 1997). Therefore, CC should aid people understand themselves. Difference in talent must be acknowledged and individuals assisted to nurture these talents.

Summarily therefore, CC entails identification of a client's problem and determining the best strategy to overcome that problem. When this is deemed successful, the counseling is then terminated. In effecting an intervention, CC enhance a counselor's knowledge of

occupations as well as expose the social, economic and contextual influences using psychometric tests.

Psychometric test interpretation

Psychological tests help the people; justify speculation, discover self-information (abilities, interests, values, needs and personality (Gysbers et al, 1998). As such, there is the need to provide supporting information to enable the user to administer, interpret and evaluate the test results (Walsh & Betz, 1995). This is done by ensuring that the tests are reliable and valid, have appropriate items content and norms, and that the test instructions and interpretation protocol or methods and procedures are clear (Foxcroft, 2001).

It is noteworthy that guidelines guide lines exist for application of psychological tests, but that relatively, little guidance exists for sharing test results and interpreting them. Although Holland (1997), Dorn (1988) and Super (1983) approaches advocated a passive role for the client, Super's (1983) approach advocated for an active role by the client in the interpretation and sharing of test results.

Given that a dearth of knowledge exists with respect to test interpretation styles, Duckworth (1990) had cautioned that if focus is not shifted to various psychological test interpretation styles, career counselors may struggle before getting insight into the client's situation. It was in this light that; Hanson, Claiborn and Kerr (2001) encouraged active participation by clients in test interpretation to enhance counselors understanding.

Assessment for learning (AfL)

The most fundamental way through which change occurs in human growth and development is through learning (Nenty, 2006). By gathering information through a variety of methods, analyzing and feeding the results back to learners, parents and administrators for one type of decision making or the other, learning can be assessed. This is referred to as formative and summative assessment when done at the process and output stages of learning respectively. This type of assessment aimed at documenting the amount of learning with variation in degree is referred to as Assessment of Learning (AoL).

AfL is the type of learning aimed at provoking, maximizing and ensuring learning. Formative assessment results are often combined with summative results to make some type of terminal decision about learners. These decisions are never about learning itself. Was it the case, consideration would be made about conditions under which learning took place or the issues which hindered or enhanced learning. No matter if it is summative or formative

assessment, if it is high stakes setting, it becomes a great intimidator due to the high anxiety it causes in the learner which hinders learning (Nenty et al, 2006).

Whereas AoL is concerned with the extrinsic product of learning, AfL is concerned with the factors that underlie the learning process and how this information can be reinvested in the form of feedback to improve learning. Current assessment practice places learners in a position where they tend to find out how they can get maximum scores on an assignment rather than how they can use the assignment to improve an understanding of the course material.

Results from assessment are an effective precursor for behavior change within and outside the classroom as they can motivate or demotivate learners. Pessimistic feelings and lack of confidence in oneself can result from consistency in poor performance in a learner. With the feeling that assessment should ensure success at learning, learners tend to withdraw from the learning process.

Learners can fail not because of lack of ability, but because the right ingredients for learning are lacking and because the science of learning and learning techniques have not been assessed and the results used to improve learning. Improvement in the cognitive fibers of learning and what makes a learner want to learn and how such factors can be manipulated in the psychological and physiological classroom environment to provoke and enhance learning is the major preoccupation of AfL.

Assessment if meant to help learners must be designed to improve learning and not just to document the amount of learning that has taken place. Assessment designed to document performance and not necessarily if learning has taken place will find a learner failing. Since AfL is aimed at ensuring learning which sustains performance, AoL is of less importance since it simply documents performance.

Withoutappropriate assessment learners who perform may even underperform as they would have done better if assessment results were fed back into the learning process to maximize learning. The processes of learning itself must be closely examined to understand what motivates or enhances learning and factors which hinder learning isolated and assessed and results used for the purpose of learning.

Continuous Assessment (CA) shares a great deal with AfL but they are different. CA does not involve the conceptual or theoretical aspects of AfL but operationalizes AfL. AfL is research-provoking concept which sustains research by which means learning can be improved. Theories of learning are keys in providing foundations on which the improvement

of learning can be designed. AoL targets performance while AfL targets how the process which results in performance can be improved.

AfL 'is the process of seeking and interpreting evidence for use by learners and their teachers to decide where learners are in their learning, where they need to go and how best they can get there' (ARG, 2002). As such, aspects of the hidden curriculum such as motivation and attitude are also assessed by retrieving information from the learner in a comprehensive manner. It also deals with assessing the non-performance components of learning since not necessarily all learning leads to change in behavior.

AoL is inferior and may lead to teaching for assessment and not teaching for learning thereby limiting its scope without always providing learners with a clear understanding on how to improve in their learning (Birenbaum et al, 2006). As such, AfL is multidimensional in nature, measuring the learners progression, informing the learner about their progression, areas that need improvement and ways by which to improve. Therefore, there is need for a paradigm shift from AoL to AfL.

Qualitative measures obtained through AfL provide information on issues concerning learning which are not revealed by conventional tests scores (McAlpine, n.d). Learning styles used by learners, their perception about the importance of the task, the approach taken, learning strategies and study skills are some determinants as to whether the learner is intrinsically motivated to do an in-depth study. In this light, AfL differs from CA.

The concept of CA is narrower in that it entails frequent summative assessments given at regular intervals to find out which students have not yet mastered the criterion (Stiggens&Chappuis, 2006). This therefore is formative assessment which informs teachers about where more work is required. As for the learner, their marks and remarks made by teachers inform them about their performance but do not inform them about how to make progress towards further learning.

> AfL goes deeper than identifying incorrect answers and pointing out to students. It should identify the nature of the concept or rule that the student is employing that governs his or her performance in some systematic way (in most cases, the students behavior is not random or careless, but driven by some underlying misconception or incomplete knowledge) (Glaser, 1981, p.926).

We can assess many aspects of teaching such as teacher enthusiasm, questioning techniques, demonstration techniques, teaching method, teaching skills and so on in order to improve teaching. Similarly, AfL argues that we can do the same with aspects of learning to improve learning. Teachers are therefore charged with the responsibility to find ways to

improve upon these intrinsic learning aspects to build confidence in learners and maximize learning.

Stiggens&Chappuis (2006) add that national standards should be disintegrated to classroom learning targets which in turn are broken to dependable classroom assessment aspects which are integrated into classroom instruction. With this method students are expected to understand success in a similar way and are able to watch them grow. Success here means students can see where they are now, and understand where they are supposed to be and what to do to get there.

According to ARG (2002), AfLrecognizes all educational achievements, develops the capacity for self-assessment, helps learners know how to improve, promotes understanding of goals and criteria, fosters motivation and is incentive and constructive. By articulating objectives in a language at the level of the learners, the learners are motivated since they know exactly what is expected of them. Teachers have to pinpoint learners strength's and advise them on how to improve.

By considering learners partners in the assessment process, they are given the chance to assess each other's work and assess themselves. Self-assessment is a cognitive strategy that allows students to be more aware of their thinking and learning process, encouraging deeper approach to learning. Teachers comments should be sensitive to learners confidence, enthusiasm and motivation since learning is pivoted on learners attitude and perception about the content material, the teacher, his/her peers and self (Klenowski, 1996).

Competencies in Assessment for Learning

Stiggins (2002), Stiggins and Chappuis (2006) stipulate that teachers must have a deep knowledge of why they are assessing the students and of what consequences are to emerge from the process, who will be affected and of what information is helpful to the process. As such, the degree of achievement set for the students must be very clear to the learners with a clear algorithm on when and how the learning targets will be assessed.

Secondly, learning targets should be translated into assessment that leads to valid results. Meaning the leaners must be assessment literate, having a clear picture of assessment protocol and practical skills that permit them meet the standards. Thirdly, assessment results should serve as feedback be it at summative or at formative level and should therefore be communicated effectively and on time to the learners by feeding the information into effective communication systems that are familiar to the learners.

Lastly but one, at the time when there is still time to make use of the feedback to improve their leaning, learners should be given descriptive feedback. As such, instructions

have to be tailored to align coherently with results from classroom assessment. Furthermore, learners must be taught appropriate learning skills and study strategies that will allow them control their own academic success by setting goals, self-assessment, reflection, keeping track and sharing their learning. As such the learners are inside and not outside the assessment process and watching themselves growing.

Social perception

Social perception has to do with how an individual views one and how one views others. It's important for teachers to be able to view their clients as they are. People use various means to 'see' others. However, how they view others may be very different from reality as a result of erroneous pre-misconceptions from past experience. Some of the biases that can affect the way we characterize others due to reasoning error are briefly discussed below.

Halo effect; occurs when a general impression is drown about someone based on a single characteristic. For example, a teacher draws a conclusion that a student in question is smart simply because the student is neat. Another example is judging that a student is intelligent because he/she has a good handwriting.

Horn effect: Thorndike in 1920 also asserted that one suffers from Horn effect by evaluating an individual lowly on other characteristics simply because the individual has scored low on a trait which is deemed critical. For example, some studies have found an obesity bias in which obese people were associated with laziness (Schwartz et al, 2003).

Contrast effect; people also judge others on a characteristic, by comparing them with others who rank higher or lower on that particular characteristic. A study conducted in 1987 by Wedell, Parducci, and Geiselman evidenced that when an averagely attractive person was compared with a very attractive person, the latter received lower grading's compared to being compared with a less attractive person (Thornton & Moore, 1993).

Projection; projection occurs when we attribute our beliefs and attitudes onto others. Sigmund Freud (1894) and his daughter, Anna Freud (1936) explained that this was a defense mechanism to avoid guilt and anxiety. In other words, we can ascribe the negatives we find in ourselves onto others thereby projecting our self-esteem.

Stereotyping; this word has come to mean ascribing abilities, traits, or behavior to groups in order to make generalizations. Stereotype is conventionally defined to mean treatment of groups according to generalized traits (Bargh, Chen & Burrows, 1996). Race,

religion, gender, disability, physical appearances and occupation are some factors that can activate stereotyping as suggested by social researchers. A common type of stereotype is associated with gender and leadership. Traits associated with leadership are 'masculine' in nature. Courage, assertiveness, persuasiveness are masculine characteristics which may explain why people are less likely to accept a female leader. In as much as we use stereotypes to simplify our world, we must not turn to our prototypes and ignore relevant information.

Pygmalion effect; this term describes consistency between an individual's perception and others actions, whether or not it is inaccurate (self-fulfilling prophecy). Teachers and parents need to understand the effect of their expectation on the students. With this, they can set realistically high expectations for students. By allowing students to rate their work, their expectations about their own work tend to be self-sustaining.

Impression management; this term describes an attempt to affect people's perception of us, by what we do, how we do it and what we say. People try to do this to have a positive evaluation of themselves by others. On its own, impression management is neither good nor bad, and is inherent in social life. People sometimes handicap themselves by placing obstacles on their path. When they succeed, they brag to have succeeded in spite of the obstacle. When they fail, they blame the obstacle (Giacalone& Rosenfeld 1989). According to Walsh (1998), people form impressions on others by controlling the information they send out and that which is received by the former. This could be conscious like during a job interview. But the school professional should be able to figure out impression management in the assessment situation.

The use of transcripts

A record is a documented proof of an event, transaction or item or activity that falls within the normal routine of an organization. A school has as part of its objectives to provide a learning environment. In order to perform this task, materials, personnel, infrastructure and finances are acquired. During the day-to-day running of the school, activities take place. New staff is recruited and some are transferred and so on. Indeed, the school may remain for decades, but the personnel and learners in the school keep changing over the years (Chefwepa, 2016). Therefore in order to transmit the school heritage to present and future generations, school records must be kept.

Records are therefore inevitable in an organization because they enhance accountability and provide proof of action. For example, when funding or other demands are made by school managers or teachers, they must be backed by records as evidence. Unless

the school can provide ample proof that there is need for more guidance counselors, teachers, didactics or a guidance room, higherarchy may not be in a position to allocate scarce resources to it if they do not deem it absolutely necessary. Therefore records play two main functions; provide justification for certain needs and provide a clear picture of what is available and what is necessary (Chefwepa, 2016).

The need for a systematic school-record keeping cannot be over emphasized given that part of the most invaluable information of a school is provided by school records. Once this need is identified probably by policy, the next important issue that arises is being able to manage the records (NOUN, 2006). This specifically entails the storage, retrieval and use of information-"the application of systematic and scientific control to all the recorded information that an organization needs to do business." The inability to keep and properly manage records results in difficulty in monitoring educational systems and may partly be responsible for poor implementation of some educational programs.

Records are information. Chefwepa (2016) categorizes ten types of information. In order to manage information efficiently, it becomes imperative to understand its basic characteristics and functions. Information can be classified as action (which requires the recipient to act), non-action (which does not require any action by recipient), recurring information (which recur at time intervals), non-recurring (which does not recur), internal (which is destined for internal use), external (which comes from outside the school), future information (which concerns actions to be taken), documentary (contained in hard copies) and non-documentary (oral). These categories however, are not mutually exclusive.

The scope of record management involves; creation, use, storage, retrieval, protection, preservation and final disposal. Some schools may employ people specifically to manage records. When there is the bridge of information flow, the whole system may be affected. Almost everyone is involved in record management. This may include using the right form, preparing the correct number of copies and ensuring that the right copies are sent to the designated storage area.

Once a record is created, it becomes active and is referred to as an active record. It is in full use. An example is when the student is currently in school. In the second stage, the record is semi-active and may serve as a source of reference. In the final stage, called the inactive or dormant stage, two things can happen to the record. The record may be that which may be used in future, in which case it's safely stored and becomes an archive. If it has no future use, it can be discarded at this stage (Adebowale, 2008).

A record is usually examined through a process called appraisal in order to determine to which of the categorizations above to which it belongs. If records become myriad, it is more costly and cumbersome to keep them. Therefore appraisal permits the disposal of those documents that have become obsolete. Personnel responsible for record maintenance and scheduling specifically perform the following functions (Tajudeen, 2015).

Maintenance is a central role of record keeping. This implies, making sure that records are not worn out. Records with historical value are then retained and stored. Those that are obsolete are disposed. Records which are retained may be filled in a file in an order that eases retrieval. It's also important to place records with the same subject in the same file. For example, records containing information about students can be sub headed into admission, academic performance and so on (Tajudeen, 2015). This arrangement of records according to subject is called classification.

After classification, a coding system is important because it will ease retrieval of information. Some schools for example may classify information concerning pupils and staff according to alphabetical order. The files can then be stored in a drawer. These drawers also have to be labeled to show relationship between the files. When files arrive, they have to be indexed. This implies recording them such that it's clear when the files arrive and in what location they are stored. People using the files may not be very versed with the coding system and therefore it is important to list them in a chronological order.

In a nut shell, three important routine activities in record management are; indexing, check out (indicating when and where a file has been lent) and file maintenance. In order to carry out these routine activities explained already, physical requirements must be met. This involves providing infrastructure to support the records such as shelves and cabinets. In addition, personnel should be given basic training on record management.

It therefore becomes imperative to keep records and manage them scientifically, given that; they tell the history of the school, allow continuity in school administration, facilitate effective guidance and counseling especially in career and academic domains, allow higher institutions and ex-students to communicate with the school, provide information needed for decision making by stake holders such as ministries and school administrators and parents, provide information to the general community, allow communication between the school and other agencies of socialization and serve as a data bank on which researchers can work on in the advancement of knowledge (Hrach, 2006)

Before leaving this section, it is important to look at some specific records that are kept by schools as observed by Tajudeen (2016). The admission and withdrawal register is an

entry and exit record of students that pass through a college, including the details of their academic progress. The attendance register is a record kept in class rooms to keep track of student's presence and absence in the classroom. The log book keeps record of historical events that affect the school. The visitor's book keeps track of everyone that visits the school. Staff and student's personal files are a record of personal information of staff and students within the limits of ethical consideration. The corporal punishment book records students who involve in disciplinary issues and the nature of punishment given to them.

The Cumulative record folder is a store house of all information concerning the student's affective, psychomotor and cognitive development. Student's report cards x-ray the academic progress of a student and become a transcript when years accumulate. Lesson plans and notes portray what the teacher intends to teach, didactic materials involved, details about class and activities involved. The scheme and record of work book show the work load expected to be covered within a particular time frame or annually. School time table is a yardstick that determines duration of classes and length of school day. The school cash register gives a clear picture of financial transactions carried out in the school. Transfer and leaving certificates mark official entry and exit of staff and students from the school. Health records show the medical history of the students and those students exempted from particular activities like manual labor (Tajudeen, 2016).

Roles of school professionals in assessment

The main thrust in this section will be to describe the teacher's role in the area of assessment. One crucial role of the teacher is assessment. Assessment here refers to procedures and methods used to get information to describe human behavior (Shertzer and Linden 1979). However assessment is a very controversial area in education (Chafer, 1995). Various schools of thought have emerged in education over the years, invariably affecting their assessment practices.

Researchers have sought roles expected by employers of teachers (Schafer and Mufson 1993). The society consumes school products. One most important of such products is the students whose skills, knowledge and attitude are transformed by schools. These schools need particular skills. For example, a particular society may be in need of a medical doctor to rescue people from a particular illness. It may so happen that schools available have not been able to produce such personnel. In this case such an educational system has failed in this particular case to produce the correct man power requirement for the society.

After the adoption of humanistic perspective by some teachers, the result was the de-emphasis on quantitative methods (Minor, 1981). This has led in part to the debate on

knowledge needed by school professionals to collect evidence and interpret its usefulness and consequent reaction. Assessment, mainly through tests, was used mainly to classify (summative). However, some authors criticized tests, for 'labeling' students and in a well-known metaphor that the marriage between tests and counseling had failed (Zytowski, 1982).

In spite of this controversy, tests never ceased from schools due to their inevitable role (Chafer, 1995). Engen, Lamb, and Prediger (1981) in a survey observed the following; '93% of secondary schools administered at least one test to all students; 76% administered achievement test batteries; 66% administered academic aptitude or intelligent tests; and 16% administered inventories of school or social adjustment or personality tests'. Evidently, personality tests have not been popular in schools. Probably, counselors have not found personality tests useful, maybe they are not readily available or they are unable to make inferences from these tests (Zytowski, 1982).

Various changes have been made in tests particularly to improve construct validity in an attempt to improve predictive validity and make them popular again in vocational guidance and counseling. Another important change has been to motivate a professional using assessment to get information with new techniques like one item formats, cohorts and inventories in an attempt to deformalize assessment (Zytowski, 1982) in (Chafer, 1995).

Another important change has been the increase in use of computers in assessment practice from scoring to test development and interpretation. Also, ethical considerations have also been emphasized in the use of tests. According to the American Counseling Association (ACA) statement titled Responsibilities of Users of Standardized Tests (RUST), test users have been cautioned on making interpretations given the limitations of tests and purposes and to also have in mind the costs of not testing at all.

Responsibilities of school counselors have been found to fall under six categories as found in a study conducted by Schafer and Mufson (1993); 'counseling (individual and group), pupil assessment, consultation, information officer, school program facilitator, and research and evaluation' with each having its assessment intensive aspects. These find responsibilities also fall in line with American School Counselor Association's expectation for school counselors (2012).

As a primary responsibility, counselors have to counsel students be it in groups or as individuals identifying their special needs. As such, assessment processes like interpreting test scores and non-test data (which may be obtainable from transcripts and record folders) is vital as this may be evidence for empirical basis.

Secondly, they have to schedule for testing, scoring and interpretation of test scores while arranging appropriate accommodations for exceptional students (Beech, 2003). Counselors through the interpretation of standardized tests are in a position to help students evaluate their aptitudes. They may also be required to help teachers understand psychological tests in improving their content-referenced testing skills.

Thirdly, the guidance counselor serves as a consultant to all stake holders of the guidance and counseling program. They advise parents, teachers and students. They assist school administrators in selection of appropriate tests and in the interpretation of psychological tests. They are also in a position to give out information to all these stakeholders. They serve as a two way channel of information between school and home. All of these activities involve test interpretation (Chafer, 1995).

Furthermore, school and counseling administration are inherent functions of the guidance counselor. The counselor is expected to administer tests as part of school administration. As part of counseling administration, the counselor is expected to analyze, implement and evaluate guidance and counseling services. Also, guidance counselors are members of board on the development of instructional curriculum (Chafer, 1995).

Lastly, the guidance counselor is an educational researcher. He/she is expected to acquaint with update literature in various aspects which affect school life. As an information officer, he/she must be abreast with current events and new findings concerning guidance and counseling in order to appropriately carry the ardent task bestowed upon them by the school system. Therefore the guidance counselor must continuously update by revising counseling techniques (Schafer&Mufson, 1993).

Pupil assessment, program evaluation and basic research are three major areas into which various assessment roles of the school professional fall (ASCA, 2012). *Components of pupil assessment include: types of assessment; assessment systems and programs; test administration and scoring; test reporting and interpretation; test evaluation and selection; design, analysis, and improvement in instrument development; formal and informal methods of assessment; methods for using assessment in counseling; administrative uses of assessment; computer-based applications; and ethics of using assessments (Chafer, 1995)*

It is partly the place of the teacher to ensure that the right type of assessment takes place in school. Teachers must be dissuaded from clinging to same formats and perennial exams because these undermine the validity of tests. Selection of tests must also conform to the developmental level of learners and should consider accommodations for special needs.

Teachers must also be drilled on test development process and the concept of test domains. As such, one question formats especially in essay will be shun by lazy teachers as these factors make the tests unreliable. There is need to also be informed that assessment can serve as learning in order to reduce the tension between summative and formative assessment practices.

Program evaluation includes: needs assessment; formative and summative evaluation; sources of evaluation research invalidity (instrumental, internal, and external); choosing evaluation designs; choices of and computational methods for descriptive and inferential statistics; writing evaluation proposals and reports; disseminating information; and research ethics (Chafer, 1995).

Needs assessment here entails finding out if the right human and material requirements have been put in place for them. The need for infrastructure cannot be overemphasized. Policy too must provide the necessary facilities for learning. The quality of student's results is partly dependent on the quality of didactic material such as laboratories and libraries.

Using basic research includes: locating and obtaining relevant research reports; reading and summarizing research reports; evaluating validity of instruments and research designs; and purpose and assumptions of common inferential statistical procedures (Chafer, 1995).

Instruments which have been validated in the west may not necessarily be relevant here. As such school professionals are cautioned on the need to evaluate their instruments as per their use in the local context. The instruments can be redesigned for particular purposes. Most importantly, research results can help them adjust some practices that do not have an empirical base.

According to ASCA (2012), school professionals should articulate an understanding of data-driven decision making. It adds that school professionals must be able to achieve measurable objectives and review school data. Relevant data including process, perception and outcome data would help the counselor to monitor and improve student behavior achievement.

Furthermore, data should help in causing systematic change in areas such as school enrolment patterns, equity, access and achievement, opportunity or information gaps. Data should be used data to close the achievement/opportunity gap between underachievers and over achievers. It should also be used to identify gaps and differences among different groups

of students. Also, it should be used to assist students who do not perform well in school who have the opportunities and resources and to evaluate program effectiveness and evaluate program needs (ASCA, 2012)

In spite of these assessment expectations of various groups and agencies from the school teachers, there has been little evidence that test interpretation has caused any change in the people counselors serve (Goldman, 1982 &Goe 2013). They suggest that they have not been prepared adequately enough to understand psychometric evidence and/or that predictive validity of tests is insufficient to support individual test interpretations.

Shertzer and Linden (1982) suggested that a more systematic rehearsal of learning to integrate assessment aspects in both pre-service and in-service levels will produce improved results. It would be through the various ministries and educational bodies involved to organize periodic seminars to improve on the exam content referenced skills of teachers.

THEORETICAL FRAMEWORK

A SOCIAL LEARNING THEORY OF CAREER SELECTION (JOHN KRUMBOLTZ)

Krumboltz and Mitchel developed the Social Learning Theory of Career Selection that aimed at responding to the problematic issues; the fact that people have different interests for different educational programs at different points in their lifetime. Preceding this question is the question as to why people enter particular educational programs or educational programs and not others. As such, the authors provide a series of testable hypotheses which serve as a yardstick to synthesizing a series of prepositions, providing a framework for existing empirical evidence. The theory therefore opts to explain how educational and occupational choices are made through specific skills, circumvented by; genetic factors, learning experiences, environmental factors, cognitive and emotional responses, as well as performance skills which smoothen movement along one career path and not the other. Individuals have external and internal influencers which shape the nature of decision making. At one point in time, the decider feels that the occupations are so limitless and the is overwhelmed by the amount of decision to be taken, and anxious about the consequences.

According to the author, there are always options, even if it means not taking a decision. This, because taking an option, limits the number of decisions in the future. At times the decisions are irreversible. A new decision becomes part of the environment and acts as a facilitator or constraint to other decisions.

DETERMINANTS OF CAREER DECISION MAKING (CDM)

Krumboltz identified four influencers to the decision making process.

1. Genetic endowment and special abilities

People are said to be born with some inherent characteristics which limit their skills, occupational preferences, education and selection. Examples include race, sex, physical appearance and defects. Although it is not clear to what extent genetic and environmental factors contribute to special abilities, it however is undoubted that some people are born with greater disposition to benefit from some kinds of learning. Examples include intelligence, musical coordination, artistic ability and muscular coordination.

2. Environmental conditions and events

Factors in the environment, usually out of the decider's control, usually affect decision making. Some of them are planned, whereas others are not planned. Due to human action (cultural, social, political and economic) or natural forces (disaster and location of resources), certain events foster or restrain the preferences, skills, plans and activities of the individuals.

i) Number and nature of jobs opportunities

Due to government policies and historical forces, some occupational opportunities are present in some settings and not in others. For example, an opportunity is presented to become a teacher but not a prostitute.

ii) Number and nature of training opportunities

In Cameroon for example, education and training is provided through public schools, apprenticeship programs, proprietary schools and the armed forces. The accessibility of these alternatives vary from one location to another.

iii) Social policies and procedures for selecting trainees and workers

The requirements from society to society may require that you acquire an HND in Cameroon even when GCE A/L is sufficient. As such, certain laws influence decision making.

iv) Rate of return of various occupations

The nature of risks and rewards as well as cost in training for some occupations may change from one culture to the other among different groups. People can easily identify the trend and thus modify their future planning accordingly.

v) Labor laws and union rules

People will join labor unions depending on the nature of laws and rules binding them. If they are stifled, then less people will be joining and vice versa.

vi) Physical events (earth quakes, droughts, floods, hurricanes)

Such disasters can halt the economy such that people are no longer able to work there.

vii) Availability of demand for natural resources

For example, a lawyer who discovers oil in his land may change his activities to becoming an oil dealer.

viii) Technological developments

Change in technology creates new jobs and also closes or make some jobs to become obsolete. For example, the advancement in mobile phone technology, to introduce cameras, has greatly reduced the demand for professional photographers.

ix) Change in social organization

An introduction of a social security system in a state would greatly affect the career plans of many citizens.

x) Family training and resources

People are born into different families, with different cultures, resources and heritage for the younger generation. The type of family determines the educational, occupational, skills and selection.

xi) Neighborhood and community influences

The types of models present in a particular neighborhood affect the motivation to enter an educational program or occupation.

3. Learning experiences

Learning experiences influence the decisions that people make. The motives and reinforces are so many that a single theory is inadequate to explain the infinite number of possible permutations. Krumboltz simplified the learning experiences into two that have an important bearing for career development.

i) Instrumental Learning Experiences (ILEs)

This is the type of learning in which the individual acts on the environment to have certain consequences. Antecedents, covert and overt behavioral responses and consequences are complements of ILEs. The antecedents such as these factors earlier identified that emanate from cultural settings, social history of a particular group. Behavioral responses include cognitive and emotional responses and overt actions. Consequences refer to the new dispositions that the individual faces as a result of particular actions. From kissing to knitting a sweater, are ILEs that are instrumental for career planning since successful career planning, development and occupational or educational performance are learnt through ILEs.

ii) Associative Learning Experiences (ALEs)

Reacting to external stimuli also constitutes learning. Such learning also includes observing models in real and fictitious situations. It also includes pairing a previously neutral stimulus with other producing negative or positive emotions in terms of place and time. For example, statements such as 'plumbers make a lot of money' or 'all lawyers are crooked' have stakes as they attract or repel people from occupations.

Many of these associations can be learned through reading books, watching films, or in real life situations. It is not uncommon that although these could be stereotypes, the conclusions are drawn from very few examples about entire occupations, and sometimes the first association becomes the last. For example, in such classical conditioning paradigm, a girl who observes a wife being beaten by husband may rule out housewife as an occupation. A girl may also become nauseous at the sight of blood and rule out the possibility to becoming a physician.

4. Task Approach Skills

Task approach skills are determinants that influence outcomes and are outcomes in themselves. The perplexity resulting from both genetic and environmental factors permeate the set of skills, performance standards and work habits, perceptual and cognitive processes, mental sets and emotional responses. Examples of cognitive processes include; attending, selecting, symbolic rehearsal, coding, encoding, reflecting and evaluative responses.

Take a student who crams to score an A grade in high school, but obtains poor grades in the first year of University studies. S/he can, through differential feedback, be convinced to change such a habit.

Outcomes of interactions among influencers

Each individual throughout his life is exposed to innumerable learning experiences, whose permutations are infinite. After each ILE, there is a reward or punishment. All these produce an array of unique experiences to each individual, resulting in the perplexity and diversity of the human species. As such, three important consequences are considered for the sake of this analysis.

i)   Self-Observation Generalizations (SOGs)

Humans will rate their performance against that of others or set standards and then make conclusions or generalizations. These generalizations may however not be free from biases and stereotypes. As such, SOG is defined as an explicit or implicit evaluation of one's actual or vicarious performances against learned standards.

The SOG may not be accurate. They of course are affected by many factors particularly our psyche. If children are poorly evaluated, they tend to believe in such evaluation and develop a low self-esteem about certain standards. As such, they begin to share with friends who reinforce such believes by the utterances that they make. As such, the self-fulfilling prophecy takes place. According to this prophecy, children eventually become what they think they would be.

It is noted that some evaluative statements undergo differential reinforcement and stimulus discrimination. In the presence of a teacher, a student may feel inferior but later boast about his performance with friends. People accumulate evaluations about themselves in various situations but may never be able to articulate them, unless given a chance.

Through instruments such as interest inventories, psychologists have developed ways to gather information from people about their SOGs. Individuals may never have formulated their opinion about writing a letter for example. When compelled by a questionnaire to select 'like', 'dislike' or 'indifferent', they make a decision

about the degree of liking for each item. The 'interests' therefore are simply SOGs from past experiences. Also, through observing oneself in past learning experiences, an individual can respond to a checklist based on SOGs.

Interest inventories are also one way through which people describe themselves. Such adjectival descriptions have been conclusions from past experiences. It is said that people tend to forget the actual learning experience but remember their reaction to that experience.

As such, the inventories predict future behavior as people generally tend to continue to do what is pleasurable for them. Rather than think that the interests cause occupational selection, it should rather be that the learning experiences cause interests. They have an effect on people's development of educational and occupational skills selection of a course of study and occupation or work.

One very important SOG is that of preferences; the decision to eschew one task and embark on another. This becomes building blocks for future career decision making, as the preferences are important outcomes for learning experiences.

ii)   Task Approach Skills (TASs)

People relate with their environment in such a way that they are able to make projections about the future and inferences from the past. TASs are cognitive performance abilities and emotional dispositions that allow individuals cope with the environment, interpret it in relation to SOGs and make overt and covert predictions about future events. Such include; work habits, mental sets, perceptual and thought processes, performance standards, values, problem orienting and response to emotions.

We may refer to TASs as Career Development skills. These career development skills include; value clarifying, goal setting, predicting future events, generating alternatives, seeking information, estimating, reinterpreting past events, eliminating and selecting alternatives, planning and generalizing (Krumboltsz and Baker, 1973). The evidence on how people can apply these skills can be got from their behavior in making decisions.

'…according to the pamphlet, the demand for computer programmers are going to be much less 10 years from now than it is now. But I wander if the person who wrote this pamphlet really knows. I certainly do enjoy working with computers. Maybe by the time I am old enough to make a full time employee, the specific

requirements will be quite different than they are now. I wander if it does any good to plan ahead'.

The way people develop their TASs therefore depends on inherent characteristics as well as prior learning characteristics, which allow individuals to sequentially acquire and perform related skills and complete new tasks in making future career decisions.

iii)   Actions

Each decision taken today produces consequences that increase the probability for similar behavior in the future. Concerned in CDM are antecedents or entry behavior; overt steps in a career progression. Applying for a particular program, job, training, accepting a job offer or promotions, changing a college major are examples of entry behaviors that lead to career progression.

Career planning and development

From infancy, children begin to appreciate learning patterns. When cry results in warmth and milk, the baby begins to understand the association between actions and consequences. Although unable to vocalize all these, the subsequent behavior reveals that the child had begun formulating SOGs. The figure below is a general model of factors affecting occupational selection.

General model of factors affecting occupational selection

The factors on the left hand side denote genetic characteristics at birth. As time moves from left to right, the environmental, economic, social and cultural events impinge on the child's learning experiences. Individual learning experiences have been depicted by Os and Hs, while the triangles and parallelograms depict additional thought processes. Where there is a triple arrow, the representation is that that activity did not necessarily have to occur at that time. The individual could have decided otherwise. The eclipses entail that a lot of time has passed involving enormous learning experiences. The current activity which is far from being final therefore is as a result of the circumvention of genetic, environmental, and complex sequence of learning activities.

Noted ahead, the individual can react to learning experiences, producing preferences and also get reactions from people about performance as well as cognitive and performance skills. Consequently, the more the feedback in certain activities, the more the probability that s/he

will repeat those kinds of activities in the future, and vice versa. As such, differential skills development is promoted, orienting the path in a particular direction.

Enrolment into a particular program therefore is as a result of sequential reinforcement of particular types of behavior affected by other environmental circumstances and the person's emotional and cognitive reactions to particular learning experiences. Some of the factors are beyond control of the person, and therefore, employment or enrolment is not simply an issue of choice or preference. As such, change in an environment or learning experience can cause a change in stated occupational preferences. Due to the varsity of learning experiences of adolescents, their occupational preferences are usually highly volatile.

People would generally accept the opinions of people who identify with them and reject those of people who punish them. As such, the people with whom one gets in contact can have a profound influence on his/her preferences. Someone hypothesized that the popularity of medical and legal training in the 70s was due to Marcus Welby and Perry Mason. In other words, all communication media have potential to generate preferences for or against certain occupations.

Systematic instruction can be designed to increase the probability that people will chose wisely when faced with different choices. Indeed, environments that provide children with CDM resources will produce people with superior skills on decision making. However, such resources must be tailored to consider the entry level behavior or characteristics of these people such that they should be pertinent to the target population.

As such, opportunities to talk to models, stimulating job experiences, chances to work for a short period, along-side descriptive material about various occupations can go a long way in helping people who are deciding on a career or occupation. Peers have serious influence too. They are one set of models. Parents who have been frustrated must also take caution not to insensibly mingle with the career decisions of these kids. Sometimes the best thing to do is to forget about the future and tackle the most expedient action at the moment.

Implications for career counselors and clients

1. Occupational selection is a complex of interaction between various environmental, genetic and learning experiences that lead to the development of specific task approach skills.

2. Career selection is a two way process which is affected by social forces such as availability and requirements people select and are selected by occupations.

3. Career selection rather than being static is a dynamic process that runs from birth through retirement years.

4. Career selection is not accidental, but the causalities are so complex that it is difficult to predict with any degree of certainty.

5. Career counseling is not matching people to jobs, but rather, a process of motivation individuals and opening new avenues for learning experiences that lead to career-relevant exploratory activities.

6. Career counselors are responsible to

   i)   Help the client learn a rational sequence of career decision skills.

   ii)   Help clients acquire appropriate sequence of career relevant exploratory skills.

   iii)   Teach the client how to evaluate personal consequences of those learning activities.

SCAFFOLDING AND CAREER GUIDANCE COUNSELLING

The Zone of Proximal Development (ZPD) and Vygotskys Socio-cultural theory are at the fulcrum of scaffolding (Berk, 2001; Daniels, 2001; Wells, 2001; Krause et al, 2003; McDevitt & Ormrod, 2002), in spite of the fact that the interpretations to the concept have differed. The interpretations range from regarding scaffolding as teaching in the ZPD to the broader view that it only reflects the richness in the ZPD (Danials, 2001). Stone (1998) identified some limitations for equating scaffolding to the ZPD.

Three features characterize scaffolding; the dialogue through which knowledge is co-constructed, the representative activity in which knowledge is embedded and artifacts that mediate knowing (Wells, 1999). The transfer of task responsibility to the student is said to be one important characteristic of the concept (Mercer & Fisher, 1993 in Wells, 1999). The event which allows learners carry a task in which they would not have been able on their own, equips the learner with some competence which eventually allows them complete the task on their own and following some evidence that they have independent competence as a result (Wells, 1999). Such a view cannot be overemphasizing the need for collaboration between the learner and teacher (Vygotsky, 1978).

However, it is possible to view scaffolding as a narrow one sided event (Lave & Wenger 1991, in Daniels, 2002). The narrowness of the metaphor itself can lead to a conclusion

wherein, the scaffolder constructs the scaffold alone and presents it to the learner (Danials, 2002; Stone, 1998). Indeed, a metaphor is not much descriptive as it is generative of new ideas and is much more than a graphic description of ideas. In fact, when correctly chosen, it should appreciate consequences or sequence of events.

When left in the hands of inexperienced teachers, the metaphor could rather hinder the cooperation between the teacher and learner in co-construction of knowledge to 'the imposition of structure on the student' (Stone, 1998, page 349). Such a view looks at the classroom interaction as adult driven and a one sided thing. Recall that the Piagetian regard for the child as an active constructor of knowledge is a serious asset to the Theory of Child Development. As such, Stone was unable to overemphasize the need for finely tuned communication between the learner and teacher (Berks, 2002; Krause et al, 2003; McDevitt & Ormrod, 2002).

Piaget replaced the pre-Piagetian structure of learning with a structure in which the responsibility for learning is shifted on the learner, in which the learner constructs their own knowledge and is an independent learner in a self-determined manner. This structure of learning is based on the learners' interests and motivation for them to become lifelong learners. Vygotsky elaborated on this Piagetian view, emphasizing the need for dialogue and respect for the child's interests and needs (Bodrova & Leong, 1996; Feer, 1992, 1995; Tharp & Gallimore, 1988).

In spite of the questioning of the metaphor, in terms of its limitations, it does not put any educator on the advantage to abandon it. It has increasingly been used by educational researchers and practitioners. It should be guarded however such that the narrow interpretation of the metaphor does not connote a one sided pre-Piagetian structuring of learning in which the learners are passive recipients of knowledge.

Such a notion would fall far behind the ZPD and the Piagetian view of the learner as a self-explorer. The ZPD was elaborated for psychological testing in schools. It advocated that testing should not only be based on the child's current level of achievement, but that it should also sort after the learners' potential development. Accordingly, the current level of development (level of independent performance) did not sufficiently describe development. Since it described what was done, it described a 'yesterday of development'. More importantly, it envisaged that the level of assisted performance indicated what a person can

be in the near future (potential level) 'tomorrow of development', what a person 'can be' (Vygotsky, 1978).

Thus the ZPD, the difference between what a person can do with and without help is the target to which the educator seeks to reduce to a minimum. The co-construction of knowledge continues until the learner becomes a self-regulated learner. Accordingly, the teaching learning transaction occurs in such a way that the child is not directly influenced by the teacher, but rather, the teacher is there to fashion and shape the social environment (Diaz, Neal & Amaga-Williams, 1992). In fact, the teachers' role is to provide a pathway for self-independence (Bodravo & Leong, 1996).

Although Vygotsky did not elaborate on the ZPD, leaving ambiguities in interpretation and how it could be understood, a good number of researchers have elaborated on the concept in the subsequent decades (Chaiklin, 2003; Cole, 1996; Dixon-Krauss, 1996; Hedegaard, 1992, Tharp & Gallimore, 1988; Tudge, 1992; Wells, 1999; Wertch, 1985, 1998). Failure to link the ZPD and the theory as a whole would make it difficult to distinguish between the zone and theory and impossible to distinguish between the concept and any other instructional technique in which learners are guided by adults through a series of steps (Tudge, 1992).

Without an understanding of the theory as a whole, there is the danger to interpret ZPD as domination over position and initiative over a child's learning. Lambert & Cladon (2000) state that 'we feel … that Vygotskys ZPD presents a restricted view of learning processing and reduces learner's role to one of passivity and dependence' (Lambert & Cladon, 2000, pg. 29). However, Vygotsky was aware that the gap between doing something with and without help represented development, which however was never same in anyone.

He therefore regarded a teacher as one who served as a lever and shifted the learners thought with its structural characteristics from level to level (Varoshevksy, 1989). Elaborating on this, Vygotsky highlighted that the learner's development cannot be divorced from the social and cultural contexts. It was therefore that in order to understand mental processes in the learner, it was important to understand the sociocultural contexts that mediate them (Wertsch, 1985; Tchombe, 2019).

As such, any function of the child begins from social polemic before becoming a mental reality which he referred to as internalization (Vygotsky, 1962). Internalization occurs in such a way that external functions in the social environment now become mental functions in

which the child becomes intrinsically motivated and becomes a self-regulated learner (Engerstrom, 1996; Dixon-Krauss, 1996). This mental anchor, although residing in the mind, originates from the social environment (Hedegaard, 2002).

By intentionally interacting with adults and friends, the child through this mediation process develops inter-subjectivity. This refers to shared understandings between the learner and adult (Wertsch, 1985, 1998). Internalization eventually entirely shifts the responsibility to the learner, needing no assistance as the learner becomes a self-regulated developer (Diaz et al, 1992). Accordingly, the most important aspect of a child's psychosocial development is the acquisition of culture; what the people produce from simple artifacts such as a brum, to more complex belongings such as science, arts, language, which all play a heavy role in this development (Cole, 1997; Vygotsky, 1982).

Acquiring mental tools is the primary objective of the teaching learning transaction. The teachers' role is generally to 'arm' the learner with those tools by presenting the learning structure which takes the learners characteristics and local realities into account (Bodrova & Leong, 1996; Tchombe, 2019). That interaction with more experienced people allows the children to move from shared possession of tools (interpersonal) to individual possession (intrapersonal). It cannot therefore be overemphasized that to understand the ZPD without giving it a limited metaphoric connotation, there is the need to understand concepts such as; social and cultural mediation, inter-subjectivity, internalization and learner's active role.

The inevitability includes looking at the cultural environment to see what tools have been provided for the child or learner to appropriate for their independent performance, and considering the conditions for the internalization to occur. As such, the conditions that can lead 'knowledge consolidation' have to be considered (Stone, 1998). These are techniques that can convert assisted performance to independent performance.

SCAFFOLDING AS THEORETICAL BASIS FOR CGC

Vygotsky emphasized the need for teachers to teach in the Zone of Proximal Development (ZPD) of the learner. It was however Wood, Bruner and Ross, who beautifully termed the process 'scaffolding' (Wells, 1999). The ZPD is the gap between what a learner can do on their own, and what that learner can do with the help of a more knowledgeable or experienced person (Vygotsky, 1978). By defining learning in this manner, the theory earmarked learning and teaching as social and participatory activities. It will be pointed out

below that the ZPD can be narrowed most importantly when the learner and teacher are actively engaged.

A scaffold is an apparatus that builders use during construction. Whey they use a scaffold; it is usually to reach a point in the building to which otherwise one cannot reach no matter the size of their step. But by using an appropriate scaffold, they reach their target or working surface. The nature of the scaffold usually depends on the objective. During the construction phase, different types of scaffolds are used. Those that are climbed on, when carrying blocks, are obviously different from those that serve the purpose of plastering the house.

Furthermore, scaffolds used in putting plywood on the roof are different from those involved in the painting phase. Characteristically, a scaffold that will be used for a longer duration in the same place can be made heavier compared to the need to have a lighter one that is easily moved. Whether or not a scaffold can be dismantled and reorganized and used for a different purpose is an important factor when architects go for one.

More so, those that are placed on soil are usually made thicker at the base such that they do not sink, while those placed on tiled surfaces are made to avoid any sharp nails that can break the tile. The analogy illustrates the teacher, the learner, content and the purpose for the learning; preparation for a career in our own case. The purpose of the scaffold is to reduce the gap between the technician (student) who stands on it and the working surface (learning). We can look as the teacher as the laborer who shifts the scaffold in the construction site. It is the laborer who is in charge of the scaffolds used, and their nature.

The working surface is learning. In other words, if the scaffold is not well placed and supported by the laborer, the technician can easily fall from it; throwing and waiting some mutter or paint during plastering or painting respectively. Recall that both the laborer and technician must be in communication such that at one point in time, the laborer knows what type of scaffold the technician will need. Sometimes, the technician will tell the laborer that at this point or the other, a scaffold is not needed.

At the time the scaffold is not in use, the laborer is hardly asleep, instead, he/she keeps preparing new surfaces and creating space in which to put the scaffold. This is necessary such that when it is time to take a bend or move to a new point, the technician does not have to waste time waiting. The different scaffolds can be regarded as methods, processes and programs or resources used in CGC. Again, meanwhile the laborer and technician work

together (student and teacher), they may have come to the chattier differently or as partners. If they came as partners, it is likely they will easily move on since they understand each other already. Otherwise, they will need some time to acquaint themselves to each other.

The danger however is that both can team up at the detriment of the construction site. Therefore, the architect must also follow up on the progress of the work and make sure that the material is used for the purpose for which it was designated and nothing more. In case the teacher and student have not successfully completed their task, there is room for imagination of unhealthy practices such as teaching to the test, exam malpractice, which put the student on the disadvantage in the short and long term. The long term effect being that these students may leave school without the adequate KSAs that are useful to employers, and worst still, without the know how to create jobs for themselves or entrepreneurial spirits. This is a case when a structure has gone wrong or when it collapses in our illustration.

It is necessary to say that although the architect is in charge, he is usually not the owner of the building. He may draw a good plan and the proprietor is unable to finance it. Needless to say that some architects partly in quest for the job may accept to do the same structure even using unorthodox means such as using fewer laborers and using poor mixtures and so on. This burns out the workers at the construction site and they work inefficiently.

If fewer teachers are retained for example to reduce cost, it may even be more costly in the end. Some structures are very tall and require a complete redesign of scaffolds that will reduce the risk of collapse and fatalities. So to say, the developmental level of the learner, their sociocultural context, the economic status and other psychosocial variables such as attitude are very important factors in determining how to mold them. Perhaps we cannot overemphasize the importance of the molding. Actually, cement, water and sand are used in the site for very many purposes. The nature of the mixture or texture is determined by the ratio of each of these three.

What is most determinant for the type of mixture is the purpose. If the purpose here is the career, then we could say that the methods, processes and contents for various careers of course differ. However, no matter how good the technician is, if the laborer has made a watery mixture for plastering, it poses serious issues; it is almost impossible to plaster with such a mixture and could take forever. We know a teacher can frustrate a students' career if they unable to help the learner in the area most desired for a particular field.

So too, if teachers are not aware of the purpose for which 'their' learning leads them and are not motivated, it becomes difficult for the learner because they will not receive the right guide (scaffold). However, by always going back to the drawing board (program), it is possible to remember what scaffolds will come up at what stage of the building and make them available.

The enthusiasm, with which the technicians, laborers and architects work, depends on many issues. Most importantly, if they know that on the day they finish their work they will receive their pay packets, it drives them to work so hard (extrinsic motivation). Sometimes too, the architect wants perfect work and can create trusting relationships with the people in the site such that they work as if the building was theirs (intrinsic motivation).

CLASSICAL TEST THEORY (CTT)

Introduction

One way through which we can gauge students learning, to understand their development in terms of learning, is through assessment. These learning abilities according to Bloom (1956) fall into three main areas; cognitive, affective and psychomotor. The cognitive abilities look at learning in the mind, according to Jean Piager, while the affective regard the learner's emotions, attitudes, interests, predispositions and so on. Lastly, the psychomotor look at the learner's ability in terms of dexterity, ability to manipulate motor skills and comport the physical self.

In order to know what students have learnt, assessments are usually carried out. An assessment entails gauging the learning in order to understand their abilities, aptitudes, achievements, predispositions, interests and so on. Generally speaking, people assume that assessment and tests are synonymous. However, a test is simply an instrument that is employed during assessment.

Other instruments that are used during assessment include; rating scales, questionnaires, observation, interviews, psychological testsand so on. The type of instrument used, depends on the nature of the data to be collected or the nature of the research/assessment. An instrument is a tool that enables an assessor or researcher to solicit information or measure an attribute in the respondent.

An instrument however needs to be reliable and valid used, for it to serve its rightfully intended purpose. Reliability entails the ability for the instrument to give consistent results. On the other hand, validity entails the trustworthiness, dependability, and truthfulness of the findings. In order words, validity is the ability for the instrument to measure what it says it measures accurately.

There are many factors that affect the reliability and validity of instruments. It is noted that validity lies somewhat on the use of the instrument. Meaning that, an instrument which is reliable becomes invalid if wrongly used. Therefore, reliability is a necessary and insufficient condition for validity. If an instrument is valid, therefore it is also reliable. Reliability and validity as indices are strongly rooted in CTT and Item Response Theories (IRT). These theories permeate the Test Development Process (TDP) in the field of Psychometrics.

Classical Test Theory (CTT)

In the early 20th century, psychologists and other educators became more interested in the measurement of individual differences. It was to this effort that CTT spurted in this emancipation. It simplifies in a model; how small errors can influence observed scores. Due to recognition; that errors exist in measurements, acknowledgement that errors are random variables and conception of correlation indexing, the CTT was formulated. It was Charles Pearman (1904), who derived a formula for obtaining coefficients of correlation in reliability estimates. CTT was considered to begin with Spearman's formulation (Ado, 2017). However; Truman, Lee Kelley, George Udny and Louis Guttman were heavily instrumental in making the Kuder-Richardson formula.

Meaning of CTT

CTT is a formulation that has been used to determine the reliability and characteristics of measurement instruments. The formula introduces three concepts; test or observed scores, true scores and the error scores. The classical test model is often presented mathematically as below;

X = T + E

Where;

   X = observable test score

   T = True score

E = Error score

The formula links the observable score to the sum of the unobservable scores. The true score is not easy to observe. It is however then estimated from individual responses on test items. This equation hitherto cannot be resolved without some assumptions.

Assumptions of CTT

The first assumption of CTT is that true scores and error scores are not correlated. In brief, there can be three types of correlation. A correlation means that two things vary in a particular manner. A positive correlation entails that while the magnitude of variable X increases, that of variable Y also increases and vice versa. In a negative correlation, while the magnitude of variable X increases, that of Y decreases and vice versa. We say that they are directly proportional and inversely proportional in the first and second cases respectively.

The second assumption of CTT is that the average of the error scores of the examinees is zero. In other words, the error scores of individual examinees is not zero, but the average of their individual scores is zero. So there is a net cancelation effect on the error estimates. In other words, if you made a mistake by over rating student A and another mistake by under rating student B, you have made two mistakes. However, if we consider that the mistakes are the same, then on average, you have not made an over rating of the students.

The third assumption of CTT is that error scores on parallel tests are uncorrelated. Parallel tests are separate instruments. It is expected that their errors scores are uncorrelated. Should this not be the case, then the error becomes a nonrandom error. It is therefore formulated that if the measurement instruments were perfect, we could be able to obtain observed scores which are true, without any errors. As such, an error is said to be a random error variable and its distribution is normal.

Therefore, we can say that measurement instruments are always faulty. It is to say that with repeated application of the instrument on the examinee, the true score never changes. However, the observed score continuous to change. This is due to the constancy of change of the error score. It is to say that the nature of the error can cause an increase or a reduction in the observed score, but does not affect the true score.

The distribution of random errors is assumed to be the same for each test taker and tells us about the magnitude of the error in measurement. In CTT, the standard distribution of random errors is used as the basic measure of error. Using reliability of the test and the standard deviation of the observed scores, the standard error of measurement can be estimated. The standard error of measurement is directly proportional to the ratio between the individual (observed) and the true score. Meaning that if the standard error of measurement is large, the less certain is the accuracy with which the attribute in question is being measured.

$$SE_M = S_X \sqrt{1-R_{XX}}.......2$$

SE_M = standard error of measurement

S_X = standard deviation of test scores

R_{XX} = reliability coefficient

SE_M is directly proportional to the inverse of R_{XX}. This implies that small SE_M indicates high reliability.

The SE_M can be used to create a confidence interval around observed scores. The true score is approximated by the upper and lower boundaries of the confidence interval. Even though an error is usually said to be inherent in CTT, the goal during the TDP is to reduce this error. As such the test is made to be as reliable as possible. In case where the reliability coefficient is known, we can determine the error variance, whose square root is the standard error of measurement. Clearly defining the confidence interval with the help of SE_M allows more reliable estimations of the true score.

Item analysis under CTT

This section will comprise of test analysis, which includes; item difficulty, item discrimination, distractor analysis and item-test inter-correlation. These are analysis which depend on traditional sample and item dependent statistics. There is need for inclusion of analysis at the item level as has been the focus of most psychometric analysis. The algorithm that is followed during TDP in order to maximize reliability is called item analysis. Three main classical analysis are usually carried out; difficulty (item level statistic), discrimination (item level statistic) and reliability (test level statistic).

1. **Item difficulty**

Item difficulty refers to the proportion of test takers who had the right answer. It is usually the first statistic to be determined. The difficulty level is inversely proportional to the size of respondents who have the correct answer. The number of examinees who had the correct answer is divided by the total number of test takers in order to obtain the item difficulty index. It implies that an item that is correctly answered by 60% of the students has an item difficulty or p-value of .60.

P = R/N

Where;

P = the difficulty of a certain item

R = the examinees who got the item correctly

N = the total number of examinees

Table 1: item difficulty indices interpretation

P-value	interpretation
$P \leq 0.30$	difficult
$0.31 \leq 0.70$	moderately difficult
$P \geq 0.70$	easy

2. Item discrimination

The difference in correct responses between the high scoring and the low scoring students is referred to as item discrimination. It is the ability of the test item to segment the class into two, between lower scoring and higher scoring students. To do this, the class is divided between higher scoring and lower scoring students. The purpose of this statistic is to drop items that do not discriminate appropriately in the test. Item discrimination and item discrimination coefficient are usually computed.

I. Item discrimination index D

In order to obtain D, the students are ranked according to their test scores. The upper and lower 27% of the students are used for the analysis. Differences in nominal distribution are said to be maximized when 27% are used, without compromising the number of cases for the analysis.

D = p_u – p_i …….3

Where;

D = the discrimination index

p_u = proportion of responses in the upper group

p_i = proportion of responses in the lower group

Realize that the proportion ranges $-1 \leq Pr \leq +1$. This implies that if a larger proportion of the lower group answered the item correctly, there will be a negative D index. If a larger proportion of the lower group answers the item correctly, the index will be positive. Therefore, by going through the items, there is room to revise the items if they have a negative D or to completely remove them.

II.   Discrimination coefficient

We note that analyzing D above, we use only top 27% and bottom 27%, thereby ignoring 46% of the examinees. Point biserial correlation coefficients are two indicators of discrimination effectiveness. Actually, it is the type of question we intend to answer that determines the type of correlation employed. Similarly, the advantage to use discrimination index to determine the discrimination power is the fact that unlike D where on 54% of the examinees are used, all examinees are used.

$r_{pbi} = ((mp – m_q)/s_t) (\sqrt{pq})$ ……4

Where;

r_{pbi} = point biserial coefficient

m_p = whole test means for students who had the item correctly

s_t = standard deviation of whole test

p = proportion of students answering correctly

q = proportion of students answering incorrectly

A point biserial correlation coefficient ranges from minus one to one as noted ($-1 \leq r_{pbi} \geq +1$). It indicates that as expected, students with higher scores are those selecting the correct answers and vice versa. As such, since r_{pbi} can discriminate between students, the items can be checked and those with negative coefficients or very low r_{pbi} completely aver hauled.

Table 11 is a very widely used interpretation of $r_{pbi.}$

Table 11

Interpretation of $r_{pbi.}$

Discrimination index	Quality of item
D ≥ 0.4	Item functioning quite satisfactorily
o.3≤ D ≥ 0.39	good item, little or no revising required
0.2 ≤ D ≥ 0. 29	item is marginal and needs revising
D ≤ 0. 19	poor item; should be eliminated or completely revised

Source,

III. Reliability

In order to explain the different ways to estimating reliability estimates, the diagram in figure 1, is adapted from (18 and 17).

Reliability in classical theory of measurement

Reliability as equivalence   reliability as stability   reliability as internal consistency

Figure 1: CT reliability

Source (18)

1. Equivalent forms reliability

There are two types of equivalence forms reliabilities; parallel forms or alternate form and inter rater reliability. In order to estimate reliability by parallel forms, tests are developed with the same; content domain, test blue print, number of items format, discrimination and difficulty indices. Such tests are then administered at the same time to a group of students. Thereafter, the two tests are correlated to see the degree of reliability. Inter rater reliability has to do with the extent to which the scores differ on the same test paper among examiners. If two raters give the same ratings on the same test paper, the test is said to be more reliable than one in which the test takers differ much in their ratings.

2. Reliability as stability

Another name for this type of reliability is test retest reliability. In order to establish the reliability of a test in this form, two tests are administered on the same sample successively and correlated against each other. It is noted that the duration between administrations of the test should neither be too long to reduce the effect of new learning or too short to reduce the effect of recall.

3. Reliability as internal consistency

The premise in the determination of internal consistency by this method is that if the items are measuring the same construct, then they should correlate. For example, items measuring ability in geography will correlate more than those measuring ability in chemistry. As such the internal consistency coefficient provides an estimate of the internal consistency of the measurement. As such two sets of items from the same instrument can be said to be equivalent. Cronbach Alpha is popular in its use to establish internal consistency reliability estimates.

In order to establish internal consistency, the split-half or the Kuder-Richardson 20 and 21 can be used. These indices indicate the extent to which each item correlates with the other items. The coefficient ranges from 0-1 and the magnitude of the coefficient is indirectly proportional to the degree of reliability (18)

Split half method

If assumed that the items can be divided into two in terms of cumulative difficulty and content, then reliability can be estimated. One way would be by assigning odd numbered items on one group and even numbered items on the other. The other way could be by breaking the test into two taking the first half of the questions. Indeed, it is estimated that the mark of each testee on each half should resemble that on the other half. This is done by correlating using Pearson statistics and correcting for all items.

$r_{xx} = (2r_{hh})/(1+r_{hh})$ 5

r_{hh} = correlation between the two halves of the test

In order to do this; the test is divided into two halves, the correlation between the two halves is then calculated. The Spearman-Brown formula can be used to get the reliability estimate. The formula gives an upper bound estimate of the reliability expected.

Kuder-Richardson-20 method

It was (21) who determined a way to obtain homogeneity estimates of items. KR-20 is an index of homogeneity which is obtained by considering the proportion of correct and incorrect responses for each item.

$$KR\text{-}_{20} = [(k/k\text{-}1)]\ [(s^2x\text{-}\Sigma pq)/(s^2x)]$$

Where;

K = number of trials or items

s^2x = variance of scores

p = percent answering right

q = percentage answering wrong

Σpq = sum of pq products of all items

The KR-21 simplifies the formula by assuming that all the items are of the same difficulty.

$$KR\text{-}_{21} = [(k*S^2)\ \text{-}(\ddot{X}*(K\text{-}\ddot{X})]/[(K\text{-}1)/(s^2)]$$

Where;

K = number of trials or items on test

$S^2 =$ variance of test

$\ddot{X}$ = mean of test

Cronbach's alpha method

Chronbach alpha is a nice formula which allows analysis in which we have columns as persons and another column as characteristics. It compares the consistency of results from one situation to another. As such it is called internal consistency.

$$\acute{\alpha} = [k/(k-1)] \ [1 - [(\Sigma Si^2)/sx^2]] \ \ldots\ldots.6$$

where;

$\acute{\alpha}$ = alpha

k = number of items on the test

ΣSi^2 = sum of variance of different parts of the test (item i)

sx^2 = variance of the test scores

Chronbach alpha provides the lower bound for reliability. As such the reliability in a population is always higher than the alpha $(0.7 - 0.8$ acceptable).

Item selection

This entails selecting items based on particular parameters for use in a test. Items which do not perform well are indicated too low or too high difficulty indices (p< .3 and p≥ .7 respectively). Items with low discrimination indices are also eliminated from the test ($r_{pbi} \leq$ 0.20). It has been noticed that most tests prioritize item difficulty and discrimination indices

as statistics to be considered. The most discriminating items are selected first. However, the choice of item difficulty depends on the purpose for which the test is intended. If you wanted to award a scholarship for example, tests with high discrimination and distractor indices will be preferred. However, such a test for diagnosis of student's problems will have medium level of difficulty.

The advantage of CTT

The advantage of using CTT for test analysis includes the fact that smaller representative samples can be considered. Secondly, simple concepts and mathematical procedures are involved. Furthermore, the theories assumptions easily met traditional testing procedures. People have called it 'weak' models for that reason.

Disadvantages of CTT

CTT methods have proven to be very effective and are still widely used among educational practitioners. However, it was observed that CTT statistics, item difficulty and discrimination indices were highly dependent on the sample used. Meaning that p, D or r values depend on the sample used. As such it is expected that higher values of discrimination indices are obtained with more heterogeneous groups and vice versa. In like manner, groups with above average abilities will produce higher difficulty indices and vice versa. Accordingly, such sample dependent statistics compromise the usefulness of these statistics.

Trait and Factor Theory (TFT)

This theory derives its precedence from studies of individual differences. This was during emergence of the psychometric movement. The purpose of the theory was to explain how individual characteristics account for individual differences. A group of these individual characteristics correlate more with some jobs. As such, distinctive personality attributes are inherent to various careers (Gothard & Mignot, 1999).

It was Parsons (1909) concept of vocational guidance that TFT was expounded upon. For the best career choices to be made, individuals needed knowledge of self, knowledge of the work environment and a way through which the self could be matched to the environment (Arthur, Hall & Lawrence, 1989). The traits referred to the individual characteristics that endure in individuals over time, while the factors referred to the characteristics of the individual that are effective for successful performance at work.

SELF KNOWLEDGE

This is the first in the trilogy that characterizes TFT. Knowledge of self encompasses an understanding of abilities, interests, needs, values and personality.

Abilities

Abilities refer to what the individual is capable of doing in future, rather than what they are interested in (Sharf, 1997; Isaacson & Brown, 1997). These abilities ranging from general cognitive ability to job specific requirements, determine the extent to which the individual will perform at the job site. According to Schmidt & Hunter (1998), carefully constructed intelligence measures can predict successful work performance (de Bruin, 2001).

Although intelligence measure predicts work performance in general, there is no advantage at undermining the effects of socioeconomic status, lack of schooling, test anxiety, measurement errors and norms that are irrelevant to the clients. It therefore predisposes guidance counselors to seek additional evidence that can boast the individual test scores. In the case of South Africa for example, tests utilized by counselors include the General Scholastic Ability Test (GSAT; Chassen, de Beer, Hugo & Meyer, 1991) in group counseling and the Senior South African Scale Revised (SSAIS; Van Eeden, 1991) for individual counseling. Test policy in guidance counseling in Cameroon is not clear.

The specific job related abilities are associated with specific job related skills. It is through the possession of such specific job abilities that individuals can be said to fit for a particular occupation (Osipaw & Fitzgerald, 1996; Arthor et al, 1981). Some tests that are used in South Africa for example are the Senior Aptitude Test (Fouche & Verwey, 1978) and

the Differenctial Aptitude Tests (Coetzee & Vosloo, 2000) because these were standardized and researched for various groups of populations (de Bruin, 1999). Similarly, we can develop ours which will take considerations of the Cameroon context and culture.

Interests

Interests refer to the client's likes and dislikes. They are essential in that they constitute the client's satisfaction for future life (Lowman, 1991). The importance of interest inventories lies in the fact that; they enable the client to identify issues they otherwise didn't know they had interest in, identify the client's interests and expose the discrepancy between the client's abilities and interests (Sharf, 1997; de Bruin, 2001).

Although there are many interest inventories, it is the Self-Direct Search (SDS), Du Joit & Gevers, 1990) that is outlined due to its prominence for this work. According to Holland (1985), realistic (practical), investigative (scientific), artistic, social, enterprising (business) and conventional (clerical) are six basic types of occupational personalities. As such, Holland (1997) postulated that these six types of personality types can be correlated to six types of working environments. The theory therefore describes six interest fields which can be hexagonally aligned such that those are most related are closest, while those that oppose are opposite to each other. As such if a client discloses his interest then the hexagonal model can be used to analyze or visualize the consistency or inconsistency of the clients' interests. When the SDS scores are highest for interest fields that are closest to each other, then the clients' interests are highly consistent.

Values and needs

Values and needs are cognized needs that guide human behavior (Isaacson & Brown, 1997). People tend to value something when they have the need for it, and drift away from something when they have no need for it. It can therefore be said that behavior is motivated by values and needs (de Bruin, 2001). Therefore, the job of a GC is to help the client find an environment that optimally satisfies their needs (de Bruin, 1999).

In South Africa, the Value Scale (Longley, Du Toit, & Herbst, 1992a) assesses the client's values and predicts the extent to which they will be met in the work environment. It was standardized in SA (de Bruin, 2001) and measures 22 values which through factor analysis were recognized to be grouped into 6 categories; inner orientation, autonomous life style, humanism and religion, social orientation and physical orientation (de Bruin, 1985).

The basis of this scale was that developed by Nevill and Super (1986a). However, the value scale employed in this work is tailored specifically to investigate the value that the counselee places on STEM. It is easier to investigate the value placed on a particular construct especially at this level, and therefore; the respondent is investigated with respect to their value for Science and Technology, Engineering and Mathematics. If the student does not show interest in STEM, of course there are reasons for that, and probably it means they do have a higher value for other fields. This is however beyond the scope of the present study.

Personality; these are basic tendencies for people to behave in a particular way. The assumption has it that people of a particular occupation have the tendency to behave in a particular way. As such, personality profiles are matched with many possible occupations (Sharf, 1997, de Bruin, 2007). The 16 Personality Factor questionnaire (16PF; Cattel, Eber & Tatsuoka, 1970), the Myers-Briggs Type Indicator (MBT; Myers & McCauley, 1985) and the Jung Personality Questionnaire (JPQ; Du Toit, 1983) are some personality tests developed in South Africa. The 16PF uses a bipolar dichotomy to identify extreme ends of a trait. By so doing, a GC can match the clients profile with the most eligible occupational pattern (Sharf, 1997).

It was Carl Jungs, Theory of Psychological Types that formed the basis of the MBTI. Using 16 different personality types, it categorizes people into 4 groups in which the degree of compatibility among people in the same group is higher. It also established that people in a particular group are more suited for some jobs than others, leaving the counselor with the latitude to match clients to their optimal environments. JPQ was adapted from the MBTI for use in SA. In this study, the big five was used to categorize the client into 5 typologies;

Neuroticism. Neuroticism is a dimension of normalpersonality indicating the general tendency to experiencenegative affects such as fear, sadness, embarrassment,anger, guilt and disgust. High scorers may be at risk ofsome kinds of psychiatric problems. A high Neuroticismscore indicates that a person is prone to having irrationalideas, being less able to control impulses, and copingpoorly with stress. A low Neuroticism score is indicative of emotional stability. These people are usually calm,even-tempered, relaxed and able to face stressfulsituations without becoming upset (Hough et al., 1990). Hörmann and Maschke (1996) found that Neuroticism isa predictor of performance in various occupations.Dunn, Mount, Barrick and Ones (1995) showed that emotional stability (the opposite of Neuroticism) is thesecond most important characteristic

that affects theemployability of candidates. In a another study Judge, Higgins, Thoresen and Barrick (1999) found thatNeuroticism is inversely related to job performance.However, according to Salgado (1997), Neuroticism predictsjob performance in certain circumstances.

Extraversion. Extraversion includes traits such as sociability,assertiveness, activity and talkativeness. Extraverts areenergetic and optimistic. Introverts are reserved rather thanunfriendly, independent rather than followers, even-pacedrather than sluggish. Extraversion is characterised by positivefeelings and experiences and is therefore seen as a positive

affect (Clark & Watson, 1991). It was found that Extraversionis a valid predictor of performance in jobs characterised bysocial interaction, such as sales personnel and managers (Barrick & Mount, 1991; Bing & Lounsbury, 2000; Lowery &Krilowicz, 1994; Vinchur et al., 1998). Johnson (1997) found apositive relationship between Extraversion and job performance of police personnel, and explained thisrelationship in terms of the high level of interaction in thepolice service.

Openness to Experience. Openness to Experience includesactive imagination, aesthetic sensitivity, attentiveness toinner feelings, a preference for variety, intellectual curiosity and independence of judgement. People scoring low onOpenness tend to be conventional in behaviour andconservative in outlook. They prefer the familiar to the novel, and their emotional responses are somewhat muted.People scoring high on Openness tend to beunconventional, willing to question authority and preparedto entertain new ethical, social and political ideas. Openindividuals are curious about both inner and outer worlds, and their lives are experientially richer. They are willing toentertain novel ideas and unconventional values, and theyexperience both positive and negative emotions more keenly than do closed individuals. Research has shown thatOpenness to Experience is related to success in consulting(Hamilton, 1988), training (Barrick & Mount, 1991; Vinchuret al., 1998) and adapting to change (Horton, 1992;Raudsepp, 1990). In contrast, Johnson (1997) and Hayes,Roehm and Castellano (1994) found that successfulemployees (compared with unsuccessful employees)obtained significantly lower scores on Openness. Tett et al. (1991) reported that Openness to Experience is not a validpredictor of job performance. A possible explanation for thecontradictory results regarding the relationship between Openness to Experience and job performance is thatdifferent jobs have different requirements.

Agreeableness. An agreeable person is fundamentallyaltruistic, sympathetic to others and eager to help them, andin return believes that others will be equally helpful. The disagreeable/antagonistic person is egocentric, sceptical ofothers' intentions, and competitive rather than co-operative.According to Tett et al. (1991), Agreeableness is a significant predictor of job performance. Salgado (1997) found thatAgreeableness is related to training success. The co-operativenature of agreeable individuals may lead to success in occupations where teamwork and customer service arerelevant (Judge et al., 1999). Conscientiousness. Conscientiousness refers to self-controland the active process of planning, organising and carryingout tasks (Barrick & Mount, 1993). The conscientious personis purposeful, strong-willed and determined.Conscientiousness is manifested in achievement orientation(hardworking and persistent), dependability (responsible and careful) and orderliness (planful and organised). On thenegative side, high Conscientiousness may lead to annoyingfastidiousness, compulsive neatness or workaholic behaviour. Low scorers may not necessarily lack moralprinciples, but they are less exacting in applying them.Borman, White, Pulakos and Oppler (1991) and Hough et al. (1990) found a correlation of 0,80 between reliability (anaspect of Conscientiousness) and job performance. Variousresearchers (Barrick & Mount, 1991; Barrick, Mount &Strauss, 1993; Frink & Ferris, 1999; Ones & Viswesvaran,1997; Sackett & Wannek, 1996) reported significantcorrelations between Conscientiousness and jobperformance. According to Sackett and Wannek (1996), therelationship between Conscientiousness and job performance could be attributed to the conceptualrelationship between Conscientiousness and integrity.Furthermore, autonomy and goal setting influence therelationship between Conscientiousness and jobperformance (Barrick & Mount, 1993; Barrick et al., 1993).To the lay person it is a self-evident fact that personality factorsplay an important part in job performance. Yet the psychologicalliterature in this regard is equivocal. Schmitt, Gooding, Noe andKirsch (1984) found in a meta-analysis of validation studies of personality measures an average validity coefficient of $r = 0,21$.However, Barrick and Mount (1991) concluded that there aregrounds for optimism concerning the use of standard personality tests to predict performance of employees.

Holland's Theory of Vocational Personalitiesand Work Environments

The work of John Holland has become a major force in applied psychology and career development theories (Brown & Brooks, 1996). The introduction

of the theory in 1959 emphasized an examination of the different aspects of person-environment fit. There was also an emphasis on the acquisition and processing of environmental information. "Persons with more informationabout occupational environments make more adequate choices than do persons with less information" (Holland, 1959, pp. 40-41). A major emphasis oncareer choice and development through external factors such as parents,teachers, and other individuals was indicated in Holland's early presentation of his theory.Central to Holland's (1992) theory of vocational personalities and work environments is the idea that individuals can be categorized meaningfully as one of six personality types — Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC). Individuals' vocational intereststypically differ according to one of the personality t3rpes. A personality type isa theoretical organizer for understanding how individuals differ in theirpersonality, interests, and behaviors.

According to Holland (1992), personality types usually develop fromactivities to dispositions. Early in life, an individual's heredity and experiences lead preferences to some types of activities and oppositions to others.Later, these preferences become well-defined interests from which the individual gains personal satisfaction as well as reward from others. The pursuitof these interests lead to more specialized competencies. These events, a combination of preferred activities, interests, competencies, and beliefs create a personality type. Personality types are measured by assessment devicesusing interest items as expressions of personality.

Holland's theory also specifies a hexagonal structure of the degree of psychological similarity among the six personality types, wherein each of the six RIASEC types appears on one point of the hexagon (Holland, Whitney,Cole, &Richards, 1969). See Figure 2.1. It is assumed that adjacent types are most similar, types positioned opposite of one another on the hexagon areleast similar, and alternating types have an intermediate level of similarity.Empirical investigations (Cole & Hanson, 1971; Swanson, 1993; Tracey &Rounds, 1992) generally have demonstrated sufficient evidence to accept the hexagonal model as an adequate representation of Holland's six personality types.

Holland's RIASEC model (1997) clearly defines characteristics beheved tocorrespond with each of the six personality types. Some of the characteristicsmay be summarized as follows: Realistic - conforming, dogmatic, genuine, hardheaded, inflexible,materialistic, persistent, practical, realistic, reserved;

Investigative - analytical, cautious, complex, critical, independent,intellectual, precise, rational, reserved, unassuming;

Artistic - complicated, disorderly, emotional, expressive, imaginative, impulsive, intuitive, nonconforming, open, sensitive;Social - agreeable, cooperative, friendly, helpful, idealistic, kind,patient, responsible, sociable, understanding;

Enterprising - adventurous, ambitious, assertive, domineering,energetic, excitement-seeking, forceful, optimistic, resourceful, self-confident; and

Conventional - careful, conforming, conscientious, dogmatic, efficient, methodical, obedient, persistent, thorough, thrifty, (pp. 21-27)

Holland's theory of vocational personalities and work environments is also known as the person-environment fit theory. It describes the six personality types and classifies the environments in which individuals functionusing a parallel set of constructs (Realistic, Investigative, Artistic, Social,Enterprising, and Conventional). The interaction of certain personalitytypes with specific environments predicts and explains the behavior and

Holland's Theory of Vocational Personalities and WorkEnvironments RIASEC Model.
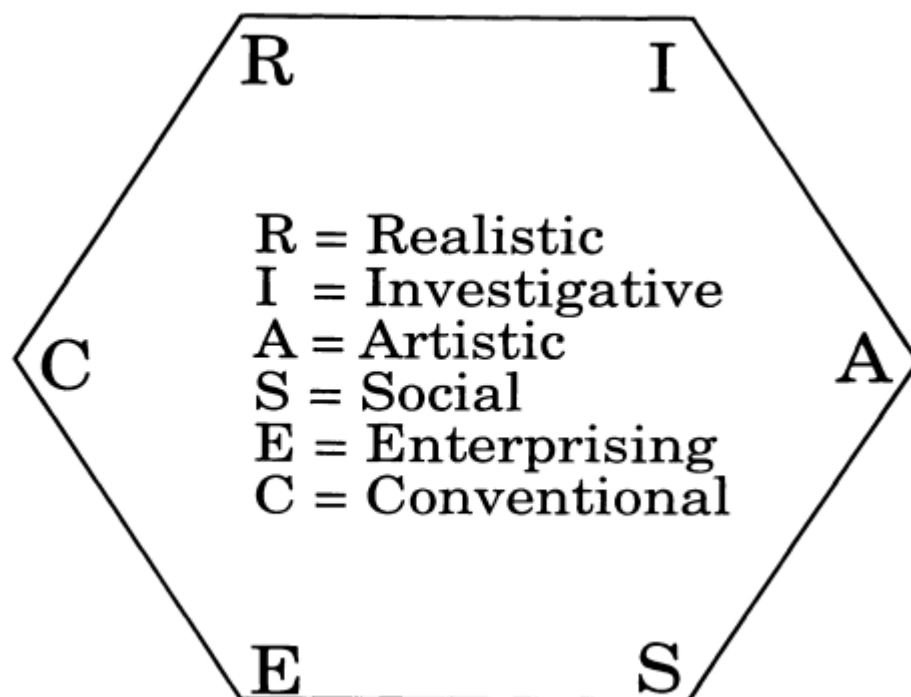
Interactions which occur in those environments (satisfaction, stabihty, performance). Holland's model implies some change and adjustment in both people andin the environments in which they live or work (Holland, 1994, 1997). Anindividual's career or development over the life span can be seen as a series ofperson-environment interactions. Some interactions are more importantthan others (e.g., choosing a college major, deciding on a job, getting divorced,getting fired, and changing jobs, retiring from a long-time career). Holland (1994, 1997) utilizes several methods to explain the interactionsof person-environment. Degrees of congruence (or compatibility), consistency(or similarity), and differentiation (magnitude of the differences) are thethree most commonly defined. Interactions involving various degrees ofcongruency, consistency, and differentiation will result in different outcomes.Holland's theory implies that many people resemble more than one, andin many instances, all six personality types.

Each individual has an uniquecombination of all of the types.The following statements made by Holland, Fritzsche, and Powell (1994)provide an overview of the model. Most persons can be categorized as one of six personality types labeled: Realistic (R), Investigative (I), Artistic (A), Social (S),Enterprising (E), or Conventional (C).

2. There are six kinds of environments: Realistic (R), Investigative(I), Artistic (A), Social (S), Enterprising (E), and Conventional(C).

3. People search for environments that will let them exercise theirskills and abilities, express their attitudes and values, and takeon agreeable problems and roles.

4. Behavior is determined by an interaction between personalityand characteristics of the environment, (p. 1)By 1994, more than 400 articles, books, chapters, and reviews had examined how the Holland personality typology fared in experimental tests of its hypotheses, in its value for organizing personal and occupational data, and in its practical use. The validity of Holland's (1994) trait characterizations of the personality types generally has been supported by empirical studies relating scores on personality type measures (e.g., Self-Directed Search, Vocational Preference Inventory) to a wide range of personality inventories, including Cattell's 16PF (Ward, Cunningham, &Wakefield, 1976),the Myers-Briggs Type Indicator (Martin & Bartol, 1986), the NEC Inventory(Costa, McCrae, &Kay, 1995), and the Career Decision-Making System(Luzzo &Taylor, 1995), among others.Nimaerous doctoral students have used the Holland theory as well (Abel,1995; Barisa, 1995/1996; Bikos,

1995/1996; Girardet, 1994; Ohler, 1994/1995;Slifer, 1994; & Woodward, 1994). Trout (1987/1989) was the only dissertationfound that was related to students majoring in family and consumer sciences.

Assessment Devices Based on Holland's Theorv.

Holland's theory is thebasis for several of the assessment inventories in use today. Because thedemand for vocational assistance continues to be very strong in education, business and industry, and counseling, a knowledge of Holland's theory is important to effective career assessment and intervention. The theory provides a comprehensive and coherent set of constructs for use in the assessment of career and vocational issues.

The Vocational Preference Inventory (VPI), the first of the Holland inventories, was introduced in 1953. The 1985 (seventh) edition consists of 160 occupational titles representing the six personality types as well as five other dimensions. The VPI is frequently utilized by career counselors with high school and traditional-aged college students, but it is also used withadults.In addition to the researchers exploring the constitution of the six personality types, Holland cooperated with Astin (Astin & Holland, 1961) to studythe nature of college environments.

The Environmental Assessment Technique (EAT) takes a census of the type of majors, courses, and students at aparticular university as a means of characterizing the educational environment. The initial work, especially that in college environments, was summarized in an American College Testing Program monograph by Walsh (1973), astudent of Holland's at the University of Iowa. Today, the EAT is used inassessing the population of a university, business, community, or other typesof groups and institutions. The environments are categorized according tothe six RIASEC types (Holland, 1992, 1997). During the 1970s, major steps took place in career development research.The Self-Directed Search (SDS) was developed and the Holland themes wereadded to the Strong Interest Inventory (Campbell & Holland, 1972). Bolles'book, What Color Is Your Parachute? (1978) introduced the theory to thepublic. During this time period, the attention on classifying higher educationenvironments shifted to categorizing of work environments and gender questions in interest assessment.

The Self -Directed Search (SDS), one of the most widely used interestinventories (Holland, 1994; Holland, Fritzsche, &; Powell, 1994), was firstpublished in 1971. It has been estimated

that the SDS has been used by over21 million people worldwide. The instrument consisted of an assessmentbooklet, an occupations finder booklet listing over 1300 job titles, and an interpretive guide. Unlike most career assessment devices, the SDS was designed to be self administered, self-scored, and self-assessed. It is usedwith high school and traditional-aged university students as well as adults.The SDS has been revised three times, most recently in 1994Another assessment tool.

My Vocational Situation (MVS), developed byHoUand, Daiger, & Power (1980) is a two-page questionnaire with 18 items.The assessment device helps to determine if lack of vocational identity, lackof information or training, or emotional or personal barriers might be problematic. The MVS is used often prior to an interview and then tabulated at a glance. Many colleges and universities use it as a diagnostic tool.The Position Classification Inventory (PCI) developed by Gottfredson andHolland (1991) is an 84-item inventory that applies the Holland summarycodes to job positions in an organization. The PCI was developed to permit asmall number of employees or supervisors to rate their work environment. Itis a valuable tool in analyzing positions within an existing job classification system to determine whether different positions belong in the same category.

The Career Attitudes and Strategies Inventory (CASI) is the most recent development using the Holland theory (Holland & Gottfi-edson, 1994). The self-administered CASI has 130 items and surveys nine different aspects of career and work adaptation (job satisfaction, work involvement, skill development, dominant style, career worries, interpersonal abuse, family commitment, risk‑taking style, and geographical barriers). This inventory assessesthe probability ofjob stability and helps to clarify situations the individualmay see as career problems.Examples of other inventories and measures which are linked to the sixpersonality types (RIASEC model) include the revised Strong Interest Inventory ([SII] Harmon, Hansen, Borgen, & Hammer, 1994) and the Career Assessment Inventory (Johansson, 1986). The revised Armed Services Vocational Aptitude Battery (ASVAB) workbook (Department of Defense, 1993)was also tied to Holland's theory.Wide use of the SDS has led to the creation of supplemental materials designed to perform a specific purpose.

The Occupations Finder (Holland,1994) was first developed to assist the test-taker in locating occupationalcodes as the number of occupations increased. The demand for a more comprehensive document led Gottfi-edson to develop a conversion formula to

derive three-letter Holland codes for all occupations in the labor force. The Dictionary of Holland Occupational Codes (PHOC] Gottfi-edson & Holland, 1989) resulted.Two additional exploration devices designed to supplement the SDS include the Educational Opportunities Finder ([EOF] Rosen, Holmberg, & Holland, 1994b), a classification of over 750 fields of postsecondary study based on the three-letter Holland occupational codes, and its more elaborate counterpart, the Dictionary of Educational Opportunities (PEG] Rosen, Holmberg, & Hollamd, 1994a). Because these devices share the same coding system and theoretical basis, researchers and counselors find these tools easy to use and to integrate with other information.

WORK KNOWLEDGE

Types of occupational information, classification systems and trait and factor requirements are 3 aspects of occupational information that compel the client to have in order to do an appropriate career selection (Sharf, 1997).

Type of occupational information

Include; a description of the occupation, the qualification required for entry, necessary education, salary and employment outlook (Sharif, 1997). These could be obtained generally from printed material like professional trade pamphlets and from computer based information systems.

Classification systems

Occupations are usually organized according to different classification systems. Some classify according to specialization, (professional, mechanical and managerial), tasks required, use of data and interaction with individuals (Sharf, 1997). The Dictionary of Occupational Titles (DOT) (Department of Labor, 1991), produced 1172 careers on ONET. Some countries like SA used My Career, a dictionary of careers in SA.

Trait and factor requirements

Traits and characteristics of individuals can be correlated with occupational information. It then provides the opportunity to evaluate individual aptitudes, interests, needs and personality in relation to the opportunity described or presented (Sharf, 1997).

CORRELATING SEL-KNOWLEDGE WITH WORK KNOWLEDGE

The goal of trait and factor theory is to integrate the client's aptitudes, interests, needs, personality, career information and career counseling interview. Parsons (1909) three step principles provided the bedrock for the trait and factor theory. However, Williamson (1939) later on translated the theory into 6 steps. It will be discussed in greater detail in the proceeding section.

TRAIT AND FACTOR CAREER COUNSELLING

The counseling process under T&FT consists of 6 main steps; analysis, synthesis, diagnosis, prognosis, counseling and follow up. The analysis step entails exploration of avenues to understand the client and his/her environment. Through tests, inventories, family background and educational progress, the GC understands the nature of the client. The GC then has the prerogative to synthesize and sum the data with respect to the client's strengths and weaknesses (Williamson, 1939; Brown & Brooks, 1984). By so doing, the GC can then draw inferences from available data in terms of the client's strengths and weaknesses (Crites, 1981).

Accordingly, clients would be faced with; no choice, uncertain choice, unwise choice and discrepancy between interest and aptitude as source of their problem. When these sources of the problem have been identified, it becomes the GC prerogative to solve the problem (Williamson, 1939; Brown & Brooks, 1984; Crites, 1981).

The lack of opportunity to observe jobs, inability to make a choice and interests in fields unrelated to carriers, are some reasons for lack of choice. Secondly, uncertain choices result from premature choices, lack of educational adjustment, lack of self-understanding and world of work; despite being able to choose and verbalize on an occupational title. Thirdly, unwise career choices occur when individuals have a career choice for which their aptitudes do not corroborate with their interests, abilities and personality. Common causes for this include; peer pressure, pressure from significant others, lack of occupational information, and misconception about careers (Stead & Watson, 1999).

Three types of discrepancies between interests and aptitude occur; interests in occupations for which the client has insufficient aptitudes, interests in an occupation for which the client's abilities supersede and equality in interest and aptitude but in divergent

fields (Crites, 1981). The type of process for career counseling is incumbent therefore, on either of these four type of problems (Crites, 1981).

Prognosis then follows diagnosis. In which the GC does an inference as to whether the client can overcome their problem or not. As such, if the GC deems it necessary, understanding that the client cannot resolve their problem on their own, then counseling follows (Brown & Brooks, 1984). The counseling provides he client with the information about self, personal attributes, information about jobs, learns about decision making, such that the client can implement a course of action (Brown & Brooks, 1984). Indeed, the follow up stage then evaluates whether the choice of action settled upon was appropriate or not and if the process needs to be revisited.

Cites observed that the T&FT have the client passive during the counseling process. It is noted that counselors who utilize this approach are characterized by 'expertness', 'attractiveness' and 'trustworthiness' (Strong & Schmidt, 1970) according to dimensions of counselor characteristics. Expertness is the counselor's ability to appraise, assess and interpret the situation from his or her repertoire of knowledge as believed by the client (Heppner & Dixon, 1985).

It settles that the typical relationship between the counselor and client is of teacher-to-student or expert-to-novice (Crites, 1981). The T&FT counselor has many techniques to help the client make appropriate decisions, one of which is psychological testing and interpretation.

THE PLACE OF TESTS AND TEST INTERPRETATION IN T&FT CAREER COUNSELLING

There has been extensive use of tests in T&FT career counseling due to the fact that it developed with the psychometric movement (Gothard & Mignot, 1999; in Crites 2007).

Proponents of T&FT such as Prediger (1974) have it that tests are an excellent way to get info about individuals and their ability to make decisions (Brown & Brooks, 1984). To the extent that tests motivate clients, to explore new avenues and appropriately needs that were only vaguely stated, it is incumbent on the GC to have the dexterity to unravel test results and also have the ability to communicate efficiently (Brown& Brooks, 1984). The GC gives advice to the client as well as clinical judgment based on the interpretations from test results.

It is upon these interpretations that he/she makes recommendations to the client (Stead & Watson, 1999; Crites, 1981).

Such an approach was analyzed by Biggs and Keller (1982) to lack client involvement which inhibits their appropriate processing of test information. They thus suggested a more active role to the client (Brown & Brooks, 1984).In spite of that, the approach has continued to thrive on the base of evidence that supports it, discussed in more detail under the empirical framework.

EMPERICAL FRAMEWORK

Support for T&FT approach to GC

In order to provide advice for job and personnel equity, Lopez, Kesselman and Lopez (1981), did an analysis which provided empirical support for the T&FT. They employed the Threshold Trait Analysis (TTA) approach which entailed analyzing a given environment to determine the characteristics that employees who would perform optimally needed to possess (Brown & Brooks, 1984). They then relied on the job analysis task to recommend the client for a particular job.

There has been correlation between particular trait, job performance and satisfaction such as that done by Hogan, Desoto and Selano (1997). Aptitudes, interests, values and personalities were found to correlate among themselves as well as with job attainment and success. Later on in 1997 and 1998, those findings were corroborated with those of Schmidt, 1988; Gottfreson, 1998; Sharf, 1997).

In spite of that, the decline in use of T&FT has been due to assimilation of its concepts into other approaches and the redundancy of the ideas (Ospow, 1983). Whatever the argument, a more comprehensive approach has not been developed to make T&FT counseling obsolete (de Bruin, 1999). Crites (2007) did not relent efforts however, to reevaluate the role that T&FT continues to hold in the GC arenas.

Evaluation of T&FT approach to GC

Schools have contended that the over simplification of CGC by T&FT has philosophical bases that needed challenge (Parsons, 1909; Williamson, 1939; Stead & Watson, 1999). The assumptions were;

The role of testing

Tests are assumed to be accurate and reliable. Only tested interest reflects career interests and that tested interests remain stable over time (Stead & Watson, 1999).

Career choice

That people make one career choice that everyone has the opportunity to make a career choice, that each person has a correct career choice and that choosing a career choice is a satisfying process for each individual (Stead & Watson, 1999).

Counseling process

That it is simple, does not require much from the client, is mainly a cognitive process that negates meanings which clients attach to information (Swason, 1996).

Despite the arguments that T&FT has over simplification, Rounds and Tracey in 1990 contended that the Crites was blinded by the metamorphosis that T&FT CC had undergone. Although Round and Tracey (1990) acknowledged dissolution of processes that occur in between the steps, the deviation from the fact that not all individuals are mature enough to take career decisions takes precedence on the how question between the stages in T&FT CC. There were emancipations of the other theories in 1984 and 1985 which however were simply extensions of the T&FT (Holland, 1985; Lofquist, 1984) and therefore it continues to provide the bedrock for career counseling.

In a nutshell therefore, T&FT does not underscore the fact that optimal career outcomes flourish when there is congruence between the individual traits and the demands, requirements and rewards of the organization (Seligman, 1994 in Crites, 2007). It can be simply put that this is based on the counselor's measurement of the client's aptitudes and interests which are then interpreted by an 'expert' counselor to make recommendations on occupations based on the interests and aptitudes required (Nathan &Hill, 2000).

Although many counselors no longer adhere to T&FT strictly, given that they content to the influences of family background, development and environmental influences, it cannot be overemphasized that contemporary theories have been developed with T&FT forming the groundwork for these theories (Holland, 1985; Crites, 2007).

The effects of test interpretation styles and the status of tests in career counseling (de Bruin, 2007)

Numerous studies have explored the role of counseling and the extent to which career counseling enhances student's ability to understand and recognize tasks that are dire to the decision making (de Bruin, 2007). Krumboltz and Worthington have pointed out that learning not only equips students with employability skills for school-to-work transition, as it develops habits, beliefs, interests and values that are salient in the world of work. Recent studies have indicated that career orientation enables students to reflect on their ambitions, gauges their interests, qualifications and abilities; thereby enabling them to understand the labor market (Loan & Van, 20015).

Other studies have established factors affecting career orientation (de Bruin, 2007). Pointing out that career orientation is greatly affected by career maturity; Heslin ascertained that both contextual and individual factors affect career orientation. At the end of high school, students are faced with numerous decisions with Doppler effects. For example; whether to join the military, find a job, get apprenticeship, go to college, choose a major or join voluntary services to gain a skill (Suryadi, 2010).

Taking the case of Indonesia as an illustration, where there are guidance counselors in high schools, we can explore the role that guidance counselors have in students' career orientation (Kemdikbud, 2014). De Bruin (2007) took the study to understand the role of guidance counselors in the career services in Indonesia. The study applied a descriptive survey design to draw 278 students from two senior high schools, and two vocational high schools in Jakarta, during the 2006/2007 academic year. They were grade X and XII constituted of 186 (67%) girls and 92 (33%) boys of ages between 14 and 18.

The study employed two research instruments which were questionnaires; Career Orientation Inventory (COI) and Counselling Role in Career Guidance Inventory which were in likert format. The COI had 9 items while the later had 40 items. In the end, descriptive and t-test were used to analyze the data. The finding revealed that 91.2 % of high schools and 68.6% of vocational students had plans to go to college. 0% and 15% of high school's students and vocational school students had plans to find a job. 0% and 2% respectively of high school and vocational students planned being entrepreneurial, while 8% and 1% respectively indicated others. 0.8% and 3.3% respectfully of high school and vocational school students were undecided (de Bruin, 2007).

There was found to be a significant difference between high school students and vocational school students. However, when controlled for gender, there was no significant

difference. The students generally indicated that guidance counselors had a strong role in providing guidance and counseling services. In fact, out of the 9 roles, 5 had a high priority rating above 80%.

The findings from the study has dire consequences for educators. If the students at the end of high school have no interest in getting a job or being entrepreneurial, there are many possibilities. Firstly, the students do not possess required skills, or may not have what it takes to secure a job. Secondly, in Indonesia, universities recruit 30% of applicants for university studies. Given that most of the students want to go to university and are not ready to be entrepreneurial or get a job, 70% of the remaining students were to join the unemployment group (de Bruin, 2007).

The case although in Indonesia, may not have different implications for Cameroon. It is evident that prolonging to get a job may be adverse in that the vibrant man power factor where skills are recruited becomes weak. As such, a country like Cameroon with resources that can only sustain basic education, will have the challenges in the field of productivity given that labor will be expensive. Similarly, unemployment rate in Cameroon is very high.

However, the unemployment rate among youths may be a factor of their employability rather than their willingness to work. Therefore, the ardent need to develop knowledge, skills and attitudes that can orient students towards productivity cannot be overemphasized.

In recent years, Sweden adopted a criterion-referenced grading system, where the grade outcome is used for several purposes, but foremost for educational evaluation on student- and school levels as well as for selection to higher education. In a study, Wikstrom (2005) investigated the consequences of using criterion-referenced measurement for both educational evaluation and selection purposes. The thesis comprises an introduction and four papers that empirically investigate school grades and grading practices in Swedish upper secondary schools.

The first paper investigated the effect of school competition on the school grades. The analysis focused on how students in schools with and without competition are ranked, based on their grades and SweSAT scores. The results showed that schools that are exposed to competition tend to grade their students higher than other schools. This effect is found to be related to the use of grades as quality indicators for the schools, which means that schools that compete for their students tend to be more lenient, hence inflating the grades.

The second paper investigated grade averages over a six-year period, starting with the first cohort who graduated from upper secondary school with a GPA based on criterion-referenced grades. The results showed that grades have increased every year since the new grading system was introduced, which cannot be explained by improved performances, selection effects or strategic course choices. The conclusion is that the increasing pressure for high grading has led to grade inflation over time. The third paper investigated if grading practices were related to school size. The study is based on a similar model as paper I, but with data from graduates over a six-year period, and with school size as the main focus. The results showed small but significant side effects, suggesting that the smallest schools (1000 students) are lower grading than other schools. This is assumed to be an effect of varying assessment practices, in combination with external and internal pressure for high grading. The fourth and final paper investigated if grading practices differ among upper secondary programmes, and how the course compositions in the programmes affected how students are ranked in the process of selection to higher education. The results showed that students in vocationally oriented programmes are higher graded than other students, and also favored by their programmers' course compositions, which have a positive effect on their competitive strength in the selection to higher education.

In the introductory part of the study, Wikstrom discussed from the perspective of a theoretical framework, with special attention to validity issues in a broad perspective. The conclusion is that the criterion-referenced grades, both in terms of being used for educational evaluation, and as an instrument for selection to higher education, were wanting both in reliability and in validity. This is related to the conflicting purposes of the instruments, in combination with few control mechanisms, which affects how grades are interpreted and used, hence leading to consequences for students, schools and society in general (Wikstrom, 2005)

Education should be viewed as a means to an end. The means being the acquisition of knowledge, skills and attitudes, which prepare for the end, which is the ability to live better lives as a result of development in various spheres of live (Nenty, 2014). Let us look at a case study in the United States that serves as a bridge between education and work live, and later on see how it can be employed in the Cameroon situation. Established more than 30 years ago, Career Academies have become a widely used high school reform initiative that aims to keep students engaged in school and prepare them for successful transitions to post-secondary education and employment. Typically serving between 150 and 200 high school students

from grade 9 or 10 through grade 12, Career Academies are organized as small learning communities, combine academic and technical curricula around a career theme, and establish partnerships with local employers to provide work-based learning opportunities. There are estimated to be more than 2,500 Career Academies across the country.

Since 1993, MDRC has been conducting a uniquely rigorous evaluation of the Career Academy approach that uses a random assignment research design in a diverse group of nine high schools across the United States. Located in medium- and large-sized school districts, the schools confront many of the educational challenges found in low-income urban settings. The participating Career Academies were able to implement and sustain the core features of the approach, and they served a cross-section of the student populations in their host schools. This report describes how CareerAcademies influenced students' capacity to improve their labor market prospects and sustain their engagement in post-secondary education programs in the four years following their expected graduation. The results are based on the experiences of more than 1,400 young people, approximately 85 percent of whom are Hispanic or African-American.

The Career Academies substantially improved the labor market prospects of young men

A group that has experienced a severe decline in real earnings in recent years. Through a combination of increased wages, hours worked, and employment stability, the young men in the Academy group earned over $10,000 (18 percent) more than those in the non-Academy control group over the four-year follow-up period. The Career Academies had no significant impacts (positive or negative) on the labor market outcomes for young women. This may be due, in part, to the fact that young women in both the Academy and the non-Academy group had greater propensity than the young men to be attending school or taking care of children. Overall, the Career Academies served as viable pathways to a range of post-secondary education opportunities, but they do not appear to have been more effective than options available to the non-Academy group. More than 90 percent of the students in the Academy and nonAcademy groups graduated from high school or received a General Educational Development (GED) certificate. By the end of the follow-up period, more than half the sample had completed a post-secondary credential or were working toward one. The positive labor market impacts were concentrated among Academy group members who were at high or medium risk of dropping out of high school when they entered the programs.

Although the Career Academies reduced enrollments in post-secondary education among those who entered the programs at highest risk of dropping out, this does not appear to have diminished the substantial earnings advantage produced by the Academies for this subgroup. The lack of labor market impacts for the low-risk subgroup may be due to this group's greater focus, relative to the others, on post-secondary education.

The findings demonstrate the feasibility of improving labor market preparation and successful school-to-work transitions without compromising academic goals and preparation for college. They provide compelling evidence that investments in career-related experiences during high school can produce substantial and sustained improvements in the labor market prospects of youth during their post-secondary years. In fact, Career Academies are one of the few youth-focused interventions that have been found to improve the labor market prospects of young men.

Career Guidance, participation of students and implication for Kano, Nigeria by Isa Ado Abubakar

The purpose of the study was to examine the extent to which student's participation in CG develops productive, responsible equipped students for work life with respect to an amoebeod society in terms of technology. Isa described career development in this study in three folds. By defining career development as participation, career information and exploration, he mentained that career development is a process and not just an extent. Using Hollands Career Theory (1992), Isa described how career development essentially entails looking for congruence between personality and the environment. Summing up in three steps, he asserted that applicants first have to participate in the career program. Of course it it through participation in the career guidance program that they come in touch with the resources that are put to their disposal. Through orientation, the students were therefore expected to understand what it takes to 'become' what their interests, needs and aspirations lead them to. He referred to participation as part of 'transition enhancement'. The study pointed out that the participation affected efficient career development (Herr, Craner & Niles, 2004).

Secondly students were to seek information. The information here allowed them link their interests, capacities, aspirations to existing opportunities to which the learning can lead to. By information, self-knowledge enabled effective career decision making (Zunker, 1994). This information providing relevant information about education and training opportunities,

occupation and characteristics was to be made possible through the information section stage. Career information although insufficient to make the right decision in career eas seen as crucial.

Thirdly, applicants had to explore. By exploring, this provided them the chance to participate in some activities through internship opportunities and so on. Such hands on activities that exploration provided were part of the molding or training that applicants were expected to have. By so doing, individual qualities and those of the workplace are brought in contact to see if there was a coherence (Parsoin, 1908; Holland, 1992). Isa noted that other researchers had found satisfactory participation in CGC in Malasia (Rashed et al, 2009).

This study noted that many assessment tools had been used to help students make better career choices and cited that of Frank Parson of 1908. Isa selected 186 boys and 201 girls to represent a sample in the study. Although represented in terms of gender, he did not explain how this sample was gotten from the Kano metropolis. He however opined that it was representative. The average age of participants was 17.73 years (SD = 1.75) and included students conveniently selected from 21 schools in the Kano metropolis.

Isa developed a career participation inventory and used it to measure in three areas; career information search, exploration and assessment, and student's participation. The instrument was subdivided into three subscales and each section was correlated o the personality of the students to see the extent to which it matched. The 15 questionnaire item inventory was reliable (r = .65) and ignored the neutral point in the 'sometimes' likert scale.An entire return rate (100%) characterized the administration of this inventory, and descriptive statistics were used to establish the difference in career participation through the subscales. Finally, predictability of gender, level of study, goal selection and exploration were analyzed through regression analysis.

The results were that information seeking and participation in assessment (M = 10.47; SD = 2.89 & M = 10.80; SD = 3.54) had precedence over career exploration (M = 9.24; SD = 3.01). The t test an regression analysis did not observe any difference in terms of gender in career information seeking (t(385) = - 2.68, P > .05), exploration (t(385) = .32, P > .05) and assessment (t(385) = - 1.49, P > .05).

The researcher concluded that much had to be done such that more students participate in career guidance counseling programs. By so doing, more students could be absorbed into the sciences since they would be focused and reduce the burden on the government of Nigeria,

which resulted from overcrowding in the arts without corresponding accommodation upon graduation in terms of jobs.

The development of a needs assessment instrument for summer orientation students of ISU through the use of a modified Delphi Technique

The purpose of this research study was to develop Students' Needs Assessment Inventory (SNAI) that could be used for the orientation of students. In other to do this, the purpose was sub broken thus, to develop a SNAI that could capture the perception of students about their needs during the summer orientation program; the second objective was that the instrument should have face and construct validities; thirdly, the instrument was to be reliable and lastly, the intention was to develop an instrument that could measure the importance of needs in order.

In order to achieve address these objectives, relevant questions were asked such as; what were the needs of students participating in the summer orientation program, what appropriate steps could be used to construct a reliable instrument which was also valid. The demographic characteristics of the students were also questioned in relation to their perceived needs. The study assumed that respondents were independently honest enough to provide useful responses. In order for the instrument to be developed, it was hypothesized that; there would be no significant differences when measured by test retest reliability methods, between the 7 orientation factors that were identified on a pretest and posttest survey instrument. Demographic characteristics chosen for this study were based on past studies.

Some subject variables that were considered in the study included; age, college, sex, parent income, financial aid received, financial status, high school average grade, high school graduating class size, work status, extracurricular involvement, academic standing and racial background. The study limited its scope to first year second semester students, limited responses to the extent to which theses students could diagnose their needs, and the extent to which respondents participated in the part two survey development, and the test retest sessions to provide evidence for reliability estimates.

After seeking ethical clearance through the submission of a proposal, a modified two Delphi process was used to design the instrument. The process entailed two rounds of questionnaires in which the latter was built from the former, which in itself was modified to improve construct and face validities and thus improve the reliability of the instruments (Gustafson, 1975).

The first draft of the questionnaires had two columns, on either sides of the page, wherein students were expected to say which programs they would benefit from the least and most respectively. An attached note to the first draft of the questionnaire assured that respondents' information would be confidential. They were not anonymous however, since they were expected to take up a second round of questionnaires in a disclosed date. After examining the questionnaires, the research graduate committee concluded after review that the questionnaires that they could be completed between 20-30 minutes and were ethically satisfactory.

The concentric rounds of administration of the questionnaire allowed the final instrument which was to be verified for its usability, dependability and trustworthiness. Cluster sampling was used to select respondents. Although the study was voluntary, those students who participated received a credit in their department for each questionnaire completed. However, there were almost twice as females as males in the survey. Majority were white/Caucasians with black, Indian, Asian, Mexican Americans in the minority. The respondents were between 19 and 24 and from departments of; agriculture, business design, education, engineering, family and consumer science, and science and humanities.

In order to analyze the data, bubble sheets that were recorded by students were entered into SPSS-X procedures and the Pearson Product moment correlations were run for test retest reliability estimates. T values were also computed using two tailed t-tests. Step wise regression was computed to establish evidence between the orientation factors and demographic characteristics studied at an alpha level of .05.

Results of the reliability test had factor to factor correlation for 6 of the orientation factors significant. The social adjustment and integration factors fell below acceptable reliability coefficient. Therefore, academics, faculty and student factors, orientation, finances, geographic and housing had no significant differences in means between pretest and posttest according to the t test and were thus reliable.

The findings did not therefore support the hypothesis. However, the researcher suggested that the instrument was a useful tool that could be used to access the orientation needs of summer students. The social adjustment factor could have yielded unreliable due to increasing knowledge students gained within the period. Items on this factor, again, were very heterogeneous and could be the reason for the decline.

Recommending that such a similar instrument be built to include staff and administration to substantiate the validity of the instrument and institutional perspective, the researcher also recommended that a larger sample be used in order to cross check the reliability of the instrument. Adding, was the need to separately test a group of transfer and freshmen students to see if their needs differed. Two other studies one in a small private and another at a large public institution would compare needs of these groups to others and help to validate the instrument.

The development of the Students Counseling Needs Scale (SCNS)

The main purpose of this study was to develop counseling needs scale for use by counselors, in Kenya, at the secondary school level. Secondly, the researcher intended to find out if it was possible to group the needs of students in Kenya according to academic development, career development and personal development content areas. With this in mind, the

Researcher had in mind that this would help in the development of the counseling program. The prerogative therefore was to find out if the scale would reliably identify the counseling needs of students and if these could be grouped into the trinity afore mentioned. It was therefore hypothesized that; counseling needs of students in Kenya fell into the 3 content areas, that the SCNS could reliably identify these needs, that there was no significant difference between needs of male and female students, and that the needs did not depend on the school and form of the student.

From 8 provincial secondary schools in Kenya, 941 participants were selected for the study, through the convenience sampling, with a mean age of 17.4 (SD = 1.27). The participants represented 17 ethnic backgrounds with six religious groups. The justification of the sample was based on past studies (Abumere, 1986; Feller, 2003). Factor analysis was then used to determine the size of the sample (Hatcher, 2003). However, these were single sex boarding schools, limiting generalizations from public, mixed and day schools.

The initial SCNS was developed from previous literature around the world. The researcher then fine-tuned it to reflect the realities in Kenya. It contained 52 items screened from an initial set of 100 items. The demographic section included; age, sex, tribe, residence, form, religion, parent's/guardians education and occupation. 30 items tackled the academic section, 20 on the career construct and 4 on the personality construct.

These constructs originated from the consultation of literature (Jenning, 1996; Mathabe & Temane, 1993; Navin, 1989; Nicholas, 2000; Ocansey, 2000; Tehhan & Eitah, 2002). This model resembled that used in the US which keyed around; academic, career, personal/social needs (Gybbers & Henderson, 2006; The Missouri Comprehensive Guidance Model, 2002).

An example of the nature of items in the academic content areas was 'to know how to study and get most out of my study time' and 'to know how to seek help in selecting courses that will help me meet my career goals'. Sample questions in the career section included, 'to know how to prepare for career which I am interested' and 'to know how to make plans for what I will do after completing high school'. Sample items in the personal/social content area included 'to know how to express my thoughts and feelings that are important to me' and 'to know how to handle personal difficulties'. A 6 point Likert scale was used to identify the needs through a subject centered scaling method. The scale ranged from 1 = strongly disagree to 6 = strongly agree and avoided the neutral point; thereby increasing variability of response (Heppner, 1991) and increasing reliability.

Three Kenyan graduate students in either education or counseling and two secondary school teachers were asked to evaluate the items for readability and wording as well as adequacy across; socio-psychological appropriateness, cultural relevance, language simplicity, length, format and inclusiveness. Recommendations from this group helped revise the items and reaffirmed the use of such a group in past studies (Ahia & Bradley, 1984).

A pilot study with 74 students was conducted in Nairobi province at a co-educational institution. Their feedback in terms of readability, language simplicity, content application and degree of difficulty was used to further revise the items. In addition to assessment clarity and understanding, a third feedback question required respondents to suggest a modification of items to suit the Kenyan population. Revisions were then made in the items following pilot testing recommendations. The scale therefore had 100 items which were ready for collection of data.

The researcher consulted various cultures to seek clearance for the administration of the instrument; The University of Missouri Institutional Review Board, The Kenyan Government through the ministry of education and the school's administrators. Four Kenyans were recruited and trained to administer the instrument, collect data, score items and rate them. In collaboration with the school authorities in question, the instrument was administered. The proceeding was to screen the data for normality of distribution through the use of; means,

standard deviations, skewness and kurtosis and the test of normality assumptions. The response pattern of four items, initially introduced for this purpose was analyzed to check for validity. Exploration and factor analysis were then conducted to examine factors that defined students counseling needs. (American School Counselor Association, 1997; Gysbers, 2004, Schmidt, 1999). By using the chi-square and goodness of fit indexes, it was possible to examine if the hypothesized structures were supported by the data.

Exploratory factor analysis, Kaiser-Meyer-Olkin and Bartlets tests of sphericity checked if the sample was factorable (Heppner and Heppner, 2004; Heppner, Kivlighan & Wampold, 1999). As such if factor met the Kaiser-Guttman retention criteria of eigenvalues above 1.0, they were given a title. Internal consistency estimates within each scale were reported. Using univariate ANOVAS and MANOVAS, additional analysis allowed possibility to recommend for the application of SCNS determining differences by group.

The reliability estimates yielded .88 for human relationships, .87 for career development, .87 for social values, .83 for self-development and .84 for learning skills. The reliability for the whole SCNS scale stood at .94, implying that the 5 sub-scales could be reliably assessed as indicators for students counseling needs. Female students had a higher mean (M = 5.56) than male (M = 5.36), generally and by level of form.

The results therefore suggested that rather than group counseling needs into 3 content areas of; academic, career and personal, they were to be grouped into 5 areas; human relationships, career development, social values, self-development and learning skills. The discussion routed that students have successively shown more need for career development than those in preceding decades (Sindabi, 1992). The shift in acquiring career information more from counselors rather than parents is an impetus for dire need to develop the counseling sector (Saitoti, 2004; Kithyo & Petrina, 2002; Sindabi, 1992; Saitoti, 2004).

Evidence showed that some students have been pressured by parents into careers in spite of their interests being elsewhere (Kithyo & Petrina, 2002). Worthy of note was the fact that more students are seeing the need to acquire relevant career information while in school. The study recommended that the ministry could identify professionals who could carry research in schools and suggest more lasting counseling programs in schools. Adding to this, government needed to fund the staffing of counselors separately, given that asking a teacher to take up the dual function likely resulted to inefficiency and ethical violation. It turned out that national schools and private schools included in the study would expound on the perspective and

improve the reliability of the instrument. Among other factors, half of the participants were from the same ethnic background, limiting the ethnic representativeness of the sample which could have adverse effects on the reliability coefficients of the instrument.

SCAFFOLDING IN THE FIELD

Researchers have applied scaffolding to educational research in diverse ways (Jacobs, 2001; Hammond, 2002). Like mentioned in the theoretical framework, Vygotsky did not use the word scaffolding since it would not have been understood by Russian speakers. Not surprising for it to become that people used the metaphor to refer to different things (Hammond, 2002). Generally, scaffolding has referred to 'a form of support for the development and learning of children and young people' (Rasmussen, 2000, pg. 570). Others have interpreted it as a way that 'teachers or peers supply students with the tools they need in order to learn' (Jacobs, 2001, pg. 125).

Hammond and colleagues took a critical look at the role of the metaphor in children's writing (Hammond, 2002; Donovan & Smolkin, 2002). They investigated the extent to which different levels of scaffolding affected children's demonstration of their knowledge of genre. The study involved tasks with low level support to those with high level support. They described the highest level of support as direct instruction with revision; scaffolding 169. Their research revealed that although it aided children, it could however hinder their demonstration of the full genre of knowledge (Donovan & Smolkin, 2002).

As the findings tended to be, maximum scaffolding hindered learning as it is the case with direct instruction and therefore becomes counter-productive. Various researchers have provided varied definitions for pre-service teachers (Berk, 2002; Eggen & Kauckak, 1999; McDevitt & Ormrod, 2002; Krause et al, 2003). According to Berk, the quality of scaffolding changes with space and time such that it suits to the needs of the learner. As such, the quality of support decreases with increase in competence (Berk, 2000).

The university of Wollongong Research Council, Australia, supported a project that intended to investigate current perceptions of scaffolding by pre-service teachers; both in conceptual and practical implications. Using students in their third year in the programs of Early Childhood (EC) and Primary (P) education, the projects delved into an understanding of the characteristics of scaffolding and its implications for professional practice. Eight

students volunteered to participate in the survey. It was run as part of study of theories of teaching and learning; as a study of Vygotsky's Socio-cultural Theory and Scaffolding Techniques.

Students were introduced in their first year of undergraduate work to the socio-cultural theory in question and looked at scaffolding techniques when looking at a variety of curriculum areas. The survey through open ended questions warranted the students to discuss a number of issues; the definition of scaffolding and its value for their future teaching, the difference between scaffolding and traditional teaching techniques, the key characteristics of scaffolding.

By so doing, the researcher coded the responses according to the characteristics identified by socio-cultural theorists and researchers; active position of the learner, joint activity, tool mediation and indirect instruction. The answers also identified a number of issues (Verenikina & Chinnappan, 2006). The respondents valued scaffolding as providing useful techniques in their future teaching. Everyone was familiar with the concept and believed it was significantly different from traditional teaching techniques.

The effects of test interpretation styles and the status of tests in career counseling (Frade & Bruin, 2007)

The study was heralded by the fact that one group of scholars advocated for a non-participatory approach to test interpretation, whereas the other advocated for a participatory approach. As such, the study investigated the differential effects of the two approaches to see which one had a greater impact (Zytowsk, 1999). Therefore, the study was intended to broaden the theoretical base in test construction, their usefulness and accuracy in counseling practice, given that tests influence believes of clients due to their social power (Claiborn & Hanson, 1999).

The objectives of the study were therefore; to ascertain client's preference for certain test interpretation styles, the impact that the test status has on client's willingness to accept test results and lastly, how test interpretation and test status influence the client's perception of the counselor (as expert, attractive and trustworthy), and the session as having depth, smoothness, positivity and arousal (de Bruin, 2001; Zunker, 2002).

'No other technique for the conduct of life attaches the individual so firmly to reality as laying emphasis on work; for work at least gives … a secure place in a portion of reality, in the human community' (Freud, 1943 in Seligman, 1994 pg. 60).

CONTEXTUAL FRAMEWORK

In order to situate the present study in context, the researcher has decided to share the following ideas from an important meeting that was a landmark in the forefront of the present study. A group of psychologists, economists and educationists sat in Edinburg in 1921, having as subject of discussion, 'Vocational tests and educational training'. The occasion under the chairmanship of Henri Hadow had an enthusiastic attendance that September 8. In spite of variability in their opinions, they generally agreed from their speeches on the feasibility and importance of diagnosing every child's special and vocational aptitudes through tests or other means.

In the progress of the session, William Beveridge (Director of the London school of economics) welcomed the coming of industrial psychology. He reiterated three important consequences for selecting students 'carefully' for vocations. Firstly, it would greatly reduce unemployment. It is not to be expected that careful selection alone would curb unemployment, however, it would go a long way to reduce its magnitude. Secondly, more people would stick to closely to their jobs, making the tenure of employment nearly permanent. Thirdly, this would cause an increase in productivity. He aligned these by saying that the consequences would be the reduction of human misery and better welfare for humanity.

He further criticized the lack of methods or the methods used in selection for employment for different kinds of occupations. However, the president of the economics section disagreed with the criticism. More so, Hichens opined that employers were very selective in choosing workers up the rung of jobs. They eluded the methods used by psychologists. Psychologists in this slight disagreement responded that even if the methods used by educationists were inferior to those of economists, that the methods of the later were largely unstandardized and unscientific.

Myers (director of the Cambridge Psychological Laboratories) described the work carried out by the National Institute of Industrial Psychology in London. Attempts were to be made not only to improve the psychological condition in the industries, but the intention was to have psychologists help select applicants for various types of jobs through testing. Later speakers (psychologists) could not overemphasize the importance of vocational testing that was already carried out in America, and appraised the new tests of general intelligence that were en vogue.It was announced through a general feeling by educationists that the process of vocational guidance and counseling would begin while applicants were still in school. It was further suggested that tests should determine the general kind of education in schools.

The chief Inspector of Education in the London County Council in his opening speech, Kimmims, claimed that London had the best research in Psychology in the world. He pointed out that London had just added a psychologist to the Education Department. The job of these psychologists was to handle individual and general cases in the school. Because psychology was taking an important part investigating issues among school children, many changes occurred.

Before then, children were easily stigmatized as mentally retarded and sent to social schools. But then, it became possible through appropriate psychological tests to identify children who were actually mentally retarded. His experience was that children sent to social schools were mentally retarded, where in, elderly boys and girls were trained in special industrial fields which considered their capacities and future prospects. On the opposite side, it was through the use of intelligence tests that bright children were transferred to secondary school. As pinpointed, certain children may pass routine exams and succeed in scholarship exams and still lack the inborn intelligence to profit from higher education.

Kimmims urged that not only the well-known tests be used, but that tests devised for other occupations should be employed. He lamented that he had found a tragic situation when he had studied the after employment of children in the London district. He continued that a good proportion of children began by obtaining unsuitable jobs and eventually drifted between occupations. Boys and girls of greater promise had eventually only become van boys. It was strongly concluded by him that there was little marketing of educational products in spite of the enormous amount of resources that are spent. He then advocated that a child upon leaving school, should have a line of occupations suggested through the use of psychological tests, to which he/she is best suited.

Kennedy Fraser of Edenberg spoke and shared his experience on the use of psychological tests in America. He pointed out that a tiny proportion of Americans did attain the mental age of a ten year old child (1 in 40). By so doing, he advocated similar research in Britain. He concluded that psychological tests were indeed the most probable way to eliminate waste of time and resources on the part of teachers. These proceedings established vocational testing and vocational training as part of the general education system.

Frank Watts described the status quo, in the use of vocational testing as fitting square pegs in square holes. However, he said that the issue was over simplification of the problem. This he said was because he pegs were neither round nor square and the holes were constantly changing, being both plastic and malleable.

He was therefore underlying that the task of psychological assessment was not limited to identifying the capabilities of the applicant, but more so, on investigating the job requirements for various occupations for which the applicant might apply. As William Beveridge had urged firms to take keen interest in testing and training of applicants, so too did Watts urge educationists to bring schools in close contact with the industry. The paradox therefore was in the fact that neither did the employer know about the applicant, nor did the applicant know about the industry. It was due to such deliberation that Myers urged that a kinematograph should aid in establishing the prospects, expectations, advantages and dangers that each occupation entailed.

Myers strongly pointed out that although the choice of occupation is to be done by the applicant, neither the teacher nor the applicant had enough information to aid in this decision making process due to lack of knowledge about industrial requirements. It is for this reason that expert advice could not be over emphasized. Evident however, the need for a national institute of vocational psychology, even when such a creation was not going to divorce the working union between the teacher and the educational authority.

When L. Grier took the floor (principal elect of Lady Margeret Hall, Oxford), she argued that there was need for direct vocational training. Besides identifying what the applicant was suitable for, there was need to train them in these lines. By so doing, she advocated that there would be a link, through vocational testing, between the school and industry, and that the question between useless and useless knowledge would be ruled out. It was unfortunately lamented that most institutions are usually crippled in their finances in spite of the fact that knowledge that is useful ceases to be educational. Reid of Aberdeen was of the same opinion,

adding that if the idea of smaller and bigger industries could be brought into picture, it would create a bigger transition.

The articles that followed cumulated into a paradoxical fact that the training was left in the hands of schools by industries but that vocational selection was retained by the latter. The resulting paradigm outlook was that industries should get more involved in training, while schools should get more involved with vocational testing and selection, resulting in strong advocacy for reinforcement of career counseling. Interestingly, it dawned on the idea that be it training or vocational selection, it did not put either side on the advantage to leave the affairs of the dichotomy in question to the other party.

The present study is intended to develop a Students Assessment of Career Needs Scale (SACNS), a Students' Motivation for Occupational Preference Scale (SMOPS), for use by guidance counselors in career counseling in Cameroon secondary schools. The first cell in the battery, SACNS, constitutes the first objective of the study, while the second cell, SMOPS, constitutes the second objective of the study.

The purpose of developing this battery is to empower EGCs to improve EGC in terms of the evidence they put in place as bases for orienting students into various courses, fields of study and programs. The first two objectives therefore serve as rudiments to achieve the third objective, which examines the extent to which EGC can assist in providing man power requirements in STEM related occupations. It is the prerogative of the study that the instruments should provide or assist in a mechanism to 'computerize' EGC in Cameroon and provide a data base which can serve at input, process and output stages of career guidance and counseling.

EGC as a discrete program is not very old in Cameroon (cite). As such, the program does not yet have the robustness that it is supposed to have. Most of what is practiced in counseling in Cameroon secondary schools is a reflection from practice in the west. However, the programs that train the EGC, the tests that they use, may not adequately address the Cameroonian scenario, given the land marked differences between the two in terms of economy, geography, political philosophy, culture and so on. For this reason, the study is sanctioned to verify testing in career guidance and counseling.

Indeed, there is no way we can single out an educational system and name it as real estate. However, there is need that any educational practice should accommodate the local environment and realities without unnecessarily reinventing the wheel. Tests that are built

elsewhere for a particular purpose would often than not reflect the current user's history, culture, society and believe system. Therefore, if care is not taken, the performance of students on such tests may rather be a reflection of the irregularities and lacunae that are apparent, provoking the question of ecological validity.

ASSESSMENT IN CAMEROON SECONDARY SCHOOLS

Assessment has been synonymously used with words such as evaluation and testing. In spite of the technicalities in these words, most people look at them to imply the evidence that learning took place. Many stakeholders use assessment as a means to hold schools, teachers, administration and students accountable to events surrounding teaching and learning. Although the concept of assessment is as old as education itself, formalization of assessment operationalized through the creation of departments and programs in assessment in higher institutions in Cameroon is not far lived. Indeed, assessment and testing has been used to mean the same thing, in spite of the fact that testing is a tool in assessment.

Assessment is supposed to yield evidence about learning, enable teachers and other educators to identify information about where students need help. Unfortunately, the pressure that may result from testing has many undesirable consequences in the educational system. Furthermore, improvement in test results doesn't always mean corresponding gains in learning. Ranging from the nature of testing, to type of school, period of the testing to purpose, the irregularities may reveal inconsistency in practice and training on part of school personnel.

It has been documented that many schools have used exam results to hold teachers accountable in school. The exam or testing in some cases has been used as a yard stick on which student-teacher behavior is gauged. Notwithstanding, care has to be taken in terms of investigating the influence of grading system, socioeconomic status, motivation and so on, on learning. Students for example have to take the Common Entrance Exam (CEE), in order to get admission into secondary school by government policy. However, many schools still organize entrance exams irrespective of students' grades in the CEE. In so far as there are other reasons for this conduct, lack of confidence and value in the exam is part of the reason for this practice.

The thrust of the issue is not in the nature of exam nor on the content, but on the entire process that pushes teachers into unethical conduct and exam malpractice. Some teachers have lost their jobs due to students' failure. In spite of the micro, 'meso' and macro determinants to academic performance, some school proprietors have continued to hold evaluate teachers solely on the performance of their students in a test.

But there is need for research to continue to address students' performance 'out of the black box' to look at issues such as student motivation to learn particular content, skills and acquire a particular attitude. The labeling of schools in terms of students' performance looks like a single snapshot of a moving giant. When schools select particular caliber of students for admission, the expectations are obvious.

However, if there is going to be a change in the conduct of exam, testing and so on, if increase in grades will mean increase or gains in learning, then educational stakeholders have to be motivated enough to take keen interest in the processes and procedures that produce results on which evaluation is based.

Chapter summary

This chapter discussed the conceptual, theoretical, empirical and contextual frameworks of the study. The conceptual framework discussed the concepts used in this work namely; career development, students career guidance counseling, consequences of career guidance counseling, career and gender, parental influence, psychometric tests and counseling and psychometric test interpretation. By broadly defining these concepts, it allowed the reader to have a clearer meaning of the study in the context that these concepts have been employed.

Secondly, the theoretical framework discussed the theories that underpin this work; a social learning theory of career selection (John Krumboltz), Scaffolding and career counseling, classical test theory, trait and factor theory career counseling. These theories are generally summarized patterns that describe career behavior. The theoretical framework portrait career counseling as a socialization process in summary, which requires significant others to scaffold the learner, to become what ultimately they should.

Thirdly, the empirical framework looked at works of other researchers especially those involved in instrument development, to see how different they were from this study. Such works included; support for Trait and Factor Theory career counseling, the effects of test interpretation styles and the status of tests in career counseling (de Bruin, 2007), career

guidance and the participation of students and implications (Isa Ado), the development of a needs assessment instrument for summer orientation students of ISU through the use of modified Delphi technique, the development of the students counseling needs scale. These studies were explored to benefit from the variety of methods and procedures involved in the setting of objectives, testing of hypotheses, sampling of population, development of instrument and validation and so on.

Lastly, the contextual framework was discussed, which placed the concepts, theories and empirical studies in the fitting of the objectives of this study. Therefore, it was just to say that the chapter successfully gave the reader a framework from which the methods and procedures emerged, placing accent that counseling was a socialization process, which has become more complex to observe with the naked eyes, requiring the employment of expertise in testing tools and professional guidance counselors.

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

The previous chapter was a broad review of the relevant literature. The theories, concepts, educational history and empirical works enlightened the study design employed in this study. This study involved instrument development. In this chapter, the various methods and procedures are discussed.

RESEARCH DESIGN

The study design involved in this study was instrument development. Instrument development is described as the sequence of events that leads to an instrument which is both reliable and valid. These stages starting from generating items from constructs to analysis of the items, is a logical order which ensures validation procedure for the instrument. The face, content, construct and criterion related validities for the test were done with the help of the Pearson Product Moment Correlation, Q-sorting and Principal Component Analysis (Varimax Rotation Method). The initial number of 150 items was reduced to 113 after expert review and Q-sorting (heterogeneous items being ranked into homogenous sequence). These items were then finally reduced to 97 items which appeared in the final instrument after performing various correlation analyses.

PRINCIPLE OF SCALE DEVELOPMENT AND PROCEDURE

Theoretical foundation

The first thing in the scale development process was to identify the gap. The gap identified was the need to provide career counselors with an instrument which would improve objectivity in identifying client attributes. This would enable them to conduct an appropriate appraisal which would enable them expose the clients to themselves. There have been instruments, however, not specifically tailored to STEM biasing. Identifying students with this interest and harnessing the required resources needed to promote their aspirations. It was to also identify obstacles in the way of those without an eminent interest. There was need to identify key theories as the foundational bases for the development of the instrument.

Classical Test Theory, Item Response Theory and Trait and Factor Theory were the foundational theories in the development. These were theories that could explain or bring both the dependent and independent variables together. Item Response Theory (IRT) was the bases for selecting items in the pool, while Trait and Factor Theory was the bases for the constructs from which the items were developed. Classical Test Theory was the base or premise on which the use of an instrument for measurement was justified.

The purpose of instrument was to help counselors improve career guidance practice. Specifically, bias students into STEM related career fields. The instrument was intended to produce a dichotomy, students interested in STEM and therefore those who were not interested in STEM. By so doing, it would provide a data base, for further research. Secondly, it would provide some evidence for decision making. This was important because having students in grammar schools may be costly, if these students are not eventually integrated into the workforce. Evidently, the areas with science background have been over under represented. It was from this premise that counselors were to set to work.

Select construct attributes

The selection of constructs was based on the Trait and Factor theory. They were namely, students Values, Interests, Aptitudes and Personalities, which composed the four main sections of the instrument. The section on students' aptitudes was recommended to integrate students' transcripts which would therefore x-ray students aptitudes based on subjects in which they excel. A students' transcript was therefore to provide the strengths and weaknesses and provide information on how their environments, teachers and development have affected their aptitudes over the years.

The overall planning enabled the development of a blue print. This blueprint herein provided the skeleton on which to work. The steps laid are not a sequence of physical events, but rather, they were the rationale or the logical evolution of ideas. Their reporting does not necessarily follow the implementation of those ideas, but rather provides the research design.

Generate the item pool

The pool of items was generated, by reading the literature and listing items which could potentially encompass the pool of items. The section describing the instrument identifies tests from which some of the items emanated as well as tests that inspired the formulation of those

items. Items were therefore listed in terms of VIPs of the students, selecting items which could capture these attributes and modifying available tests.

Set the test specifications

The specifications provided the rational for various characteristics of the test. The length of the test, the test blue print in terms of the VIPs was assigned. It was intended therefore that the content are covered in such a way that these three attributes were closely covered. Considering the length of the items to provide a balance in terms of length of the items and their lexical compositions, considering the duration of checking of items, minimum reliability or inter item reliability indices were established.The section on administration enabled the researcher to figure out the logistical and procedural issues emanating from ethical clearance at the department to identifying potential issues with respondents during the administration process. This section has been clearly outlined under the section on administration of instrument.

Expert review of pool of items

The pool of items were assembled and edited in a reader friendly manner and given to experts for review. The test was given to measurement experts to rate them on a scale as necessary, very necessary and unnecessary. This therefore provided the pool of items that were administered to the students at the pilot test. The items were revised after pilot testing to check on the language, difficult items, and misunderstood items and so on. The items were revised based on the laid down specifications. Items that did not comply were dropped or revised.

Iitem analysis of pool

The items were re-administered to the respondents and then analyzed. The reporting is presented in the section on presentation of findings in chapter four. The technical manual provided simple explanation on how the components could be explored in the test battery.

The subtopics have been so divided to ease comprehension on the part of the reader. They do not however represent the logical progression of conduct of the work. Similarly, the topics do not represent discrete ideas given that the theses indeed is its entirety and the ideas,

concepts and procedures inherently permeate each other in a not necessarily hierarchical algorithm.

The reasons for choosing this type of research design (descriptive survey) which was quantitative in nature span from the fact that it maximized objectivity, replication and generalizability of findings. As such, the researcher set aside his experiences, expectations and biases to ensure objectivity in the conduct of the study and conclusions that were drawn. A key feature in this design was that the survey (questionnaire) was used to collect data and a probability theory used to test hypothesis based on the questions that were raised. The design was also deductive in that inferences from the sample allowed inferences to be made about the population from which it was drawn.

A key assumption in this design was that there is a single truth independent of human perception. Phases of this design included; introduction to a study that included (1) the purpose and research questions (in chapter one); (2) theoretical perspectives or models; (3) methods that encompassed sampling and an attainment of validity and instrumentation that included an evaluation of construct validity

Data was then analyzed using inferential statistical procedure. The final report consists of introductory chapters with objectives, followed by literature and theories, finally culminating in a third, fourth and fifth chapters containing methods, findings and discussions respectively. Through deductive testing of theories based on assumptions, the researcher built projections against bias, controlled for alternative explanations and generalized findings (NRC, 2002).

THE STUDY AREA

The study was carried out in the metropolitan city of Yaoundé. This is the University of Yaoundé I host town and the capital of Cameroon. It is a city sited on seven hills in the Centre region of Cameroon. With above three million people (as of 2015 projections), it is

the largest but one city in Cameroon after Douala; the economic capital of Cameroon. It is the capital of the Centre Region and is elevated to about 750meters (2500ft) above sea level. The city utilizes and covers an area of about 180km^s (70square miles), thus has about 18000 people per square kilometer.

History

Bakas or Pygmies arrived Cameroon and settled in the South and Eastern Regions. During the 1770s and early 1800s, the pastoral Islamic people, Fulani, conquered what is called Cameroon and displaced largly non-Muslim inhabitants. Nyong and Sanaga rivers hosted the outpost of Epsumb or Jeundo around the south areas in 1887 by German explorers; Richard Kund and Hans Tappenbeck allowed by agreement of the chiefs of Ela Esono. The German botanist, George August Zenker occupied and named it Jaunde, after the Yaoundé or Ewondo people.

George established the link for trade as he bought rubber and ivory from, and imported clothing and iron for the people. When Major Dominik set up a military garrison in 1895, the Palatine mission settled with a religious school at Mvolye. Belgian troops from Congo occupied Jaounde during WWI and the League of Nations later choose Yaoundé as capital of the colony subsiding Germans defeat in the war. East Cameroon was held by France. Although Douala remained the settlement area, Yaoundé rapidly grew after 1957 due to unrest and cocoa crises along the coast. It remained seat of government till today.

Economy

The administrative structure and civil service is the backbone of the economy of Yaoundé. The inhabitants have higher standards of living and security than the rest of the country due to high profile central structures. Tobacco, dairy, beer, clay, glass goods and timber are some major industries in the city. Coffee, cocoa, copra, sugar cane and rubber also have it as their regional distribution centers.

As of 2015, the city had above 50000 pigs and over 1 million chickens, with local residents engaged in urban agriculture. A project to reduce flood, The Yaoundé City Sanitation Master Plan was began in 2010, under Mayor Jean Cloude Adjessa Melingui, curbing floods that came in about 17 times a year. This reduced the times of flooding to just 3 and halved water borne diseases such as typhoid and malaria. Until after 2013, when the mayor passed away, the African Development Bank and the French Development Agency

had continued to carry out a $152 million plan financed by loans to improve the infrastructure of the city which was completed in 2017. Until 2017, in spite of the security crises that loamed Central African States, Cameroon had relatively been stable economically, contributing to about halve of its domestic production.

Due to the Boko Haram insurgeance in the North and the sociopolitical crises in the North West and South West Regions, the economy is only grabbling to stabilize. According to the City Council, the flood project succeeded and its priority is to relocate people along the low-lying flood zones.

Architecture

The city is the site for government houses. The ministries are located at what is called 'Post central' while the presidency; Unity Palace is located at etoudi. The Bastos area is the site for expatriate European and American and other continental communities of the diplomatic corps. Yaoundé has two main markets 'marche central' and 'marche mokolo'. Other important sites are the Reunification Monument, the 'Palais se sport', 'Palais des congres'. There is the Mvog-Betsi zoo and small variety of nightclubs and restaurants.

Education

Cameroon is a bilingual country, with French and English as its official languages. Indeed, cameroon is a bilingual state in the sense that each citizen is expected to be able to express themselves in either French or English, whereas the state itself must be able to express itself in both English and French. A such, there are two education systems; the Engish Education System (EES) and the French Education System (FES). These result from the dual heritage from the French and English.

The city therefore has French and English schools, as well as bilingual schools. French schools are those that follow exclusively the French system of education, while English schools are those that follow exclusively the English system of education. Each of these therefore have unique number of years to spend in school, program to follow, syllabuses, language of instruction and culture. Most importantly, each has a different examination board. The EES has the GCE Board while the FES has the Bachaloreat Board that run the end of program certification and examination after each cycle of studies.

There are then bilingual colleges, which follow both EES and FES. The language used in the school is one thing and the type of program is another. Schools in this city are referred to

differently in terms of programs. There are grammar schools that offer general education and may follow either the EES or FES. There are commercial schools and then technical or industrial schools. The technical schools are those that emphasize on skills and hands on activities while the grammar schools emphasize on theoretical background knowledge.

Majority of the schools are grammar schools in this city. Students who follow the EES have two cycles in secondary school, pending their obtaining the GCE O/L certificate and the GCE A/L certificate. The former is a 5 years program that runs from form one to five, while the latter is a two year programs with two forms, lower sixth form and upper sixth form. These are certificate exams and people who acquire GCE O/L are not compelled to acquire the GCE A/L. However, most of the students who acquire GCE O/L often proceed to GCE A/L.

The ordinary level in grammar education requires a pass in at least four subjects of at least grade C. Meaning that if a student fails, then that student was unable to make up to three subject passes. There is a maximum of 11 subjects however that a student can register and write at this level. Each subject constitutes 3 points, so if a student scored an A grade, that student gets 3 points. Therefore, a maximum score of 33 points entails scoring A grades through all the 11 papers.

Students in the O/L usually take all subjects in form one, their first year in secondary school. However, in the third form in some and fourth form in most schools, they are expected to choose either science or arts. As such, key subjects that denote if a student is an art or science subjects include; literature and history for arts students and physics and chemistry for science students. Sometimes logistical issues make it impossible for a student to register and write subjects without following this algorithm, given that some subjects are run during exams simultaneously following these principles. Meaning that there are times in the official examination syllabus that physics and literature are written simultaneously, given that a candidate was not expected to sit in for both subjects in the same session.

It goes without say that when students decide on becoming science or arts students, it often than not has to do with their aptitudes and competences; indicated by subject in which they excel. As such, a student who shows interest in reading novels might not be expected to become a physician, as would a student who shows keen interest in biology. An analysis of the configuration of subjects at the secondary school level is none of the prerogatives of this study. But it is to say that even within subjects; there are students who love some topics and

not the others. Similarly, there are students who study arts and on leaving high school, show interest in becoming nurses for example.

Furthermore, in high school, a student is expected to take a maximum of five subjects and a minimum of two. As such, a student can record a maximum pass of five subjects and a minimum pass of two subjects. Unlike at O/L, at A/L, there are five pass grades for each subject. A student can score an A-E grade corresponding to 5-1 points in the exam. So an A grade implies 5 points. Therefore, a student can score a maximum of 25 points in the GCE A/L. Students who score an F or U grade have failed the exam. There is another grade called O, which is referred to as compensatory, it is a grade that quantifies the student at the equivalent of O/L in that subject.

The issue of series is strong in high school than in secondary. Meaning that unlike in first cycle, subjects in high school are clustered in groups called series'. It is to say that the background for such classification has to do with occupation. As such, students who offer S1 in high school for example offer; mathematics, chemistry and physics. Complete omission of biology from this series therefore rules out the possibility to pursue training as physician for example. But also implies more preparation to do stuff like computer engineering. As another illustration, S4 students study; chemistry, biology, geology and mathematics. But ruling out physics from this series rules out training as pilot for example.

It is not to say that there is anything right or wrong about the configuration systems mentioned above. But the thrust of the matter is that by subject combination, it implies thinking in terms of why study this and not that, whose answer lies in the idea of becoming something in terms of occupations. The general trend noticed is that beginning from form one in secondary school, there becomes a converging effect in terms of content interest which should also reflect interest in the skills in terms of occupation or profession. What mechanisms are there to help children decide on what to study, and on what to become is the interest of this work.

The population of study

The study population comprises of secondary school students in the EES in Yaoundé. The secondary schools have forms one to five in the first cycle and forms six and seven in the second cycle making a total of 7 years. When the students enroll in form one, they do not generally have preferences given that the subjects and structure of the subjects is new to them since what they had in primary school was different. However, as they move along the ladder,

they begin to 'differentiate' in terms of choices they make. Although some decisions are difficult to reverse, there is flexibility at lower levels. With time, it becomes more difficult to reverse the decisions and the consequences of the decisions become dire.

When they leave high school, they have the most salient decisions to make, given the multiplicity of the environment they find themselves and the limitless possibilities that are there. Although it is at this point in time that they have these important decisions to make, the decision process had begun 7 years ago in every respect; in terms of their interests, achievements, performance, preferences and so on. Given the complexities involved, CGC are there to help them make decisions due to the fact that they by themselves may be immature and shortsighted in taking some of the decision.

Therefore, these people provide a better sample for the study by encompassing the spectrum through which student's difficulties and career related issues can lie. It is neither too early nor too late to intervene. It was due to this timing, and given the fact that most decisions at adolescent and teenage are compounded by many mitigating factors. It is at this point that interventions are most needed, at the time these students can still under go derails which will benefit them to adequately socioeconomically insert into society.

Children in primary school do not face much of a problem given that programs in primary school are universal, and that the schools are not diversified in terms of their programs, unlike in secondary schools where there are many diversifications. Furthermore, decisions in primary school are exclusively rested on the parents and teachers, unlike in secondary school where the student is becoming more responsible for the issues concerning them.

At university level, most students although in difficult situations, may have fewer options to make decisions no matter how bad a situation it is. Often than not, the deed has been done. It was for these reasons that the instrument was deemed most useful and appropriate at secondary school where there is still plasticity and malleability, which allows the guidance counselor in synergy with other stake holders to 'mould or bend' the stick when it is not yet dry.

Although careers begin even by choice of school where one is enrolled which are often decided by parents, as would they in choosing a religion or ethnicity which are irreversible, once enrolled, the most important thing now is to make the most use of the possibilities and opportunities presented.

The Target Population

The target population of the study comprises of students in EES in grammar schools, who solicit the services of a GC or are in need of GC services. These are students who may be in need of the services of a guidance counselor but are even unaware of the said need. They also belong to this category. There are also, students who do not have access to GC services. They are in this category.

Therefore the target population comprises of three types of students; those who need and have access to GC services, those who need and do not have access to GC services, and those who are unaware that they need GC services. The instrument has the same general purpose for the groups of students. The groups of students who are not in need of GC services are not part of the targeted population.

The instrument is aimed at helping GC and students choose appropriate careers for students that are socioeconomically relevant to the contextual needs, thus improving upon the quality of GC services for students having career related problems. If the student does not face a career challenge, the instrument becomes non-useful for such a student in question and the student cannot therefore comprise part of the target population. As such, these students are in high school, they attend grammar education and face career problems.

The Accessible Population

This is composed of students in EES in high schools, facing career challenges, in Mfoundi Division to whom the researcher had the possibility to administer the research instruments. It is worth noting that not all students in the target population could be accessed. There are many reasons why not all students in the target population could be accessed. Firstly, an academic study of this magnitude did not warrant that all of the targeted population be employed in the study, given the prerequisites of time. Even if there was ample time and means for the research to recruit research assistants, the little benefits from doing so would be undermined by the extra cost and burden on time, given that a properly selected part of the accessible population would put the research on the advantage.

As such, the logistical barriers posed by the size of the target population could not be undermined. Many schools had bureaucracies of which in the absence of the principal of the college on seat, no other alternate means for action was provided. Such schools did not

respond to the researcher's application for access to the students or did not respond positively. Therefore, they were not possibly part of the accessible population.

Thirdly, due to logistical issues, such as adherence to the sampling techniques and processes, some schools did not in the eligibility criterion suit. Such schools, for which the sampling procedures excluded them, had their students entirely excluded from the target population. Furthermore, within the selected schools, not all students in the target population were used. Students who did not fall in the probability criterion echelon were exclusively excluded. These included students whose classes were not selected and students whose classes'were selected but who did not pick the required random papers. Therefore, the accessible population was composed of; students in EES, in need of GC services, who had the chance to select the respondent random paper.

The Sample of the Study

Table represents the population that was actually studied. That is, the population which allowed inferences made on the group that was studied based on the data collected. The sample size of respondents was determined from the targeted population using Tara Yamane's formula as recommended by Israel (2009) as shown below:

$$n = \frac{N}{1+N\,(e)^2}$$

where N= targeted population, e = the desired level of confidence (95%) and n=sample size)

Table 12

The study sample

	Number	Private school 1	Public school 1	Denominational school
Boys	144	44	50	50
Girls	259	59	100	100
Total	403	103	150	150

Source; field survey, 2020

The study sample was composed of students from private, public and denominational schools in Mfoundi Division. These schools were spread in the same administrative and geographical location which is Mfoundi. However, the students although mostly dense in this division in their niches, were from diverse areas in Yaoundé city. These students were mostly Muslims and Christians, in their religious inclination. Most of them were in the age range 11-25.

Sampling

Region: the region for the study as explained under the area of the study was selected due to the representation for schools. The area is inclusive in its category of schools and was deemed fit to host the sample.

Division: the divisions were selected based on a ballot. Mfoundi Division is subdivided into the following sub divisions;

The subdivisions were selected based on a ballot. In order to have a representation of schools in the Division, two schools were selected from each subdivision. To get two schools from it, purposive sampling techniques were employed. Firstly, only schools that satisfied the condition for the sample were selected. This was irrespective of whether they were denominational, public or private schools. The following criteria were considered to choose the school; type of school, its population and location. There was undoubtedly advantage in choosing a school such that in the end, they cover the geographical sphere as much as possible.

The more sparse the schools chosen, the higher the probability that pupils from them represented the population. For example, some quarters in Yaoundé are dominantly people

from particular tribes, socioeconomic status, religion, political inclination and so on. By endeavoring to spread the sample therefore, buffered such tendencies providing a more representative sample.

Selecting respondents: students to whom the questionnaires were administered were selected through a random respondent selection. The students were moved to a classroom if not already in one, and were asked to choose pieces of paper which contained inscriptions of ether 1 or 0. The ones whose pieces of paper contained numbers 1 were asked to respond to the questionnaires. The selection of students in particular schools was guided by the overall population of the students in the school as indicated by the sample table.

Instruments for data collection

Development of instrument

The prerogative of the study was to develop an instrument which could feasibly be used by guidance counselors for guidance in career counseling in high school. The first step was to review the literature in the area of instrumentation in counseling, with the intention to identify instruments which had previously been developed. This enabled gains in the domains on the research design. Therefore the some tests, which have been mentioned under the section 'instrument for data collection' were reviewed. The review of the tests was to identify the structure, the nature of operationalization of constructs in terms of the methods and procedures. After identifying the purposes and designs of these tests, a pool of items was arrived at.

Secondly, the pool of items emerged from the available tests. Tests which were homogenous were integrated and with ingenuity to operationalize the constructs which were namely, students Values, Interests, Aptitudes and Personality. In other words, it was from the content in the literature and available tests, that the test items were born. These test items were many in terms of available items. It is important to mention that the test items emerge from the constructs which represent the counseling needs of students. Therefore, it is not feasible to inculcate the myriad of items present in the plethora of literature. Consequently, only the items which were closely circumvented by the objectives of the study were chosen from among the virtually unlimited pool of items that could be permutated.

The third step involved editing of the items in terms of their; simplicity, readability, cultural relevance and content. By content, the items were of course separated into the corresponding

sections which encompass the test battery. It was intended that the items be simple, readable without cultural, political or predijuce. They were also vetted to ensure that they did not pose ethical issues that relegate minorities and students from Zones of Educational Priorities to the background.

The fourth stage involved formatting the items to produce an instrument or a questionnaire, which could be administered to the students. This was to enable the ascertainment of face and construct as well as content validities of the instrument. These sections have been discussed under validation procedure and deemed unnecessary to duplicate at this level.

Fifthly, the instrument was administered to students with two intentions. The first was to see that the students corroborated that the items in question represented their career counseling concerns, and secondly, that this would enable the research to establish reliability of each section from the results. Therefore, after administering the instrument, a split-half was employed to establish reliability indices for each section.

The sixth and last stage was to run internal reliability correlation coefficients for the test items, such that items with unacceptable reliability coefficients were eliminated, modified or replaced. However, due to the inability of the researcher to employ the forecasted Delphi technique, the items were completely eliminated. The instrument was therefore composed primarily of the questionnaire items that passed the basic requirements described.

Two sections in the instrument have been referenced. The section on students abilities is referenced from their academic report cards, transcripts, projects and other portfolios which demonstrate or illustrate the students ability. For example, leadership can be inferred from a students' ability to captain a team. It is not possible in a single test to provide tests which go ahead to test their abilities. However, the counselors have a rich repository of information at the Dean or Vice Principals office that should provide this information. This of course stimulates and encourages collaboration between the counselor and other administrative staff and teachers. Such a synergy is priceless at biasing students into the right career profiles.

Furthermore, the section on the work environment has been referenced from the ILOs classification of work environments and occupations. This opens the counselor to seeking avenues in the environment to help the students. By so doing, there is closer and dire collaboration between the counselor and the 'industry', which scholars have identified to be weak.

Questionnaires

The questionnaires were the main instrument for data collection. They were divided into the following sections.

Introduction: this section introduced the researcher and stated the objectives of the study. It also took care of ethical consent; soliciting respondents participation in the study and awareness of the fact that the respondents had the right to refuse or back out of the process even when they had begun.

Section A: Demographic information.

This section provides the following information; the age range, class, series, type of school, subdivision, religion, parents SES, home first language, residency, parent's occupation, sex.

The purpose for collecting this data was to be able to check variances should need be. For the sake of posterity, other researches may need these kinds of information.

I self-knowledge: abilities, interests, needs and values, personality

Section B: Abilities

It was decided that the students transcrips, since they resemble results of tests mentioned in this section, should provide the information about students aptitudes. This was because every child coming for counseling in high school already have an available transcript that can be made use of. It was then decided that the component of abilities be replaced by a component on career expectations. This section on career expectation was to help provide rerouting if necessary for the client by discussing their expectations for each career and seeing the extent of feasibility of these expectations. The section on abilities was validated making use of some past tests. These were based on the following tests; General Scholastic Ability Test (GSAT), Chasse, de Beer, Hugo & Meyer, 1991. Group counseling and Senior South African Intelligence Scale revised (SSAIS, Van Eeden, 1991). Senior Aptitude Test (SAT) (Fouche & Verwey, 1978). These tests mentioned, have the same theoretical underpinning as that in this work, and the tests are based on performance on particular content mastery.

Section C: Interests

The section on interests was validated by comparing the interest value of the Self Direct Search of .86. These are likes and dislikes. However, the test analyzed likes and dislikes with respect to interest in STEM. This section was based on the following tests; Self Direct Search (SDS) (du Tot & Gevers 1990). According to Holland's hexagonal typology, six working environments correlate to six personality types thereby corresponding to different interests. It therefore implies pinpoints the theoretical bases that people will excel in environments that connote their interests than working environments that do not. Interests are multidimensional. However, they were streamlined to interest in STEM. The interest section was higher than .6 and therefore concurrently validated the instrument.

Section D: Needs and values

The Value Scale of Longley and Du Toit had a high coefficient value of .95. it provided the concurrent validation of the scale with .8 being very comparable to the value. Impressively People value what they need and drift away from what they do not need. Therefore behavior is motivated by values and needs. People will prefer to work in environments that cater for their needs. The Value Scale (VS); Longley, du Toit & Herbst, 1992a), which comprises which makes use of the following subthemes; inner orientation, autonomous life, religious life, social orientation, humanitarianism and physical orientation was consulted. This section also provided the concurrent validation of the expectancy scale with a value of .7.

Section E: Personality

Across all the factors, the big five inventory had a coefficient of .88. This value tallied with the value of .9 on the personality section for this scale. This provided the concurrent validation of the scale. People in particular occupations have the tendency to behave in a particular way (Santrock, 2005). The following tests were consulted; 16 Personality Factor Questionnaire by Cattel, Eber & Tatsuoka, 1970): The Myers-Briggs Type Indicator; Myers & Briggs, 1985: The Jung Personality Questionnaire (JPQ), du Toit, 1983. The model is based on the Hollands Personality hexagon (Figure 13).These tests differ in shape but have

the same elemental content. As such the section on personality for the big five was incorporated into the test.

Figure 13

Holland's Personality hexagon
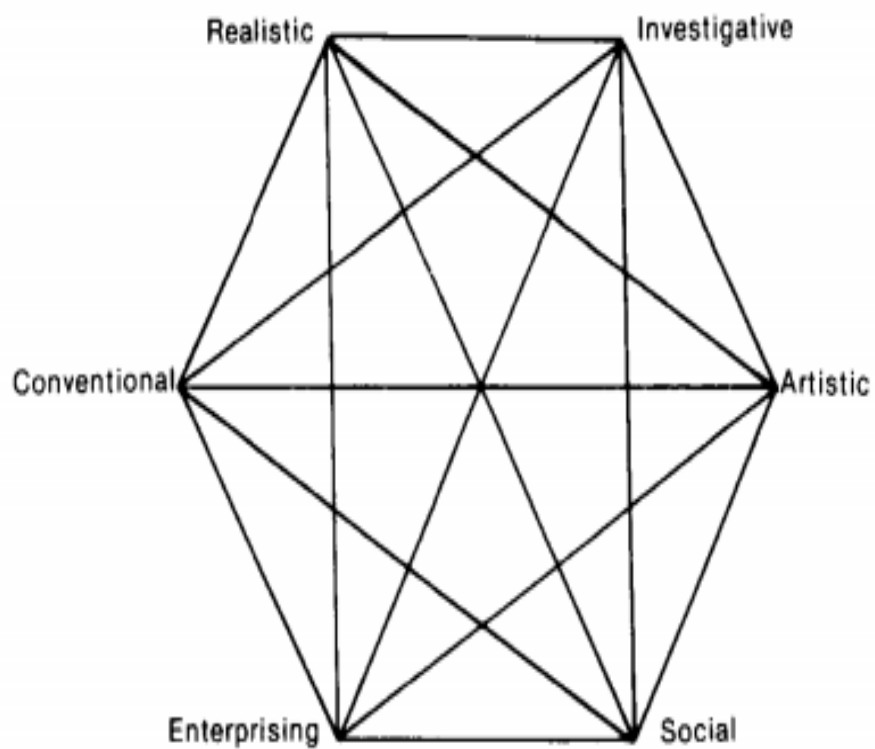
Source; Hollands Personality hexagon

II WORK KNOWLEDGE

Section F: Occupational information

Knowledge of work was made available through exploration of the ISCO and the Expectancy scale.

Sharfs 1997 model on occupational information was consulted.

Description; this describes the nature of the job. Such an appraisal provides information that can be used to for assessment in terms of the candidate's interests, aptitudes and potentials.

Qualification; the qualification refers to what is required to permit one assume particular responsibility in an occupation or profession. This is therefore in terms of the conditions which entail skills, knowledge, attitudes, and certificates and so on.

Education; the education here is usually formal and requires certification. This is so because it is difficult to always have to assess someone whenever they need a job to know what they know or can do.

Salary; the salary refers to the payment one gets from the job. Entails all other opportunities that come with the job, directly or indirectly or what are called fringe benefits.

Employment outlook; refers to the employability. The employment outlook explores the potentials of the client and the labor market in an attempt to predict the extent to which the skills of the candidate will be required in the near future. It therefore looks at where most jobs are, and where they are not. It explores the trend in unemployment and the common characteristic among unemployed. Looking at where jobs are and matching the trends with the skills needed reduces mismatch between jobs and job seekers (Sarf, 1997).

Section G; Classification system

Different classification systems are employed to categorize professions in terms of; Specialization; the specialist is an expert. By specialization is referred the particular area of competency. For example, in the domain of commerce, some people specialize in production, others in sales, others in transportation, others on researching to improve a particular product

say; Azure soap for example. As such, similarly, an engineer does not 'engineer everything' but rather, we have engineers of fridges who posses different skills from engineers of watches. It is common to hear people talk of entrepreneurial, managerial, and mechanical and so on to describe specialties. It is important though to understand that specialization is relative. For example, in a business line we can refer to one as a marketer. The individual could be concerned with marketing the particular product in urban or rural communities, or may be concerned specifically with men or only with kids and so on. From that stand point, we can have a science student who is focused on chemistry, particularly organic chemistry, particularly petrochemicals. The point is that specialization is not absolute but is usually from a particular frame of reference.

Task required; secondly, we can classify a profession or occupation in terms of task required. It is to say that the task required follows directly from the expertise of the employee. In order to assign tasks for employees, their personality, competencies, level of education, experience, certifications and others are counted. Generally the more 'sophisticated' the task, the more the pay, the more the need for higher qualifications, the more the need for more experience and more skilled people. However among a people with homogenous training, the task assigned would depend on other factors such as display of other skills such as leadership qualities, respect for authority, assiduity towards work, efficiency and so on. Among waitresses for example is a waiter.

Use of data; this entails the extent to which we can deal with the knowledge base in the particular field. Generally, the more complex the tasks required, the more the data to be dealt with. A manager for example has more data to deal with than an accountant as does a priest more data to deal with than a catechist. As such, the need to handle more data must be accentuated by an increased level of education, training, skills acquired and so on.

Interaction with individuals; we can look at the occupation in terms of the extent to which the individual will interact with others. A chemist in a laboratory may have to work long hours without coming into contact with people, unlike a police man who controls traffic. A bar tender for example or a waitress in an aircraft deals with an ever changing clientele. This is different from a school principal who may deal with a static clientele in terms of the fact that students and parents are relatively there for some time. If we were to interact with someone and we know it would be our last interaction, could it be the same like our first interaction with someone with whom we are expected to deal with for long or years. The

answer lies in the fact that there are many factors to consider, but most importantly, it will depend on our personality.

The Nature of ISCO-08

It is important to briefly describe how the occupations which are a reference in this study were developed by the ILO. The ISCO-08 was developed through a rigorous process of collecting data from surveys and administrative records to update the 1988 version that preceded it. The 436 unit groups result from a four level higharchical system. The unit groups are further grouped into 130 minor groups, which are further grouped into 43 sub-major groups. These sub-major groups are then ultimately regrouped to form 10 major groups. This classification system was adopted in 2007 by the Meeting of Experts on Labor Statistics (MELS, 2007). This was presented and adopted by the United Nations Statistics Commission in 2008.

Each group is designated by a code and title, as well as a definition that delineates the scope of the group. Examples of occupations or unit groups are included in the definition that specifies the tasks included. The ISCO-08 details the historical, conceptual as well as methodological backgrounds. There is advice provided on the more difficult distinctions and use in national and international contexts. There is a section that summarizes main differences between ISCO-88 and ISCO-08 and justification for the differences.

Should need be to identify real life examples, the *index of occupational titles serves the purpose.* This document provides an easy yardstick to compare occupations at international and local level.

Main Objectives of ISCO

The main cause of causes for the ISCO is globalization which has pressured the need for international data for administrative and statistical purposes. Firstly, there has been need for data for reporting and international exchange. Secondly, it provides a useful base for regional classification. Thirdly, it provides a means for adoption by countries without classification systems.

When students graduate, some migrate. By so thinking, the ISCO provides an easy framework for job placement in new contexts. In chapter 5, the ISCO-08 recommends that

countries, instead of 'copying-and-pasting' this version, should tailor the document to reflect contextual realities. In the case of battling with surging in situ priorities like Cameroon, it makes sense to focus resources on focusing resources to tailor and implement the already available ISCO rather than developing one from scratch.

Apart from matching job seekers to employers, the ISCO provides a framework for census information, labour force surveys, household and employment surveys, educational planning, reporting industrial accidents, insurance and workers compensations and employment related migration. It is important however to understand that the purpose of the ISCO-08 in this case is for career orientation purposes and interventionprogram development.

The modifications of the ISCO have been in order to reflect the changes in job structure that have been mitigated by the information and communication technology influences on the workforce.

Conceptual Validation of ISCO-08

A job is the set of tasks and duties performed by someone, while occupation refers to the kind of work performed in the job. Simply put, an occupation is a set of jobs whose main tasks are similar. However, through a current, previous or future position, one can be associated with a particular occupation.

SKILL LEVEL AND SPECIALIZATION

Skill level and skill specialization are two dimensions that have been used to organize occupations into groups. Skill level is the complexity in the range of tasks to be performed. So it is operationalized by the nature of task, level of formal education and extent of on the job training required. It is at the level of major groups that this applies most. Skill specialization is operationalized by the field of knowledge required, machineries used, materials worked on or with and the type of goods and services produced.

Skill Level 1

They involve the routine manual tasks that involve the use of simple equipment such as shovels and vacuum cleaners. Many may require endurance or physical endurance. Some literacy skills may be required but are not part of the major tasks. Completion of primary

school and on the job training may be required. Office cleaners, garden laborers and kitchen assistants are examples.

Skill Level 2

This level requires operation of machinery and electronic equipment; maintenance and repairs of mechanical and electronic equipment as well as storage of information. The ability to read and follow simple instructions, do simple arithmetic's is essential. Advanced communications skills may be required as well as advanced literacy skills. High level of manual dexterity may also be required. Completion of first stage of secondary school, form Five, or even High school may be required. In some cases, on the job training may wave some of the formal education. Bus drivers, butchers, clerks, accountants, sewing machinists, dress makers, shop sales attendants, police officers, hair dressers and motor vehicle mechanics are examples in this category.

Skill Level 3

These are jobs that require an extensive body of factual, technical and procedural knowledge to perform technical and practical tasks. Jobs in this category include doing estimates, coordinating, and supervising, controlling, planning activities for other workers, ensuring compliance with safety and health regulations, doing technical functions to support professionals. Welldeveloped interpersonal skills are required alongside literacy and numeracy communication skills. They may need to communicate verbally in difficult situations or prepare complex reports. In Cameroon, this will correspond to 3 years of study after high school or to a Bachelors degree. Legal secretaries, medical laboratory technicians, shop managers, commercial sales representatives, diagnostic medical radiographers, computer support technicians, broadcasting and recording technicians are examples in this skill level.

Skill Level 4

This level involves tasks that require complex problem-solving, decision making and creativity from a huge theoretical and factual background in a specialized field. The tasks performed at this level include; doing research to include body of knowledge in different fields, creating machinery, imparting knowledge on others, design of processes and structures of production.

The skill level requires extensive body of knowledge as well as very high numeracy and literacy skills. Itrequires the ability to understand complex material in different formats, and high communication skills. Generally, at least 3-7 years of study at a higher institution would be the formal training required, not withstanding that on the job training and experience can waive the requirement for formal training. However, in most, formal qualifications are required for entry.

Application of skill level to major occupations

The table below correlates the skill levels to the major occupational titles. It would be noted that the skill levels in themselves are a continuum and so is their correlation with the occupational titles. Rather, they are meant to portray some skill to be more dominant than another in a particular profession.

Table 14

Mapping of ISCO-08 to Occupational Titles

Major group	Skill level
Managers	3+4
Professionals	4
Technicians and Associate Professionals	3
Clerical Support Workers	2
Services and Sales Workers	2
Skilled Agricultural, Forestry and Fishery Workers	2
Craft and Related Trade Workers	2
Craft and Machine Operators, and Assemblers	2

Elementary Occupations	1
Armed Forces Occupations	1+2+4

Source; ILO; 2012

Mapping Skill level and Education

Some educational qualifications are used as indicator for skill level. The table below maps them out.

Table15

Skill level versus education

Skill Level	Level of Education
4	Second stage of tertiary education (leading to a research qualification). At least a Masters or Ph.D
3	First stage of tertiary education (a degree or 3 years of study after A/L), example, Bachelors degree
2	Post-secondary, non-tertiary education. Examples, Grade 1, GCE OL/ GCE A/L
1	Primary level of education
	FSLC

Source; ILO

It is worth nothing that the skills are not only got from formal education. They can and are sometimes acquired through informal education. It is partly for the short comings of formal education in achieving this, that the present study is conducted. As such, the formal education is an indicator of the skill level and only one component of the measurement. It is also important to understand that there are generic skills required for many occupations, which are not particular to an occupation in question, which also differ between occupations. For

example, a medical laboratory technician may not require as much communication skill as does an insurance representative.

Also note that it is the job that is classified and not the person holding the job. As such it does not desire to consider the skills of the person holding the job before classifying the job. Since it is the job that is classified and not the person, if you are employed as a bricklayer, you are classified in elementary occupations as a bricklayer, whether or not you have the skills of a bricklayer.

Section H; Trait and factor requirements

The trait and factor requirements for a particular occupation entail exploring the individuals; interests, aptitudes, needs and personality, and correlating to the opportunities described (Sherif, 1997).

SECTION III: CORROBORATION BETWEEN SELF-KNOWLEDGE AND WORK KNOWLEDGE

The questionnaires contain in all, eight sections; sections A to H. Each section concentrates on a particular construct of the instrument. The questionnaire is based on the T&FT model to CC. According to this theoretical model to CC, CC involves knowing the learner and world of work, and then correlating the learner's knowledge and work knowledge to see the best possible correlation with the opportunity described. As such, the sections B to H provide information about self knowledge. The following sections F to H therefore provide information about the world of work. The last section, section III associates and correlated the self knowledge to work knowledge and describes the career opportunities presented.

VALIDATION OF INSTRUMENT

The purpose of this study was to develop an instrument which was both valid and reliable in relation to use in CGC to orient students towards STEM related occupations. Validity is the degree of truthfulness or dependability or trustworthiness of the instrument (Ghauri and Gronhaug, 2005). The extent to which the instrument actually measures what it is supposed to measure. As such, the validation of the instrument was broken into smaller subtitles, given that validity has different components (Amin, 2004; Amin, 2005).

Validation Procedure

Normally, the word reliability appears before validity in most write ups. However, it is important for the reader to understand that an instrument can be reliable, but becomes invalid when poorly used. On the other hand, in order to have a reliable instrument in itself, the validation or build up process has to be scientifically construed.

This section considers questionnaire use as a questionnaire and the protocol that made them valid for the study. So we briefly see the need for questionnaires, the use of previously validated questionnaire items, other design features, ordering of questions, distribution techniques, maximisation of return rate, management of non-responses and the need for piloting.

Questionnaire categories can generally be subdivided to the traditional paper-and-pen and computer or web-based questionnaires. Although the web-based is cost effective on the part of the researcher, it is less cost effective on the part of the respondent. With the traditional type, the researcher had the opportunity to attend directly to the respondents and clarify their doubts or attend to them in other ways (Marshall, 2005). This reduced the tendency to skip some items due to non-comprehension of words or statements (Wagner, 2011).

The issue of missing data impedes reliability coefficients (Koponen, et al, 2013). Scholars have argued that questionnaires are not good for respondents with poor literacy, or poor vision, which buttresses the point that it was more appropriate to employ questionnaires given that the respondents were high school students which gave the opportunity to move synchronously at a similar pace and improve their concentration and reflection on their responses (Marshall, 2005).

In the case of poor return rate, it could be difficult to validate transferability of research results, given that the respondents could be significantly different from the non-respondents. In order to ensure that non-response rate was low, the respondents were assured anonymity and confidentiality. Neither their responses nor the outcome of their responses was to be related in any way to them.

The questionnaires were personally administered because it is easier to distribute, handle, code and analyse personally administered questionnaires (Bryman, 2015; Marshall, 2005). Since the study acquired data from a large number of respondents in 3 different intervals, it

was preferred to use traditional questionnaires since they are much easier to administer and handle.

The questionnaires were pilot tested among students as well as measurement experts to predict and rectify potential issues that would arise in the field. An online questionnaire ensures higher anonymity and confidentiality, but it is more cumbersome and time consuming with a longer 'wait' time. With multiple questions and rating scales as well as semantic differential scale type questions, an 'open-ended' section would have allowed more comments, but this was overlooked in other to reduce the time for the analysis which was multiple times (Frazer & Lawley, 2001).

Some instruments have been developed to study students; interests, motivations, abilities and values for science. These were reused were necessary while modifying some words to reflect daily use by Cameroonians. Again, by not developing the all items from scratch, it gave the study an advantage since it shortened the time for which the separate instruments would have had to be validated. As such, the prerogative of the study was to establish the synergy of the individual components in the questionnaire overall.

Research has it that when there is no 'respondent-friendliness', reliability and validity coefficients are undermined. In other to avoid this, the design was build in a way that was easier to complete, avoiding confusing questions to prevent respondents from staying neutral or as opposed to reacting to the questions positively or negatively. 'respondent-friendliness' has been put simply as the ability to make most respondents understand what is asked of them (Marshall, 2005: Holbrook, Cho & Johnson, 2006).

Although web-based questionnaires do not pose the geographical limitations posed by on site questionnaires, the burden to get contact online given that in our culture most students do not check their emails is scary. The non-verbal clues picked from the face-to-face contact could not be underestimated (Frazer & Lawley, 200). In this light, the questions were in straight forward language null of technical terms to make errors as infinitesimal as possible.

The purpose of the pilot or pre-test was to sieve vague and indifferent words in the questionnaire. This would help also to improve the face and content valities Frazer & Lawley, 2001). At each round of administration, this iterative process was continued until the coefficients indicated satisfactory indices.   Researchers have recommended that a questionnaire section should handle one aspect since lack of unidimensionality would

confuse the respondents (Fraser and Lawley, 2000; Arksey and Knight (1999, as cited in Gray, 2009).

Perceptions differ from person to person and meaning of specific questions to individual questions change with the individual. Since the questionnaires do not provide probing (Creswell, 2012; Marshall, 2005), which some questions might have called for, the respondents were deemed to be of the same class which increased their homogenous precept. Easy and non-threatening questions were avoided completely.

Face Validity of the Questionnaires

The face validity entails a subjective assessment of the questionnaires, not necessarily by experts, in terms of their readability, feasibility, consistency, formatting, clarity and language (Oluwatayo, 2012). The face validity of the instrument was done by sharing the instrument for potential respondents, teachers, CGCs and other school administrators to participate. They were expected to say a yes or no as to whether each section was favorable or unfavorable. This generally indicated the number of sections that needed review. Each person was expected to indicate favorable or unfavorable to; readability, feasibility, consistency, formatting, clarity and language. This enabled reviewing of the sections and items which were 'unfavourable' in the instrument. The Cohen's Kappa Index (CKI) was used to ensure that the instrument had at least a face validity index with a Kappa above .6(DM. et al., 1975).

Content Validity of the Questionnaires

The content validity here entails 'the degree to which items in an instrument reflect the content universe to which the instrument will be generalized' (Straub, Boudreau et al. 2004). The content validity was ensured by including plausible items in the questionnaire instruments and later on eliminating undesirable items from the list (Lewis et al., 1995, Boudreau et al., 2001).

The first thing was to have a thorough review of the literature to find out what others have done in getting information about the self and work environment. This allowed each of the sections to be developed as aggregates. The Self-Knowledge section investigated; abilities, interests, values and personality, while the Work-Knowledge section investigated work knowledge; occupational information and classification systems. As such, the literature allowed review of other items which have been included by other authors. In some cases, for

example, the Work-Knowledge classification scheme of the ILO was adopted for use. Similarly the Hollands Personality Inventory was adopted. These are instruments which have been validated several times and since they covered all the information that was required by the objectives, they were used having in mind that they covered the work content.

Secondly, the content validity survey was developed which allowed experts to rate the content as appropriate or requiring modification. This allowed the researcher to revise areas that were deemed by experts as inadequate in terms of the content presented. The content validity survey rated each item on a three point scale as 'not necessary, useful but not essential and essential'. This allowed each and every item possible reviews depending on the number of reviews proposed.

Thirdly, the content validity review survey was sent to experts in the field of psychometrics to give expert opinions. In this case, mailing the surveys was deemed more appropriate given that most of these experts were in other areas other than where the researcher was. Their acknowledgeable contributions were given serious attention and considerations for revision were implemented.

Fourthly, Lawshe's (1975) method was used to calculate the Content Validity Ratio (CVR) for each item. This enabled further review of the items in the instrument. Items that fell short of expectation were reviewed and revised.

Lastly, items that were not significant at the critical level for Lawshes's method were completely eliminated. The Lawshe's method is a linear transformation of the proportion of 'experts' that rate an item as 'essential'.

$$CVR = \frac{n_e - \left(\frac{N}{2}\right)}{\frac{N}{2}}$$

It is given as

Where; CVR = Content Validity Ratio

n_e = number of panel members indicating essential

n = total number of panel members

Whether or not an item is finally retained depends on the number of panel.

Generally the CVR should have a kappa or coefficient of .6.

Table 16

CVR showing number of panelists and minimum coefficient

: MINIMUM VALUE OF CVR, P = .05, SOURCE: (LAWSHE, 1975)

No. of Panellists	Minimum Value
5	.99
6	.99
7	.99
8	.75
9	.78
10	.62
11	.59
12	.56
13	.54
14	.51
15	.49
20	.42
25	.37
30	.33
35	.31
40	.29

Source; Lawshe, 1975

Construct Validity of the questionnaires

Construct validity here refers to the operationalization of the constructs into reality. In other words, how a concept, idea or behaviour is successfully translated into reality. We separate it into discriminant and construct validities.

Discriminant validity of the questionnaires

Discriminant validity here refers to the extent to which a latent variable for example x, distinguishes itself from other latent variables; y, and z. In other words, this ensures that a latent variable and errors in measurement do not account for the variance than the variable under consideration (Fornell and Larcker, 1981). The questionnaire had four main sections like earlier mentioned. The second section interrogated Self-knowledge. By self-knowledge; the learners Values, Interests, Abilities and Personality are investigated (VIAPs).

These four constructs were clearly distinguished from each other, by building independent questionnaire items before bringing them together. The first section investigates the learners Abilities. By abilities, refers to what the learner can do. Although these were limited to cognitive behaviour, they are a good indicator of the learner's abilities.The abilities are discriminated from interests for example in that, irrespective of what the learner has interest in, their test performances in written exams were an operator through which we could measure the extent to which they had abilities in various subjects offered in their school.

It also implies for example, that the section in which their interests are interrogated does not consider their abilities. In other words, interest and ability are discriminant to each other. A student can be interested in math for example, but has never passed a math test. Another student can have no interest in math whatsoever, even though she performs very well in mathematics.

The need to separate self-knowledge into such fragments was an attempt to 'ease' the intervention which is counseling. This is so because although being independent attitudes or concepts, they have a mutual and causal relationship. If The learner values technology for example, they pay attention or show interest in it. This is the intrinsic motivation that makes them put effort and stay alert in technology related subjects, thereby developing their abilities related to technology.

Therefore, it was important to disintegrate knowledge about the self, to integral components that were more discrete, enabling the counselor the latitude to focus on either of each of these

in the quadrant. The instrument therefore successfully, captured four different components of the learner's self, in which intervention can occur. For example, if a learner knows that mathematics is the backbone of computer engineering, they are more likely to be interested in mathematics if they have interest in computer engineering.

The knowledge of world facilitated by the ILO classification of ISCO-08 provides background knowledge which often than not is not provided in school. By letting a leaner understand that to qualify as a medical doctor, they need background knowledge in science, including; Biology, chemistry, mathematics and physics, it then leaves the leaner with lesser options than to focus on these four subjects, even though if they had no interest in one of them in the beginning.

Summarily, the discriminant validity in this instrument was handled by disintergrating the constructs into independent though interrelated entities which could more definitely be referred to. As such, the constructs in the instrument can be named; Values, interests, abilities, personalities, world of work and demographics. Let us take a look at the second component of construct validity; convergent validity.

With the purpose of investigating discriminant validity, a factor analysis was conducted including the principal component analysis (PCA) employing the varimax rotation method (Koh and Nam, 2005, Wee and Quazi, 2005). In this method, items that loaded above 0.4 were considered for further analysis on condition that there was no cross loading. As such, some items were modified accordingly and retested.

Convergent validity of the questionnaires

The same method was used to test for convergent validity of the questionnaires; varimax rotation method (Koh and Nam, 2005, Wee and Quazi, 2005). The condition of convergent validity was ensured;(eigen values of 1, loading of at least 0.40,items that load on posited constructs) (Straub et al., 2004). Similarly, the convergent validity like mentioned earlier entails the ability of the discrete constructs to show some degree of interrelatedness. For example, it was illustrated that people will show interest in what they value and as such have a higher tendency to develop their abilities in what they are interested in; a school subject in this case. Therefore in other to ensure that values towards STEM and Interest in STEM are separate constructs, it was necessary to perform Principal Component Analysis, to ensure that items correlated within each subscale than they correlated outside of the scale. This was performed using the varimax rototation method.

Criterion related validity of the questionnaires

This type of validity looks at the relationship between the measure and the outcome. It examines the extent to which the measure is related to the outcome, or how a measure will translate to behavior in another situation. It deemphasizes the conceptual meaning in for example, predicting outcomes or differentiating between groups. If a test which is meant to separate employees with suicide ideation from those without it, does just this, then the test is perfect for the purpose in question and valid in terms of the criterion.

It therefore refers to the extent to which the test can predict specific criterion variables. In this case for example, the measure of the relationship between job performance and relevant criterion variables here, values, interests, abilities, personality and knowledge of the world of work. According to Messick (1989), criterion validity should justify the use of the test for a particular purpose. Two types of criterion validity considered for this work were predictive and concurrent validities.

Predictive validity

In order to ensure that the instrument had predictive validity, it was important to ensure that it predicted what it was supposed to predict. This ideally would have been to conduct longitudinal studies for example to see the extent to which job performance will correlate with the employee data as well as employing large samples to get aggregate data. However not possible to do long terms studies, with the same respondents, it was possible to get aggregate data from employing a large sample. As such, the respondents perceptions were an indicator of the predictions of the instrument.

Concurrent validity of the questionnaires

The concurrent validity was established by comparing the tests measure with previously established measures. In the questionnaire section, various tests and their reliability coefficients used as the gold standard were employed. If the two instruments are concurrently valid, then the coefficients should have some degree of correlation. The Self Direct Search of Du Toit et al, the Big Five inventory the Scholastic Aptitude Test were used as gold standards to provide comparison for concurrent validity.

Postdictive

The postdictive validity was established by comparing the averages in the performance or ability section in the past with those on the current performance section. Post dictive validity is a measure of something that happened in the past. For example, does phobia for mathematics persist in senior classes?. To handle this type of validity, it was recommended strongly that the students' transcripts should provide the evidence on their past performance to current performance. This is a way to triangulate the students responses to the realities on ground. Counselors were are urged to work closely with vice principals or deans of studies to have the data base for students transcripts.

Summarily, self-administered questionnaires enabled instant collection of data for the three phases, a fast turnaround time, provided more time for the respondents and allowed a third party to provide assistance, thereby improving the quality of the data collected.

Reliability of the questionnaires

Reliability is the consistency with which the instrument measures what it measures. The major prerogative of this work partly, was to document the career counselling process in a procedure that is simple for use by CGCs. By having a simple instrument at hand, it would facilitate the career counselling process and improve the reliability of counselling processes. In other words, as earlier mentioned, if a student visited counsellor A and then latter on counsellor B, the orientation given to that student by both counsellors should have a common ground. The reason for this is to reduce the confusion and improve the confidence that students have on their career counsellors. If the student had been advised towards a particular field of study, there should be some degree of consistency which should be backed up by evidence.

In order that the counselling procedure be reliable, the instruments and processes must be free from errors in measurement, as much as possible. Recall that whatever is done throughout this work is to ensure that at the end of it all, a model is proposed, which in simple language, should demystify career counselling. The developmental process of the instrument itself is the protocol that enables or improves the reliability of the instrument.

If the instrument is well construed, designed, developed and used, it is more likely to be reliable than if questions are randomly assembled, typed and administered to students. In such a case, the general trend in responses will continue to change upon every administration

of the instrument. It is most likely, that if you ask about the Chelsea football club among football fans, their responses will be similar than when you ask the same question to non-football fans. The latter have a common background of knowledge, and are more likely to say the things that are true. However, if you ask about the particular football club to football fans, who do not like this particular club, the things they tell you, may more likely be due to sentiments and not facts. They will do bias reporting. Such things happen in all spheres of social sciences. Respondents would even answer 'yes' to please you. The following was done, to improve the reliability of the instrument.

According to (Carmines and Zeller, 1979), reliability is the degree of consistency of test results. If the study is made under the same conditions, there should be repeatability of findings or results (Moser and Kalton, 1989). In order to ascertain reliability of the instrument, the internal consistency was checked to ensure that the various components or sections of the questionnaires were hanging together or measuring the same construct (Huck, 2007, Robinson, 2009).

The reliability coefficients for the various components of the questionnaire for each questionnaire were correlated among themselves to find out the degree of consistency in measurement of the constructs. Take for instance, if a student values sciences, do we not expect that student to have interest in science. Again, if a student performs well in STEM, does it necessarily mean that the student is interested in STEM? The Cronbach Alpha Coefficient (CAC) was used to establish the internal consistency of the instrument, accepting values of at least .7 as reliable enough (Whitley, 2002, Robinson,2009). Hinton et al. (2004) have suggested four cut-off points for reliability, whichincludes excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability(0.50-0.70) and low reliability (0.50 and below) (Hinton et al., 2004).

(Wilson, 2010) points to literature that although a test be reliable, it needs to be valid. That is, for a test to be reliable, it needs to be valid.

Table 17

Summary of validities that are undertaken in this research

Validity Component	Definition	Type	Technique Suggested
Face Validity	The extent that measurement instrument items linguistically and analytically look like what is supposed to be measured	Recommended	Expert assessment of items; Cohen's Kappa Index (CKI)
Content Validity	The extent that measurement instrument items are relevant and representative of the target construct	Highly recommended	Literature review; expert panels or judges; CVRs; Q-sorting
Construct Discriminant validity	the extent that measures of different constructs diverge or minimally correlate with one another	Mandatory	Principal Component Analysis (Varimax Rotation Method)
Construct Convergent validity	The extent that different measures of the same construct converge or strongly correlate with one another	Mandatory	Principal Component Analysis (Varimax Rotation Method)
Criterion	the extent that a measure	Mandatory	Regression Analysis,

Predictive Validity	predicts another measure		Discriminant Analysis
Criterion Concurrent Validity	the extent that a measure simultaneously relates to another measure that it is supposed to relate	Mandatory	Correlation Analysis
Criterion Postdictive Validity	The extent that a measure is related to the scores on another, already established in past.	Mandatory	Correlation Analysis
Reliability Internal consistency	the extent to which a measurement of a phenomenon provides stable and consist result	Mandatory	Cronbach's a; correlations

Adopted from : STRAUB ET AL. (2004) (NETEMEYER ET AL., 2003) (VISWANATHAN, 2005) (ENGELLANT ET AL., 2016)

PROCEDURE FOR QUESTIONNAIRE ADMINISTRATION

The questionnaire was self-delivered by the researcher. Clearance was solicited from the Head of Department to carry out this activity. The next thing was to contact various school principals in order to apply for scheduling on administering questionnaires. A cover letter stimulating that the research endeavor was purely an academic exercise was attached to the application and sent to the secondary schools. The schools were assured confidentiality on any information given.

The students' questionnaire was designed to be self-administered to a group of students in a classroom. During the day of administration of the questionnaire, no teacher or guidance counselor was present in the classroom to make sure that the students were uninhibited and were free to provide honest responses. The questionnaire was explained briefly, pointing out to the three areas of investigation, answering questions from students and asking them to complete the questionnaire.

Although the average time expected to complete the questionnaire was 30 minutes, there was no time limit allowing the students to spend as much time on the questionnaire as available. At the end of the questionnaire session, sometime was given for students to ask questions which were taken into account in the final conclusion of the study.

Experience has it that students are more willing to work with people who are more familiar to them. It is for this reason that the researcher decided to visit the school the day before the questionnaire session after authorization had been granted by the school. The intention was to know the students a little bit before coming next day to administer the questionnaire. It was hoped that students would be more willing to answer questionnaire if they meet the researcher the second time than on the first encounter.

In order to avoid any embarrassment from other school personnel, authorization from the principal was shown to teachers who were expected to come to class immediately after the administration period such that they were well informed ahead of time. These were teachers whose periods came immediately after break in the high school classes. The break period was preferred because some students would prefer to indulge in such an exercise like answering a questionnaire than going for break.

On the day of administering of questionnaires, the researcher introduced the session to respondents indicating clearly that it was a voluntary exercise and assured them confidentiality on any information given. The researcher used the Direct Delivery Technique

to administer the questionnaires, because this would save time and increase return rate of the questionnaires.

Experience from earlier studies revealed that some students would not answer a questionnaire simply because they lack a pen or pencil and were reluctant to find it simply to answer a questionnaire whose value is indeterminate to them. As such the researcher decided to buy and sharpen a pack of pencils which was distributed to such students to reduce this logistical problem.

Respondents had to check responses by ticking on boxes provided with either a pen or pencil. After the exercise, they were thanked. The guidance counselors/teachers on their part were contacted in their offices and pleaded upon to answer the questionnaires on the first day of visit to the school. Those who were not in the position to answer them on that day had the possibility to deliver them the next day. In case a teacher did not have time to respond at that time, the questionnaire was left with the secretary upon completion.

Table 18

Return rate of questionnaires

	Issued	Number Returned	% of return
Boys	250	144	57.6
Girls	300	259	86.3
Total	550	403	73.3
%	100	73.3	

Source; researchers survey

Ethical consideration

According to the Kantian ethical principle, research participants should be treated as ends in themselves and not as a means. As such, the researcher dealt with participants with the mind-set that they are autonomous. As such, any participant in the research did so out of freewill. Participants were given an informed consent. This means the participants were clearly told what their participation in the research entails and made to understand that they had the right to refusal. In spite of the hindrance it could bring to the research, the participant's refusal was to be binding even if it minimized the presumed benefits (Stokes, 1986).

In order to ensure confidentiality in the ethical treatment of research participants, no identity-specific data (anonymity) was to be gathered and no identity-specific (confidentiality) data was to be revealed. In spite of all pressure facing the researcher, the researcher prevented research misconduct and hurting the research community by preventing any fraudulent data, data misrepresentation and plagiarism. This means data was not given a connotation it did not deserve and that the researcher acknowledged all sources of information without claiming to be the author of such knowledge (Stokes, 1986). One way to deal with this was through in-text citation and formation of a reference list. The researcher agreed the possibility for honest mistakes and real disagreements about results and interpretation.

The researcher respected all norms of research. Permission was obtained from all school authorities and time provided respected. Force or deception was not used in any form to collect data. None of the respondents were silently intimidated or promised a false reward. The researcher did not hide any valuable information from the school administration and authorities. All respondents were thanked, including participants who helped in one way or the other. The following points summarize the ethical considerations throughout this study.

Generally, some topics are controversial;

It was the researcher's responsibility to ensure that there was no controversial issue in the study. Since the research took place during the COVID-19 era, the researcher ensured that all regulations put in place by the Cameroon Government and the WHO were strictly respected to ensure the safety of respondents. In this light, the researcher while personally administering the questionnaires put on a face mask and regularly washed hands. Also, proximity between researcher and respondents was not less than a meter. Furthermore, students who participated in the study were regularly reminded on the need to put on their face masks regularly. Since the respondents sat in classrooms to respond, they were made to

seat at least a meter away, and had to leave their questionnaires on the seat when completed, such that the researcher could pick them up.

The research methods were justified and presented to the Research Ethics Commission of the University of Yaoundé 1, such that they could review and make suggestions and recommendations on ways to improve protection of the participants and the researcher.

All major documents consulted in the study were properly cited following the current APA citation model. As such, the researcher acknowledged the contributors to the work without claiming real estate of the research work.

The data was collected in such a way that it avoided causing harm or damage to anyone. In order to ensure this, a comprehensive procedure for collecting data was outlined. Data was collected honestly and truthfully, without any sort of manipulation in order to avoid deceitful presentation or interpretation of findings and thus boast the reliability of the findings.

Alongside avoiding plagiarism, the researcher was keen for copyrighted materials, patent rights, intellectual property rights and other forms of rights, and self-plagiarism.

Furthermore, 'slicing publication' or 'salami publication' was avoided by avoiding to publish the study in parts. Since the study was based on some hypotheses, population and findings, it was not possible to publish it in parts in the pretext or independent studies as this is ethically unaccepted by the research ethics board.

Fabrication, falsification and misrepresentation were avoided by actually going to the field and collecting data honestly, and avoiding to manipulate any graphic data. As such, the raw data was retained, having in mind that during review, it could serve as evidence.

The researcher made personal and financial interest clear on the questionnaire by stating that it was purely an academic affair.

The research avoided mounting personal attacks on minorities, any group based on religion, political, sexual and social orientations.

The researcher avoided bias based on geographical or economic bases and making fake promise.

The researcher was very open to criticism, being critical of self, and reviewing the work constantly based on suggestions from contributors at all levels.

The researcher prevented reinventing the wheel by extensively exploring literature, and avoiding duplications, thereby contributing and advancing research.

The rules and regulations of every institution were adhered to at any point in the process.

CHAPTER FOUR

PRESENTATION OF FINDINGS

This presents the findings of the study. It is important to recall that the research methods and procedures employed throughout the study have were to end up with a product, an instrument, which should enhance career counseling in secondary schools in Cameroon. Recall also that although the research objectives were stated as separate objectives, they indeed are inherent in themselves and permeate each other. For example, you cannot have a reliable instrument if it was not well validated in its development process. In other words, if the instrument is valid, it must also be reliable. In other to achieve the objective in question, the following questions were asked;

1.   What are the career needs of secondary school students in Cameroon?
2.   What are the appropriate steps in the development of a SCAI that has construct and face validity?
3.   What are the appropriate steps in the development of a SCAI that is reliable?
4.   To what extent can the Students Career Assessment Inventory (SCAI) highlight STEM related man power requirements in the labor market in Cameroon?

The findings have been separated to the following four components or sections; Demographic information, Preliminaries and Pilot testing, Validity Indices, Reliability Indices.

A: Demographic Information

Table 19

Gender of Respondents

		Frequency	Percent
Valid	Male	129	32,0
	Female	259	64,3
	22,00	1	,2
	Total	389	96,5
Missing	System	14	3,5
Total		403	100,0

Note. Research field survey, 2021

Figure 11

Gender of respondents
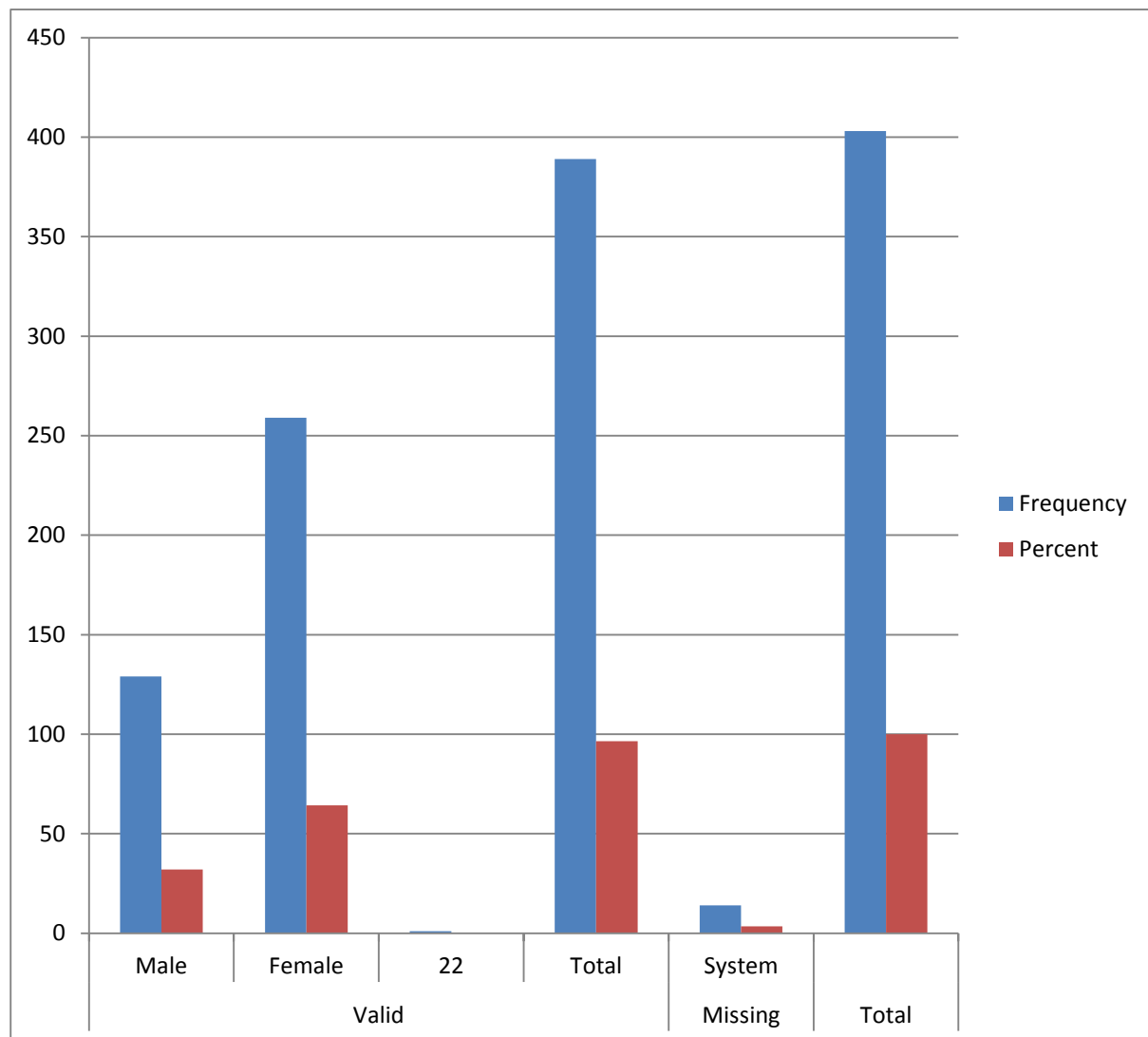
Note. Bar chart illustrating gender of respondent

Table 20

Age range of respondents

		Frequency	Percent
	10-13	72	17,9
	14-17	242	60,0
	18-21	60	14,9
Valid	22-25	4	1,0
	25+	1	,2
	22,00	1	,2
	Total	380	94,3
Missing	System	23	5,7
Total		403	100,0

Note. Research field survey, 2021

Figure12

Age range of respondents
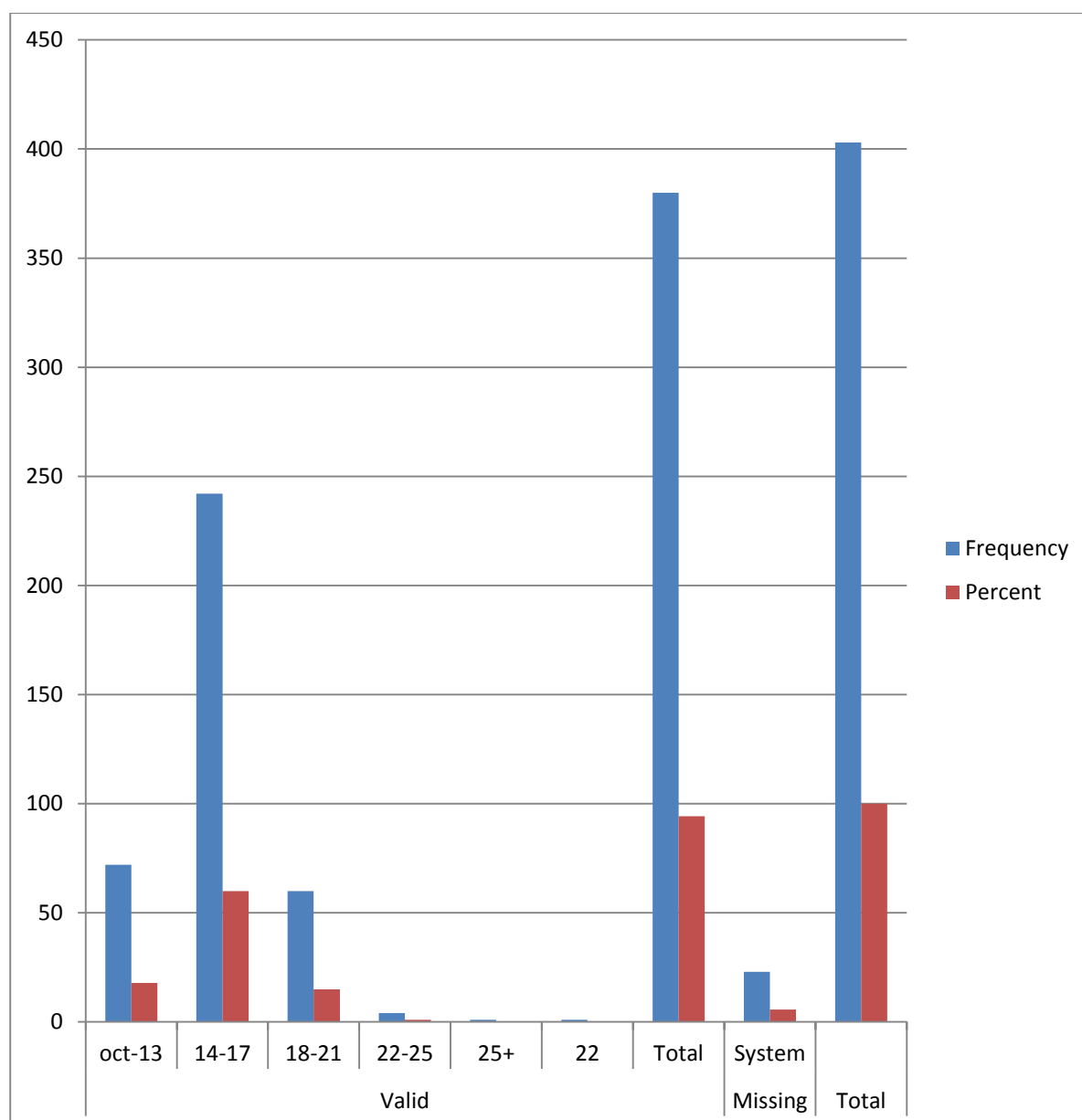
Note. Age range of respondents in years

Table 21

Class of Respondent

		Frequency	Percent
Valid	Science	133	33,0
	Arts	194	48,1
	Total	327	81,1
Missing	System	76	18,9
Total		403	100,0

Note. Research field survey, 2021

Figure 13

Class of Respondent
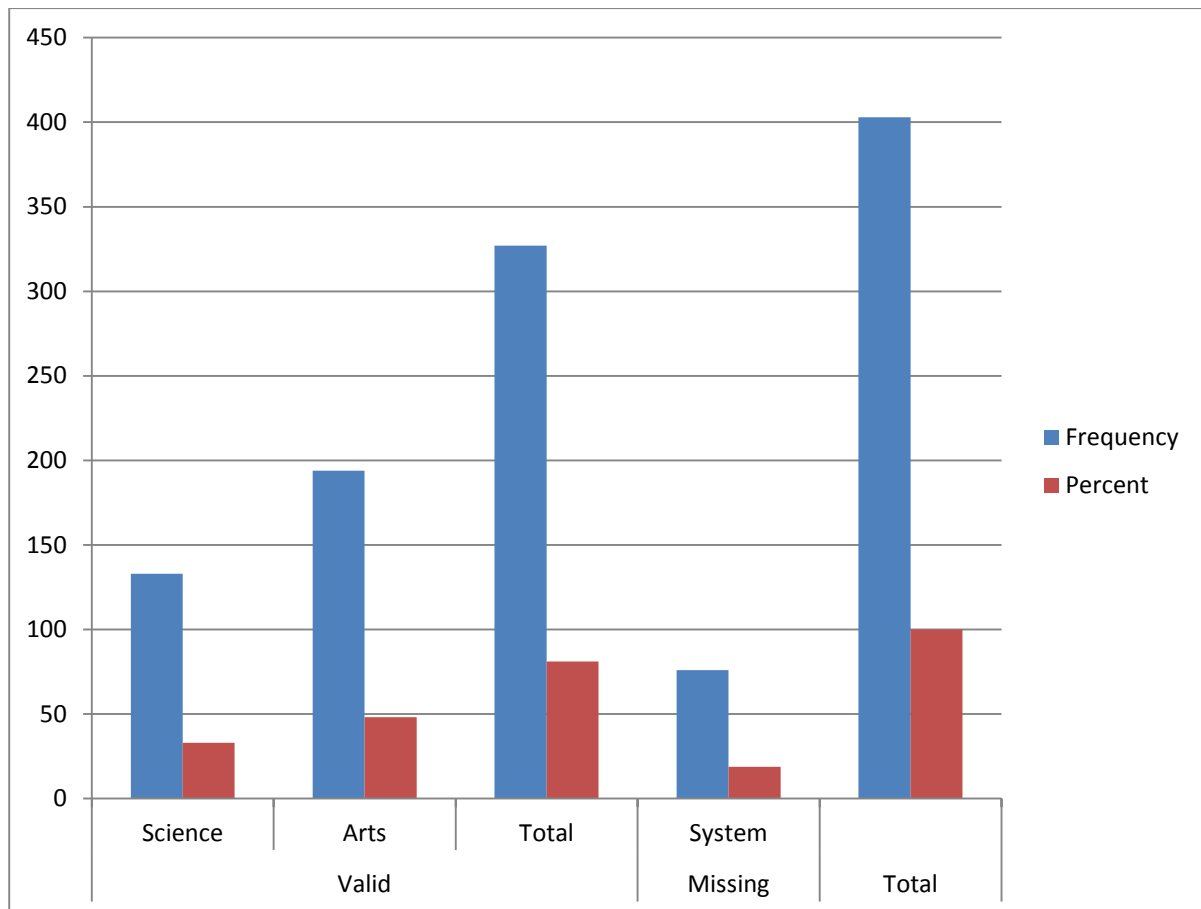
Note. Separation of respondents into science and arts; science students being those offering Chemistry while arts students being those offering Literature.

Table 22

Science Series'

		Frequency	Percent
	S1	10	2,5
	S2	20	5,0
	S3	30	7,4
Valid	S4	6	1,5
	S5	1	,2
	S8	1	,2
	Total	68	16,9
Missing	System	335	83,1
Total		403	100,0

Note. Research field survey, 2021

Figure 14

Science Series'
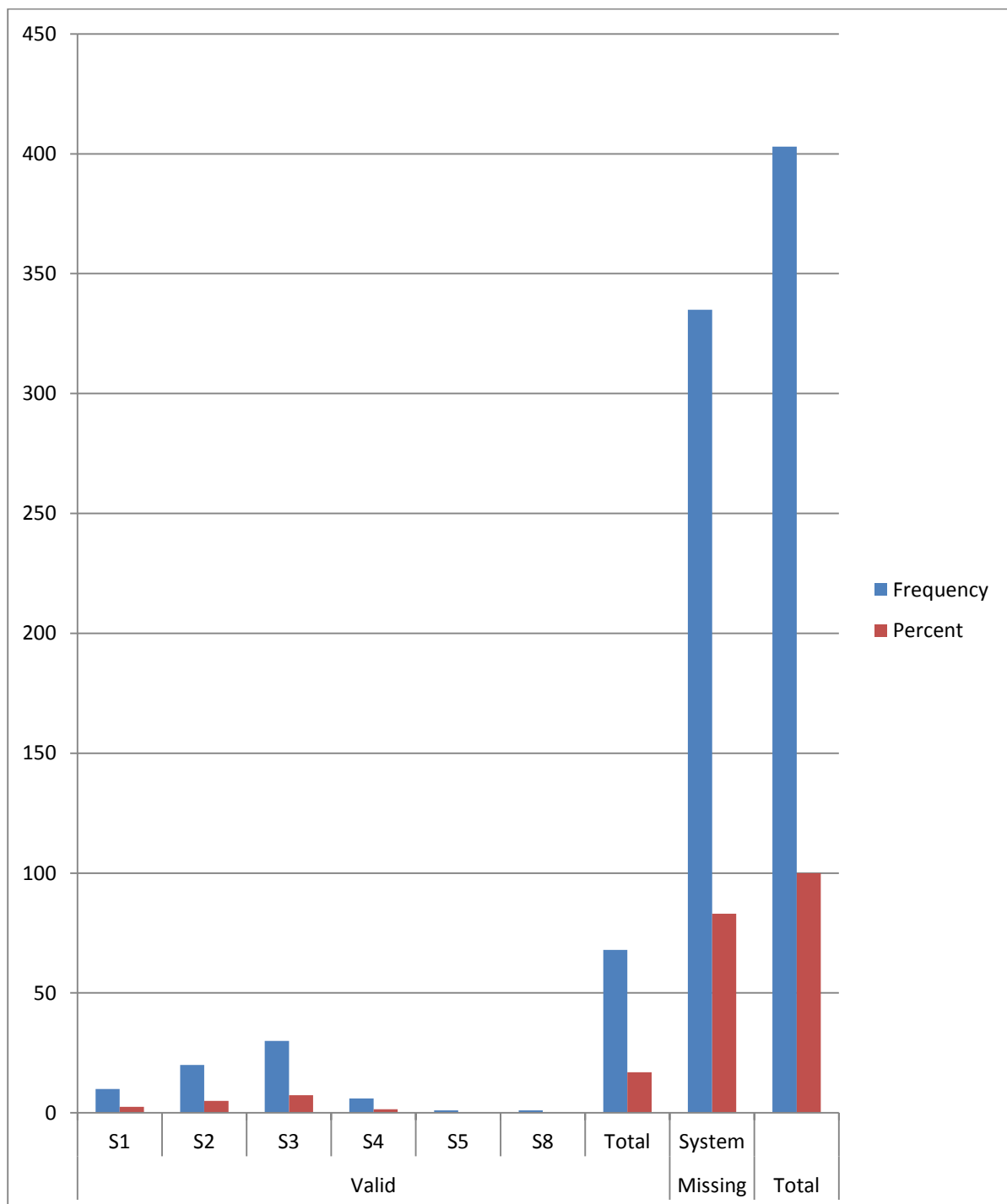
Note. Science series' ranging between S1 and S8

Table23

Arts series'

		Frequency	Percent
Valid	A1	11	2,7
	A2	30	7,4
	A3	39	9,7
	A4	21	5,2
	A5	5	1,2
	A6	1	,2
	Total	107	26,6
Missing	System	296	73,4
Total		403	100,0

Note. Research field survey, 2021

Figure 15

Arts series'
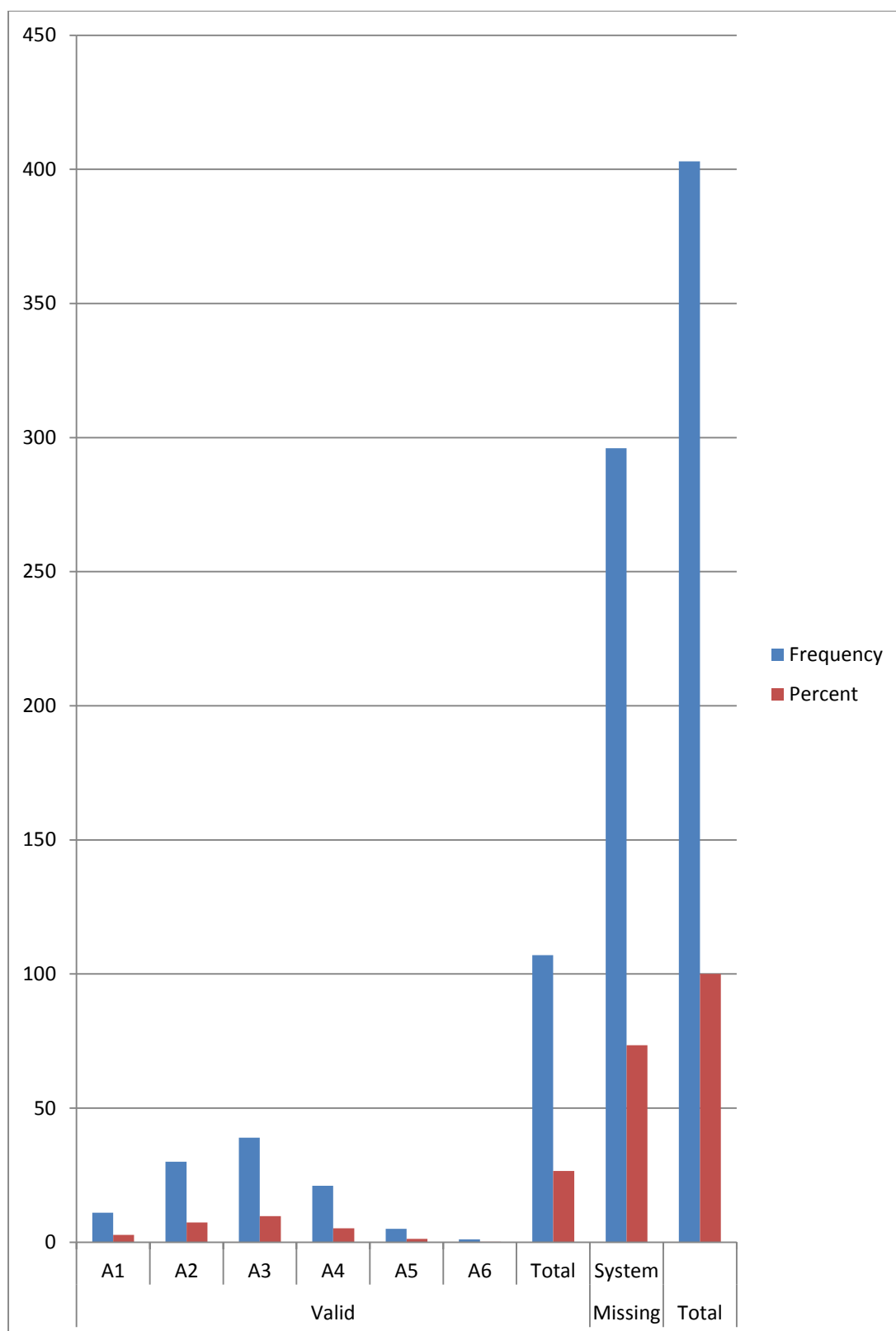
Note. Arts series ranging between A1 and A6

Table 24

Religious background

		Religious Background	
		Frequency	Percent
Valid	Catholic	176	43,7
	Protestant	122	30,3
	Muslim	12	3,0
	Others	34	8,4
	Total	344	85,4
Missing	System	59	14,6
Total		403	100,0

Note. Research field survey, 2021

Figure 16

Religious background
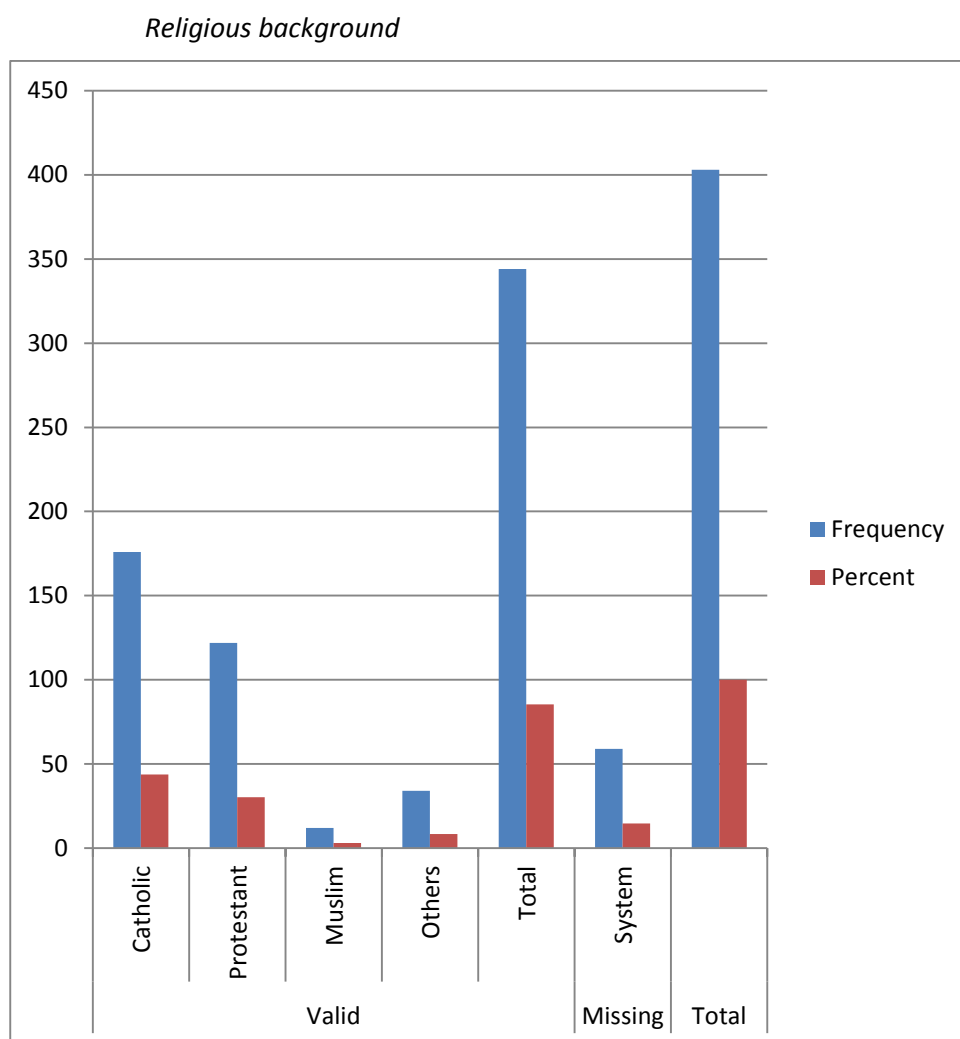
Note. Respondents were Catholics, Protestants and Muslims.

Table 25

Repeating current class

		Frequency	Percent
Valid	No	312	77,4
	Yes	21	5,2
	7,00	1	,2
	12,00	3	,7
	Total	337	83,6
Missing	System	66	16,4
Total		403	100,0

Note. Research field survey, 2022

Figure 17

Repeating current class
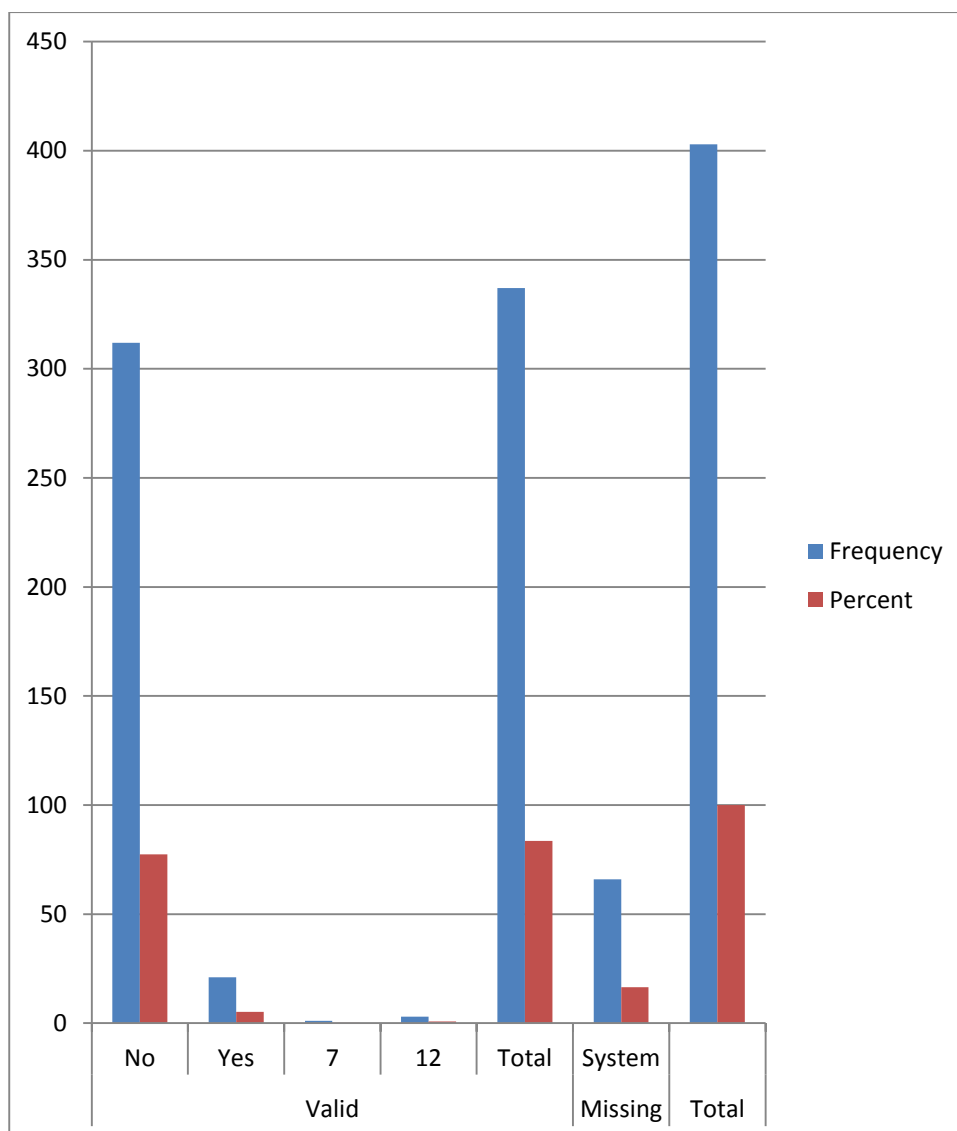
Note. Most of the respondents were not repeating their current class

Table 26

Changed series

		Frequency	Percent
Valid	No	204	50,6
	Yes	42	10,4
	Total	246	61,0
Missing	System	157	39,0
Total		403	100,0

Note. Research field survey, 2021

Figure 18

Changed series
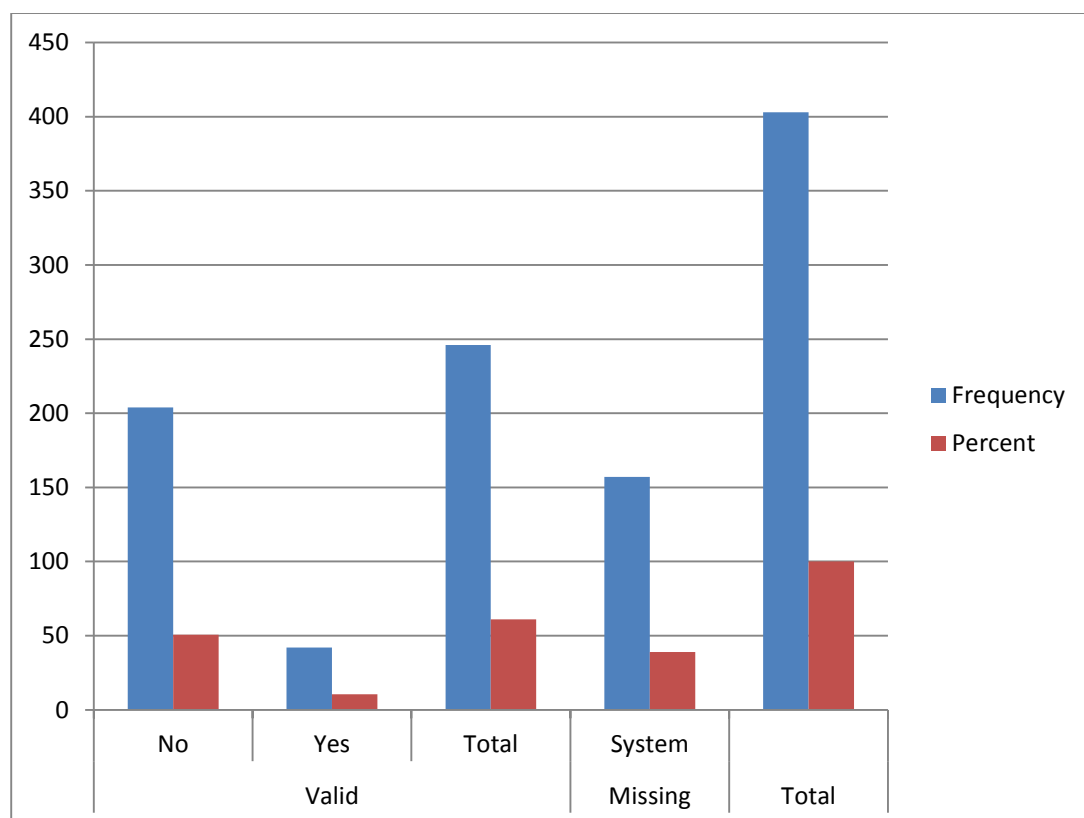
Note. Figure illustrating if the students had changed their series' before

Table 27

Will like to take up a new series

		Frequency	Percent
Valid	No	156	38,7
	Yes	68	16,9
	3,00	3	,7
	Total	227	56,3
Missing	System	176	43,7
Total		403	100,0

Note. Research field survey, 2021

Figure 19

Will like to take up a new series
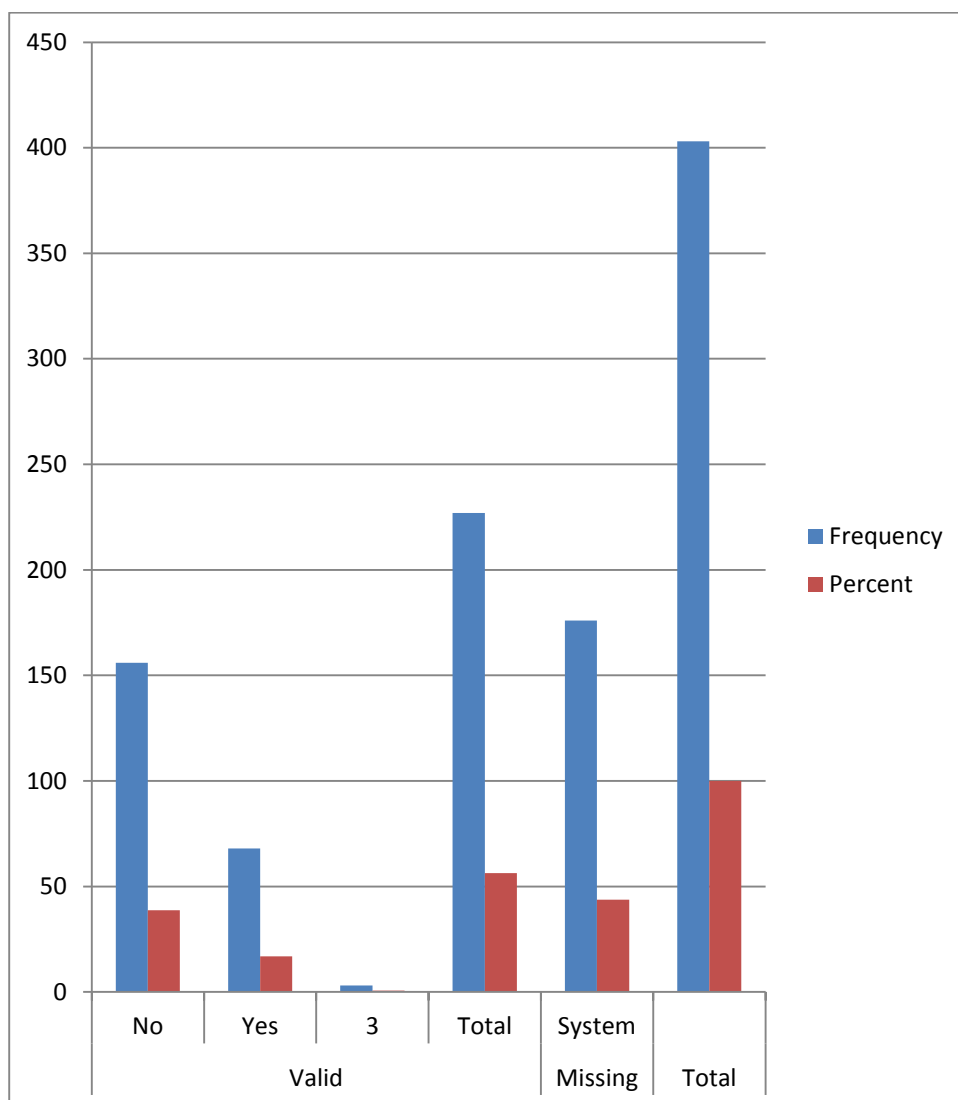
Note. Figure illustrating students who will like to take up a new series

Table 28

Subjects Offered at O.L

		Frequency	Percent
	Chemistry	166	41,2
Valid	Literature	156	38,7
	Total	322	79,9
Missing	System	81	20,1
Total		403	100,0

Note. Research field survey, 2021-09-18

Figure 20

Subjects Offered at O.L
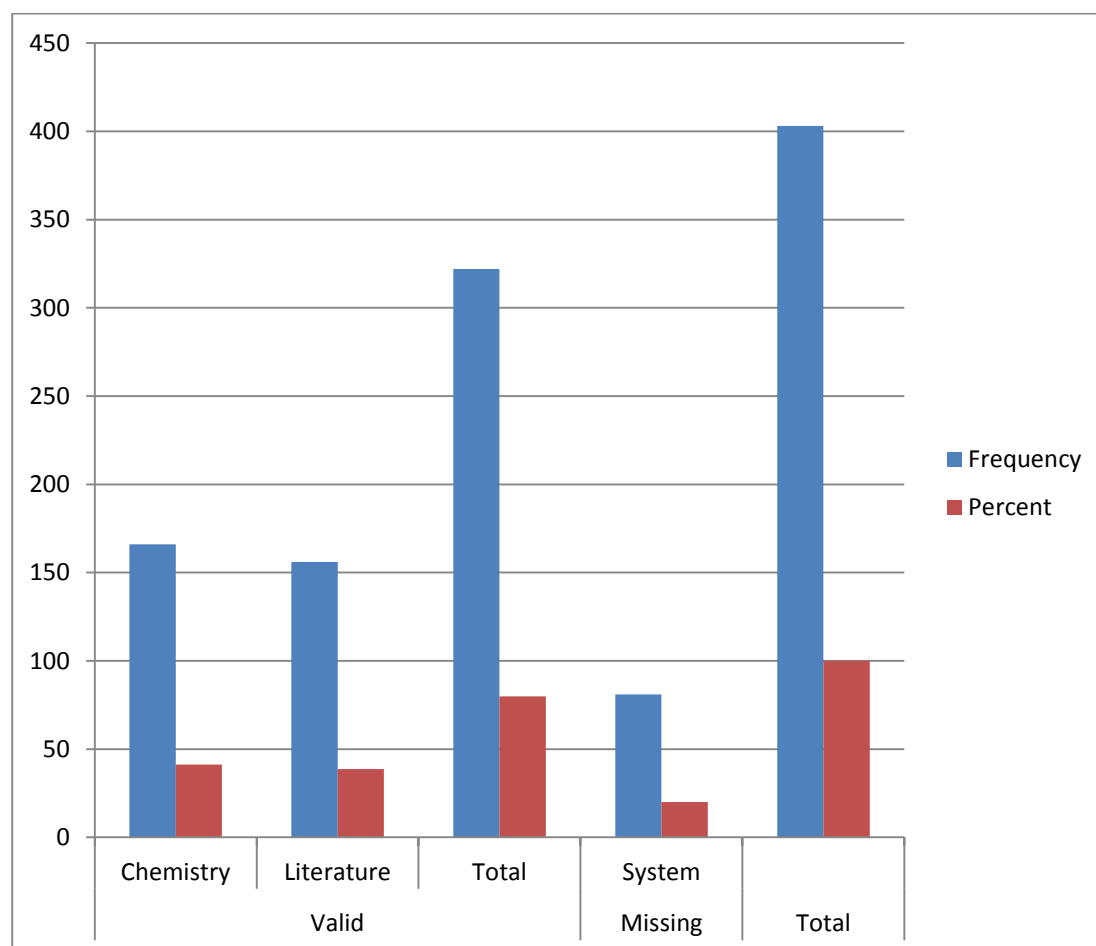
Note. Figure showing distribution of students between Chemistry and Literature

Table 29

Subjects offered at A.L.

		Frequency	Percent
Valid	Chemistry	3	,7
	Literature	77	19,1
	Total	80	19,9
Missing	System	323	80,1
Total		403	100,0

Note. Research field survey, 2021-09-18

Figure 21

Subjects offered at A.L.
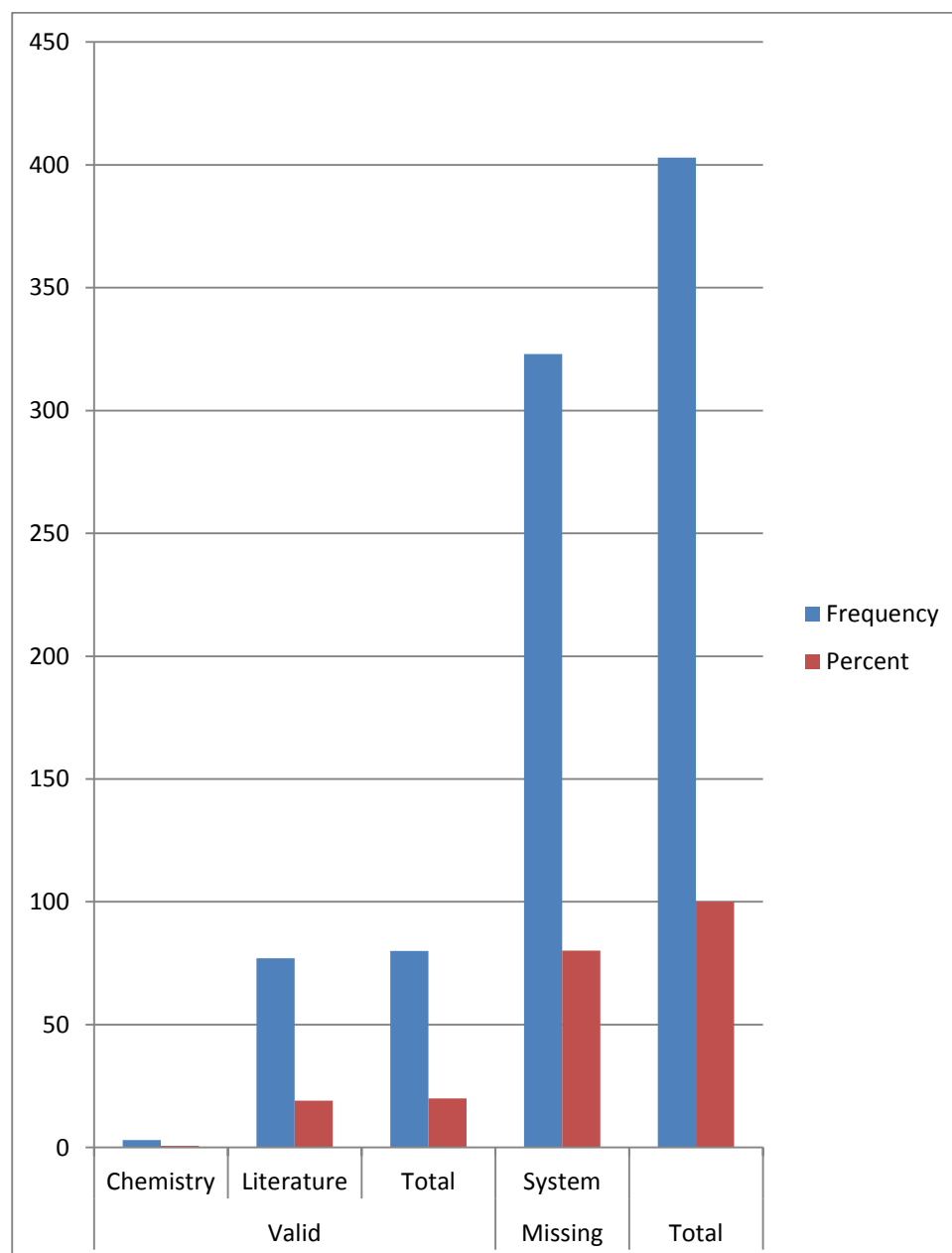
Note. Illustration of subjects at A/L between Literature and Chemistry

Section B: Descriptive statistics

Table 30

STEM Interest Survey (STEMIS)

S/N	SD	D	A	SA	Invalid
I wish to pursue my studies in science	16.9	18.1	17.1	34	13.9
My family is ok with the subjects am offering in school	3.5	5	35	43.9	12.6
A career in science will be fun	12.9	22.1	24.1	22.8	18.1
My family is happy that am offering science	16.1	17.4	19.9	22.1	24.5
Skip this question please	7.7	5.2	4.5	4	78.6
I intend to offer science in the university	8.7	12.4	28.8	30.5	19.6
Will like to do things with the help of science	17.9	16.9	16.9	28.3	20
I prefer to work in a field related to science	12.4	15.9	24.6	29.8	17.3

Work related to science gives respect	8.7	12.2	33.0	25.3	20.8
Please skip this question	6.5	4.2	9.2	6.2	73.9
Sharing ideas with others in science is interesting to me	7.9	11.9	32	30.8	17.4
We live better lives with the help of science	6.9	10.4	28.3	38.7	16.0
Working in science related field is easy	14.9	21.6	27.5	18.4	17.6
Doing science is challenging	7.4	15.4	27.5	32.8	13.7
Maths is not interesting to me	23.8	19.6	20.6	17.6	18.4
I like science	17.4	18.9	18.9	27	17.8
I don't like making new products	30.3	28.3	13.4	8.2	119.8
Electronics do not interest me	25.1	27.8	14.9	12.7	119.5
Science is easy	19.6	27.0	20.8	15.4	17.2
I pass maths easily	15.9	29	23.1	13.9	18.1
sum	14.1	16.9	22.5	23.1	23.4

Note. Research survey, 2021

Figure 22

STEM Interest Survey (STEMIS)
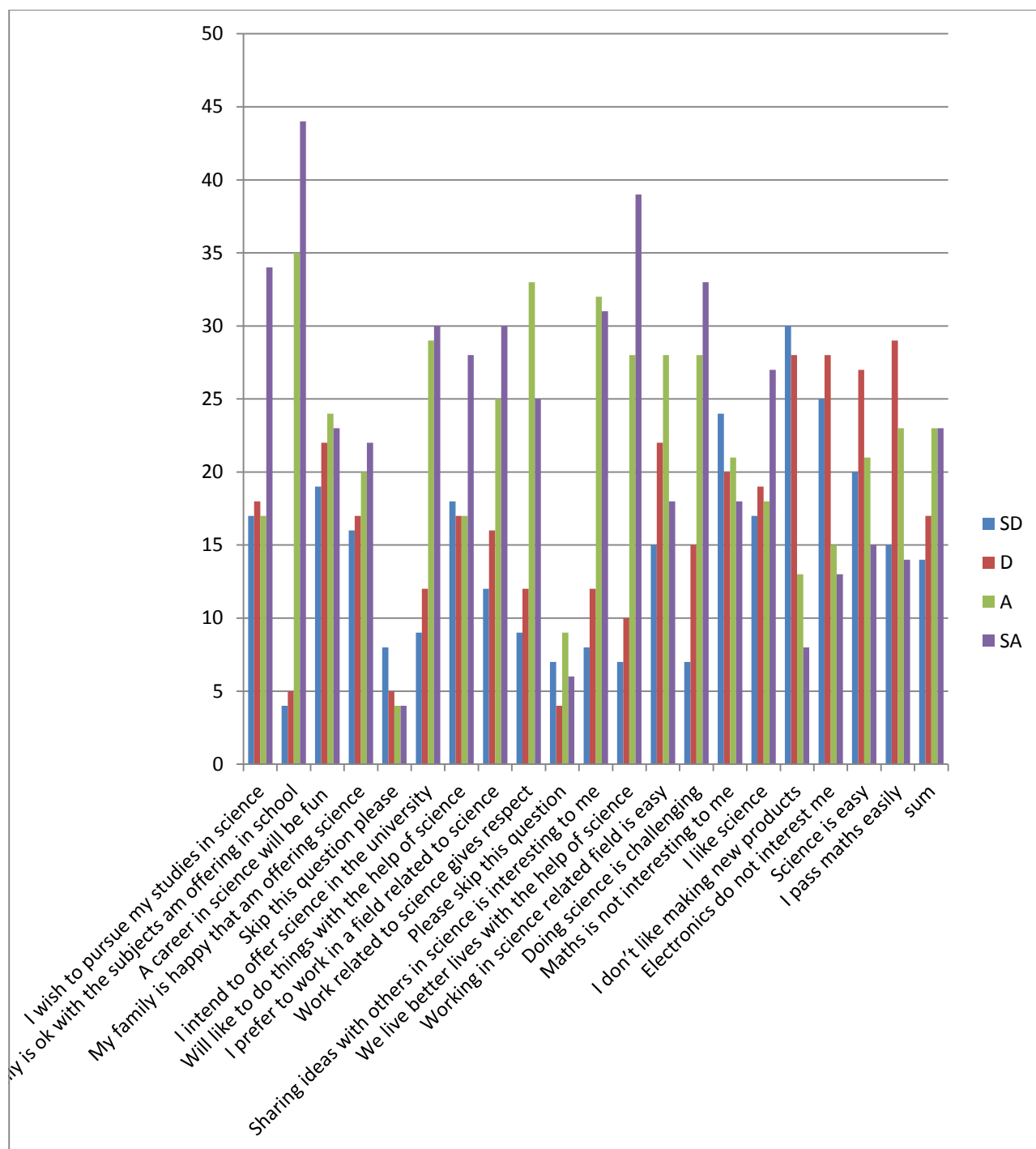
Source; field survey

Table 31

Value scale

Question	1:very very false	2:very false	3: false	4: neutral	5: true	6:very true	Very very true	invalid
Science is interesting	33	8	3	5	4	2	31	14
Science is desirable	27	4	7	8	4	4	27	18
Science is fun	29	4	5	5	4	3	31	18
Science is meaningless	19	5	5	10	5	1	46	21
Science is tedious	29	4	5	5	4	3	31	19
Math is tedious	32	8	3	5	4	2	31	14
Math is desirable	27	3	7	8	4	4	27	18
Math is interesting	29	4	5	5	5	3	31	19
Math is fun	21	2	2	4	3	2	46	21
Math is meaningless	19	5	5	10	5	2	33	21
Engineering is desirable	19	9	5	5	5	4	35	18
Engineering	22	9	6	6	6	4	27	20

is meaningless							
Engineering is tedious	22	5	9	5	6	3	27	18
Engineering is fun	19	8	8	7	3	5	29	20
Engineering is interesting	19	6	3	3	3	4	40	21
Technology is desirable	31	1	7	7	5	2	30	16
Technology is meaningless	23	1	5	6	2	2	41	20
Technology is tedious	21	7	9	8	8	5	27	19
Technology is fun	26	4	5	9	5	3	26	20
Technology is interesting	27	2	9	4	4	2	3	17
A career in stem is meaningless	17	7	8	4	2	4	45	19
A career in stem is tedious	80	1	9	5	5	3	43	20
A career in	20	6	9	3	2	5	33	20

stem is fun							
A career in stem is interesting	80	1	9	5	5	3	43	20
A career in stem is desirable	20	6	9	3	2	5	34	20
Total	26	5	6	6	4	3	32	26

Source; field survey

Figure 23a

Value scale (Science is interesting' to 'Math is meaningless')
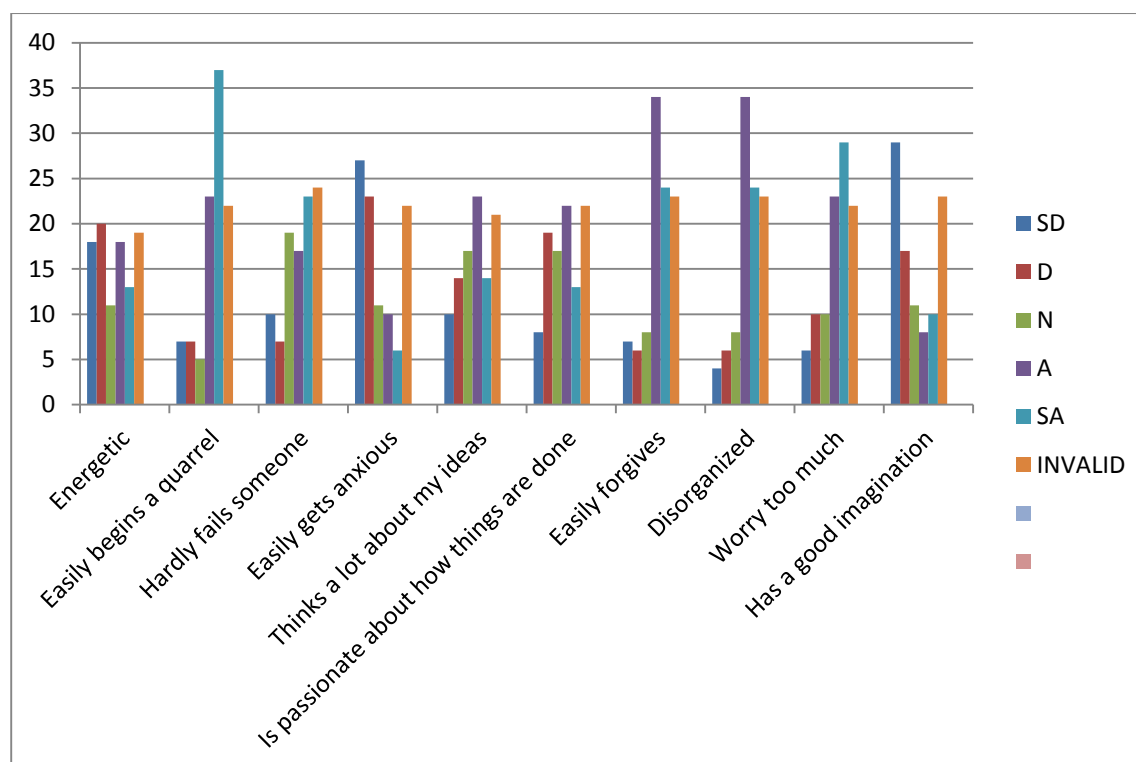
Source, research field survey

Figure23b

Value scale b (Maths is meaningless' to 'technology is tedious')
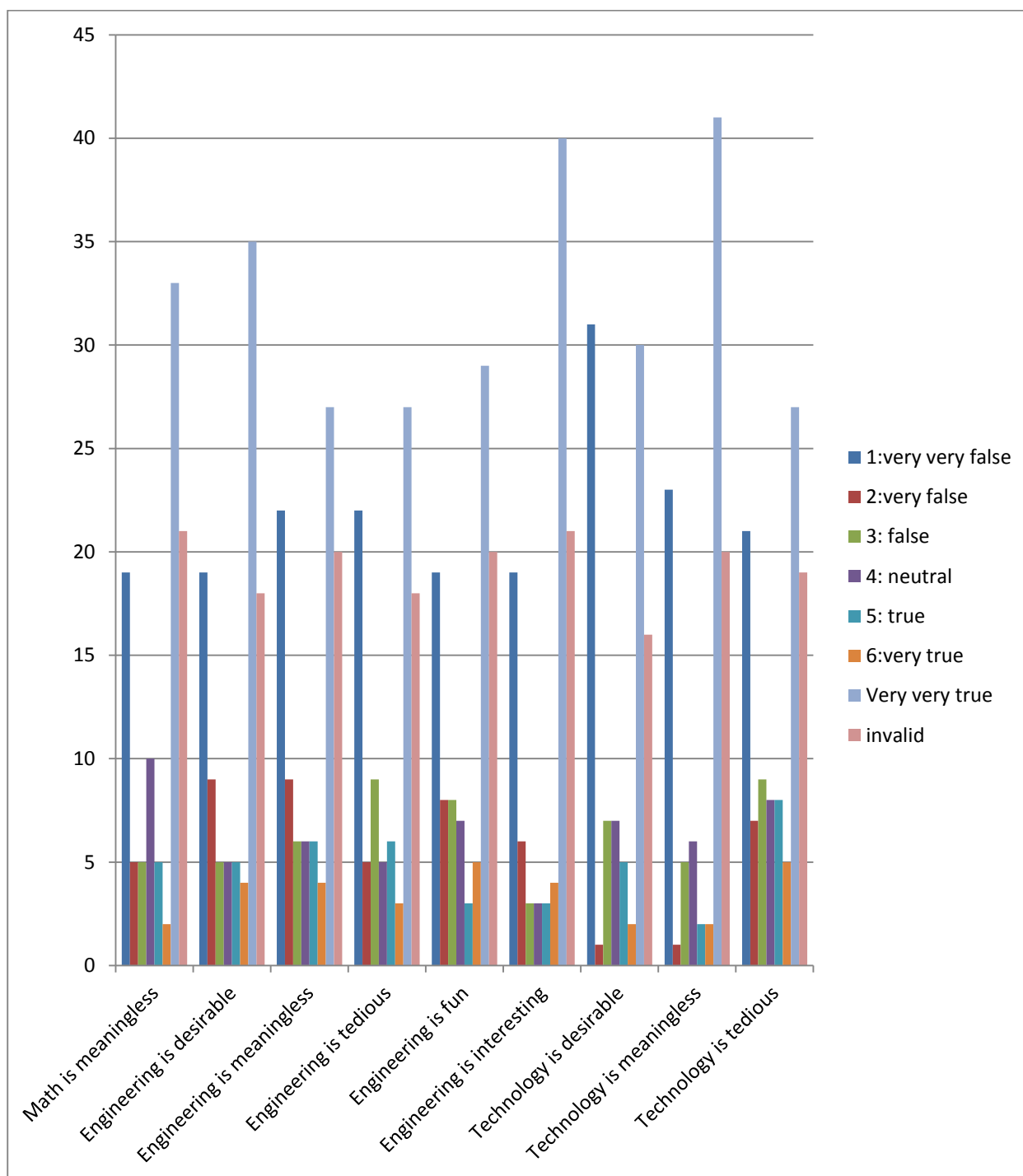
Source; research field survey

Figure 23 c

Value scale c (Math is meaningless' to 'a career in science is desirable')
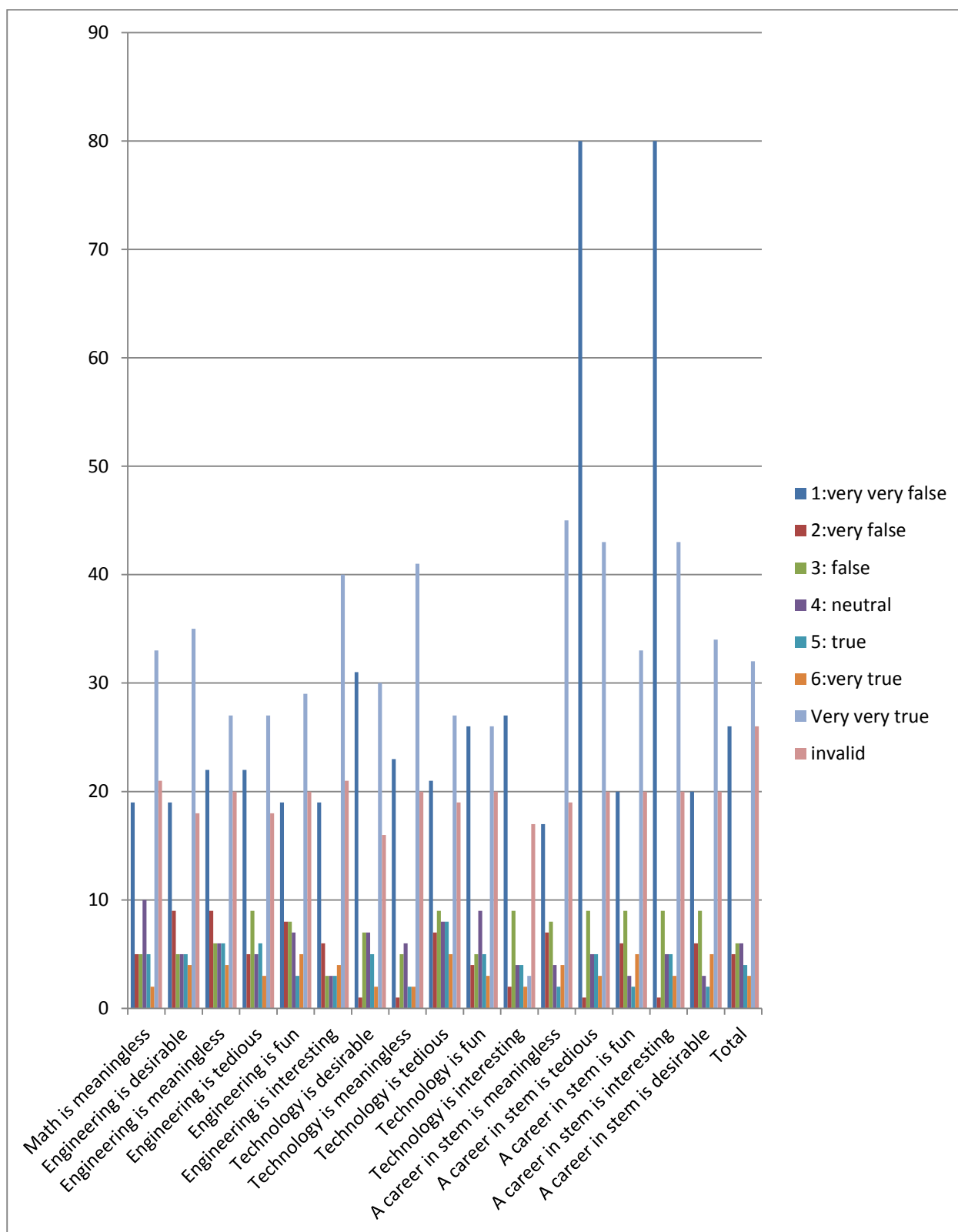
Table 33

Expectations about career

Scale: 1 = no importance, 2 = slight importance, 3 = some importance, 4 very important

S/N	no importance	slight importance	some importance	very important	Invalid
How often I can be promoted	3	4	13	65	15
Deciding on the way I work	6	10	23	42	17
Using others to achieve organizational goals	21	15	15	29	19
Ability to have my personal life	4	12	11	58	15
Trying new things in new situations	1	7	16	59	18
A chance to work and do other things	34	8	17	51	19
Putting people together to achieve goals	7	13	13	52	82
Trying new ideas to solve problems	7	7	14	54	19
Belonging to an established organization	13	9	22	38	17
Performing tasks that require thinking	5	8	26	41	20
The chance to distinguish myself from	8	8	22	42	19

others					
Being an important person in an organization	6	6	16	52	20
Outstanding in my performance	8	10	16	47	19
Exploiting skills in other people	17	10	24	27	22
Courage to try new things	4	5	18	54	19
Knowing that work is not the only thing in my life	11	13	16	38	21
Getting recognition for the success of my organization	7	8	19	47	20
Being key in implementing organization goals	3	11	25	39	22
Seeing myself perform better than others	4	11	22	43	18
Having power due to my skills	5	11	13	51	18
Flexibility to work anywhere and get same results	6	7	25	41	20
Developing with time	2	11	22	47	18
Deciding without hindrance from organization	10	20	26	23	20

Creating something as new discovery	7	8	12	56	17
sum	7	10	17	46	20

Source; research field survey

Figure 24a

Expectations about career ('how often I can be promoted' to 'outstanding in my performance')
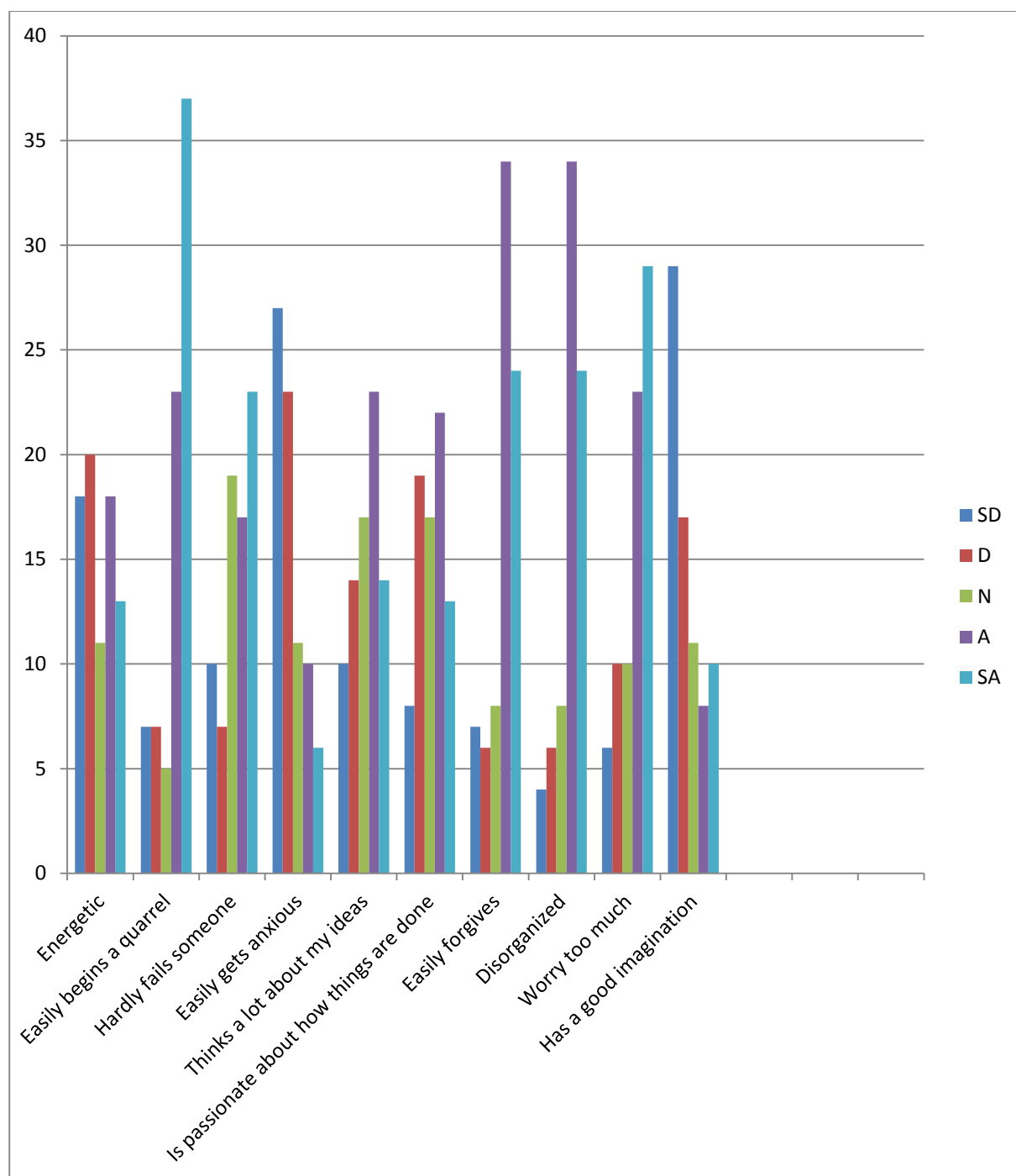
Source; field survey

Figure 24a

Expectations on career ('outstanding in my performance' to deciding without hindrance from organization')
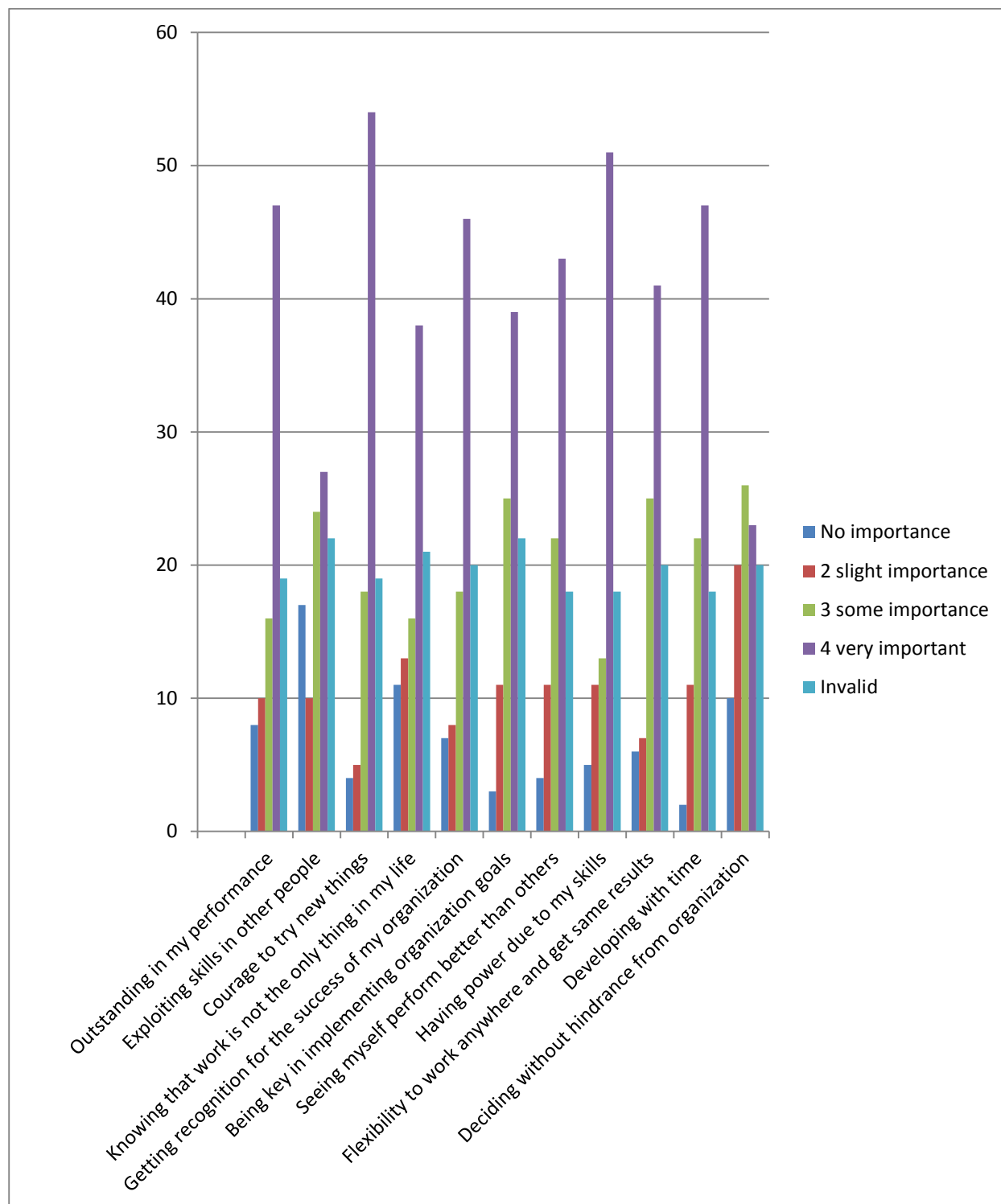
Source; field survey

Figure 24 c

Expectations about career ('outstanding in my performance' to 'creating something as a new discovery')
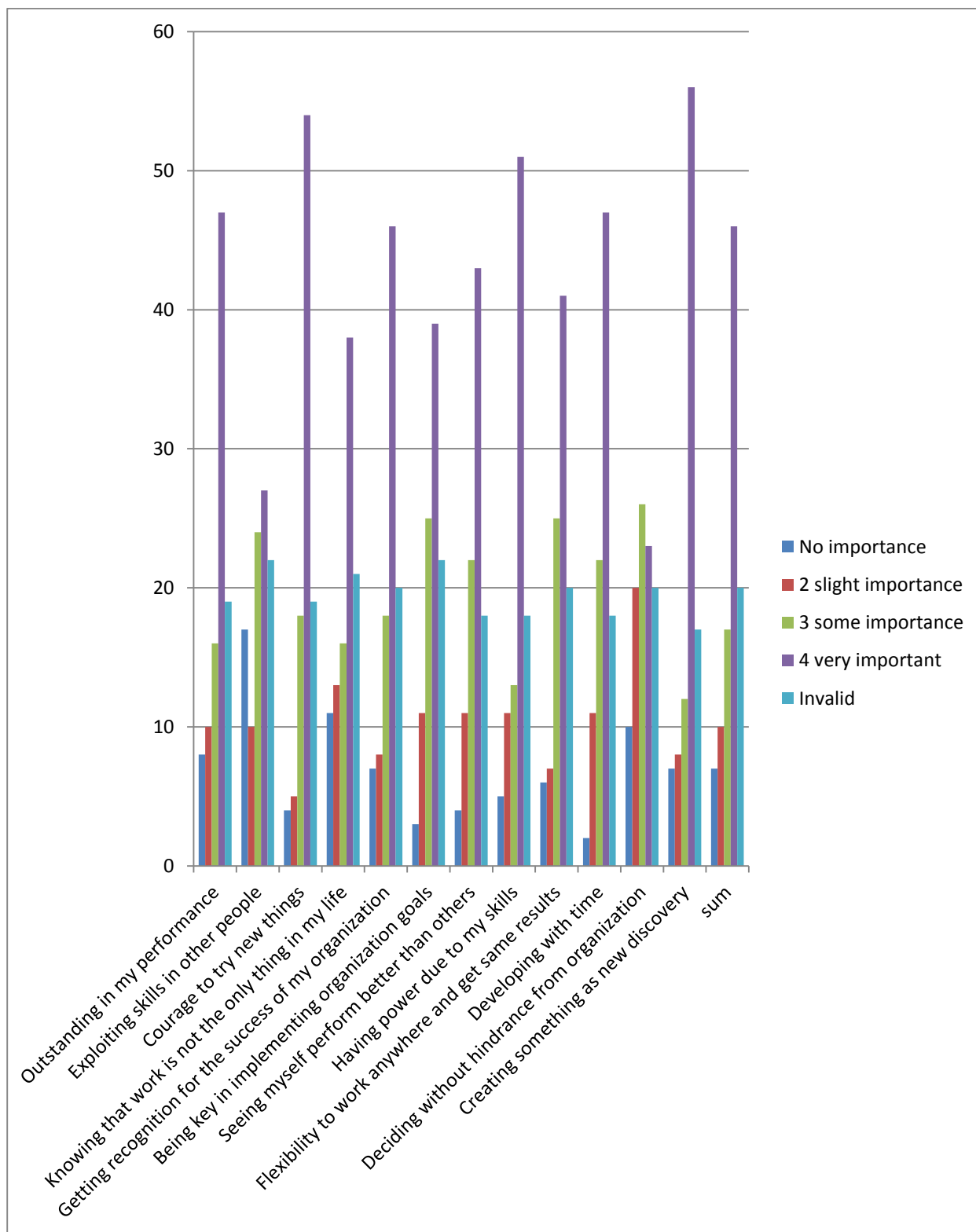
Source; field survey

F: Personality

Table 34

The Big Five Inventory

Key: SN = Serial Number, SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree

SN	SD	D	N	A	SA	INVALID
Talks a lot	23	19	14	14	8	20
Finds fault with others easily	21	27	9	17	7	19
Does my work well	6	7	10	34	24	19
Hardly gets angry	21	27	8	17	7	19
Creative, brings new ideas	6	7	10	34	24	19
Easily make friends	10	14	15	24	17	19
Cooperates with others	7	7	12	29	24	21
Somehow careless	9	10	14	20	28	19
Hardly gets worried	6	8	9	30	27	20
Likes to know a lot of different things	18	22	17	18	5	20
Energetic	18	20	11	18	13	19
Easily begins a quarrel	7	7	5	23	37	22
Hardly fails someone	10	7	19	17	23	24
Easily gets anxious	27	23	11	10	6	22

Thinks a lot about my ideas	10	14	17	23	14	21
Is passionate about how things are done	8	19	17	22	13	22
Easily forgives	7	6	8	34	24	23
Disorganized	4	6	8	34	24	23
Worry too much	6	10	10	23	29	22
Has a good imagination	29	17	11	8	10	23
Quiet	13	20	15	14	15	23
Trusts people easily	8	7	19	26	20	21
Not hardworking	15	13	17	16	16	23
Emotionally stable	19	22	15	14	8	22
Can easily invent	38	16	10	7	6	24
Confident	15	9	20	14	15	26
Not warm	15	9	20	14	15	26
Perseverant	8	13	22	20	13	25
Changes mood easily	8	7	11	28	22	24
Loves arts	13	11	21	15	12	28
Shy	6	7	17	13	21	27
Generous	9	17	17	16	17	23
Works well	14	12	8	8	25	23
Very composed	17	11	10	16	22	23

Likes doing the same thing	5	3	9	28	32	22
Sociable	3	3	12	29	28	25
Looks down on others	6	10	20	23	20	23
Consistent	16	16	18	15	11	24
Easily excited	16	9	13	17	19	26
Creative in thinking	38	14	12	8	8	22
Does not really care about arts	11	9	20	22	12	25
Likes group work	11	8	21	22	16	22
Difficult to concentrate	9	8	15	26	17	25
Great gift in arts, music, culture	20	20	17	13	9	21
Sum	13	12	16	20	18	22

Source; field survey

Figure25a

Big five inventory, (talks a lot' to 'likes to know a lot of different things')
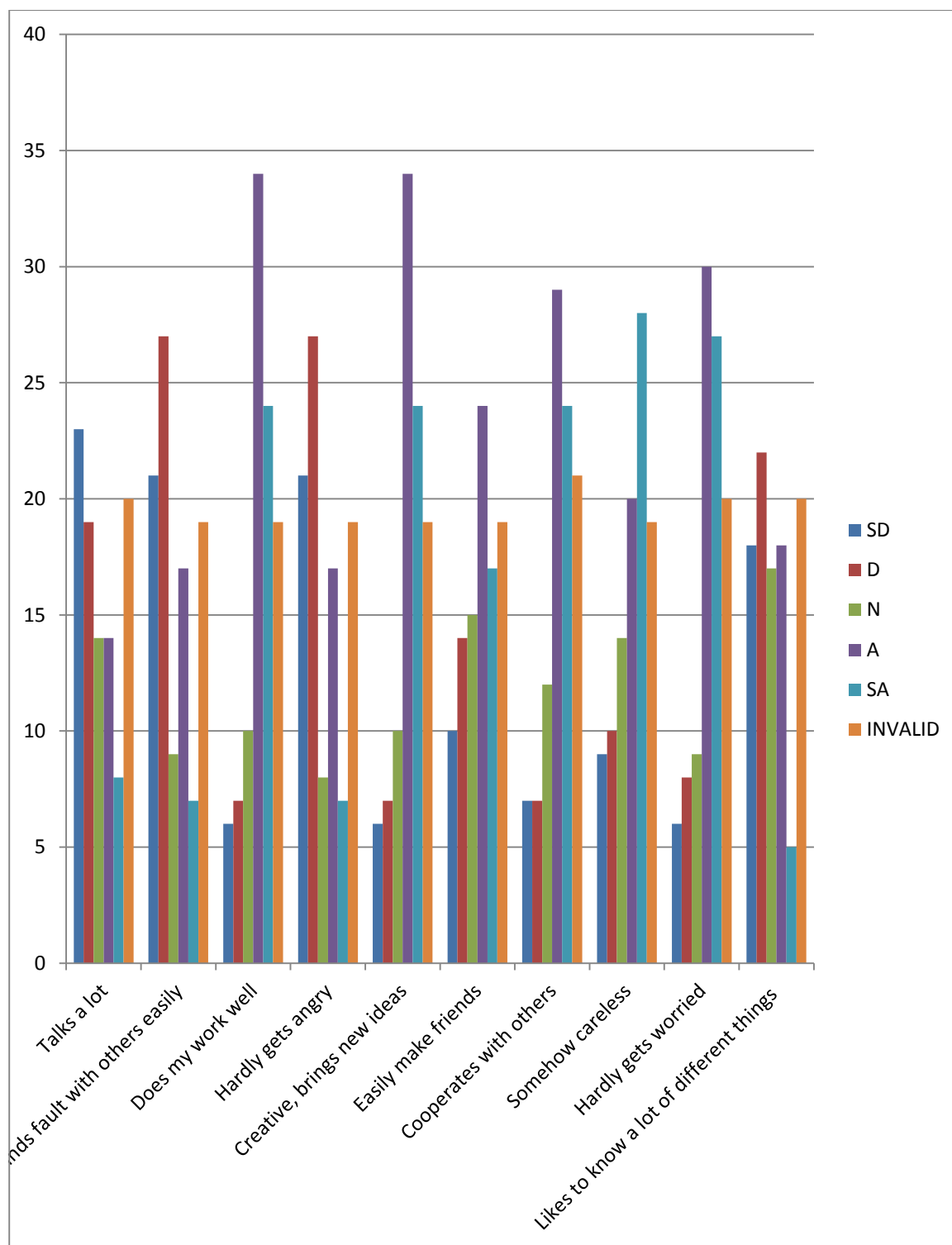
Source; research survey

Figure 25b

Big five; ('energetic' to 'has a good imagination')
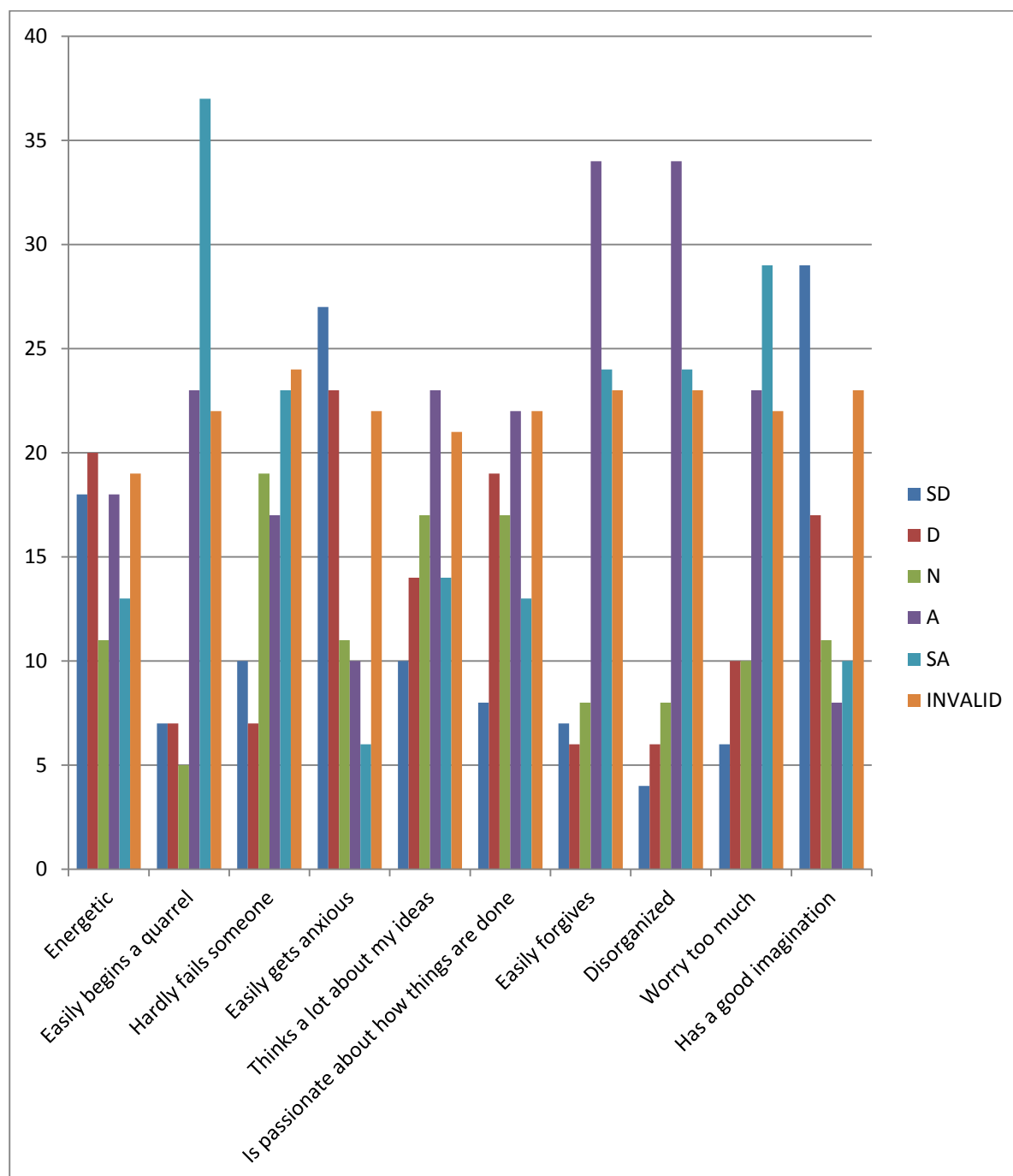
Source; research survey

Figure 25c

Big five; ('quiet' to 'loves arts')
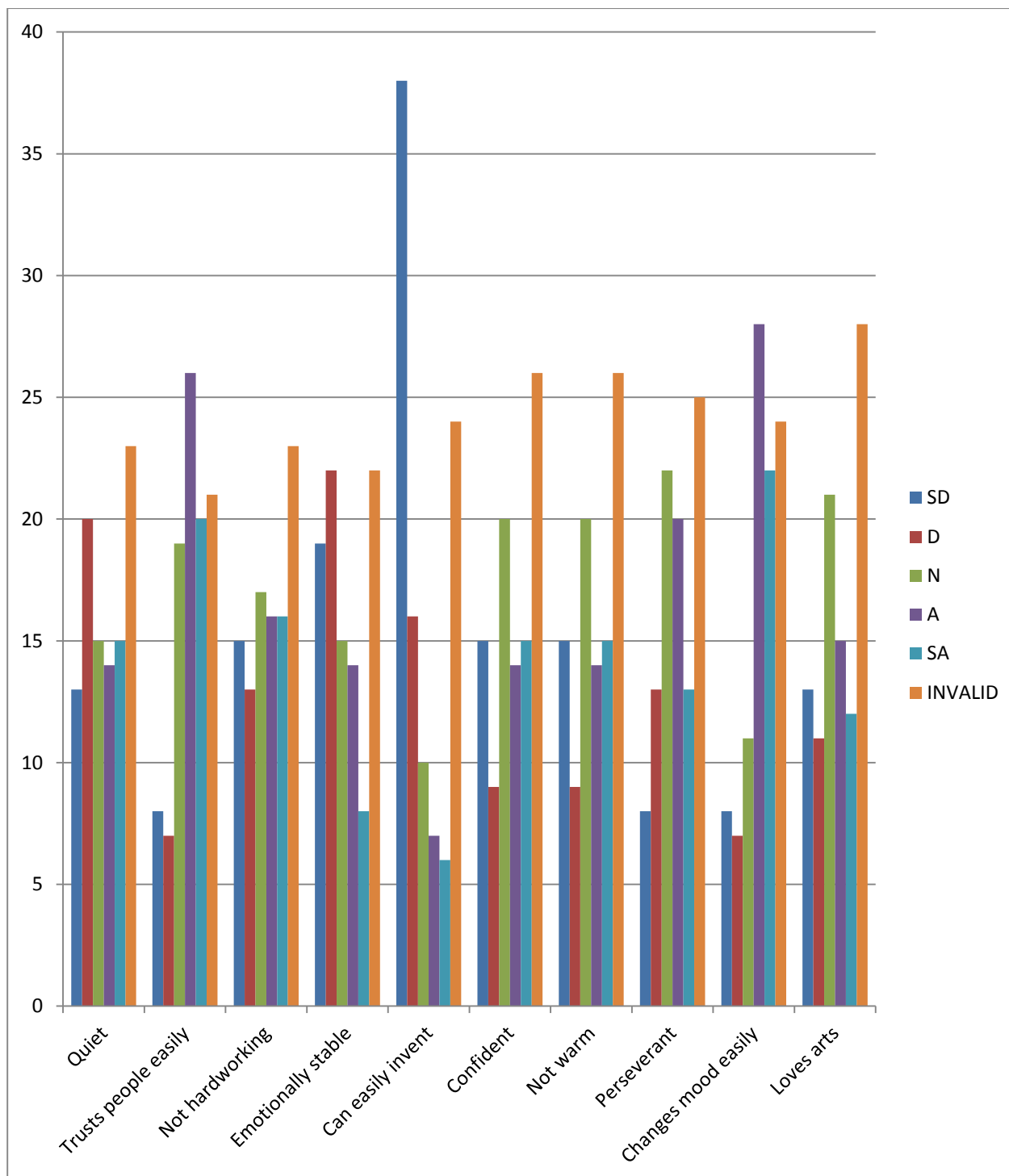
Source; research survey

Figure 25d

Big five; ('shy' to 'creative in thinking')
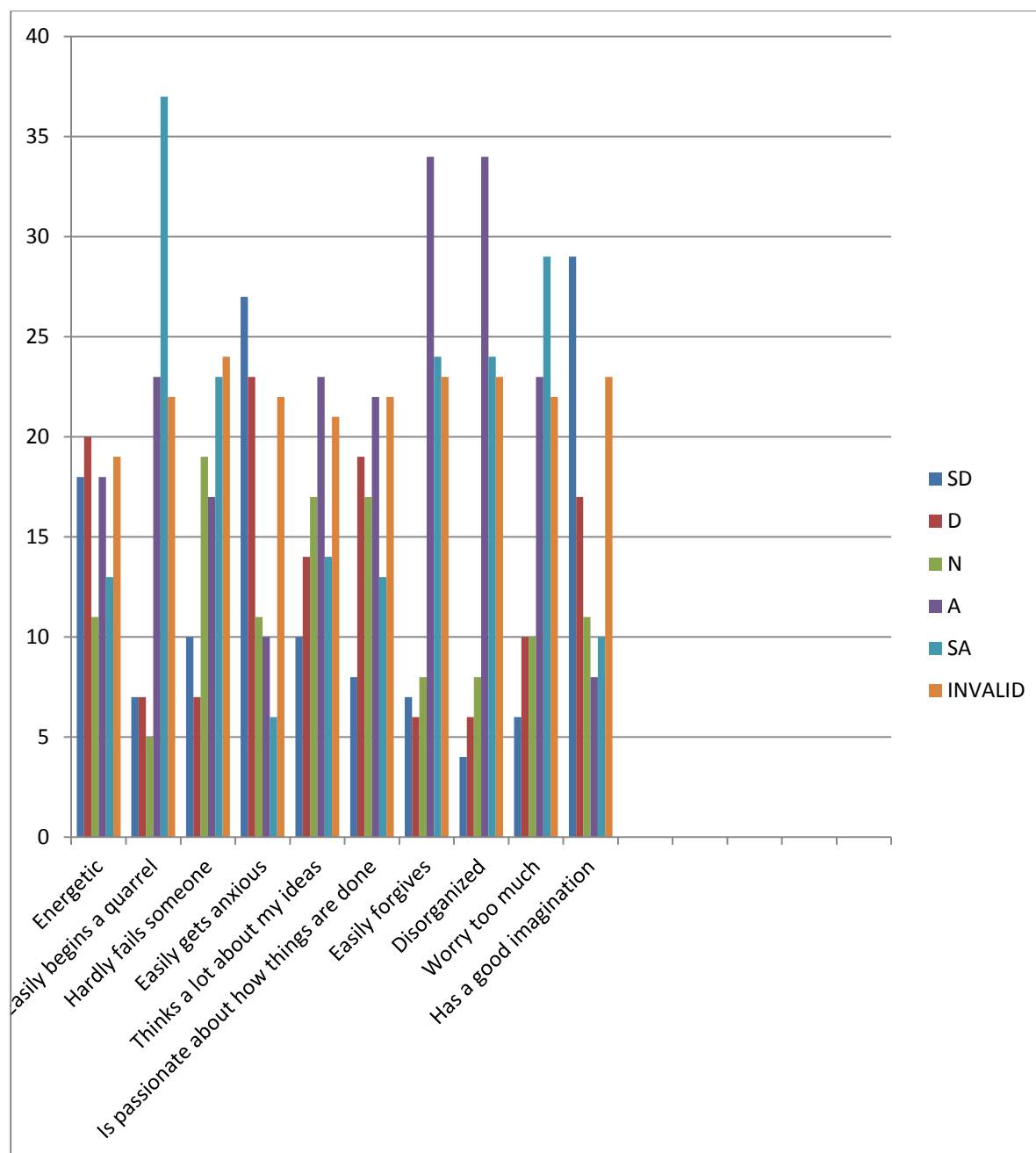
Source; research survey

Table 35

Table: Career options

SN	Career	Percentage
1	Managers	22
2	Professionals	43
3	Technicians and Associate professionals	6
4	Clerical support workers	1
5	Service and sales workers	1
6	Skilled Agricultural, Forestry and Fishery workers	1
7	Craft and related trade workers	0
8	Plant and Machine Operators and Assemblers	2
9	Elementary occupations	0
10	Armed forces occupations	0

Figure 26

Career choices
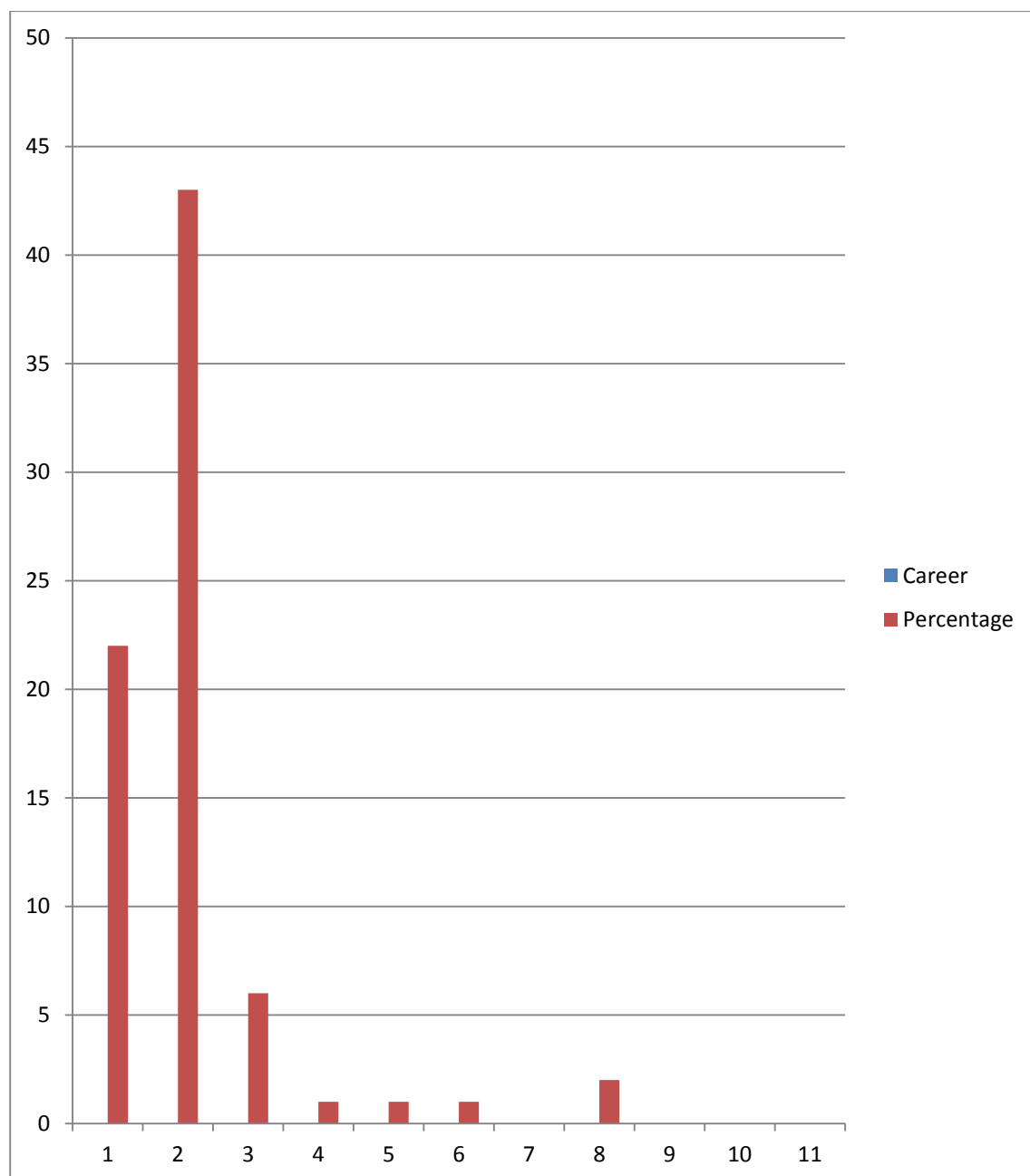
Source; research survey

Section II: Reliability estimates

Face validity

Overall respondent grading on Face Validity

Criteria	Value Scale	STEMIS Scale	Expectancy Scale	Personality Scale
Readability	Favourable	Favourable	Favourable	Favourable
Feasibility	Favourable	Favourable	Favourable	Favourable
Consistency	Favourable	Favourable	Favourable	Favourable
Formatting	Favourable	Favourable	Favourable	Favourable
Clarity	Favourable	Favourable	Favourable	Favourable
Language	Favourable	Favourable	Favourable	Favourable
Over all Kohen's Cappa Index	.7	.9	.6	.9
Face validity index .8				

The overall Kohen's Cappa Index was .8. This coefficient was very highly satisfactory.

Content validity

Overall item grading	Not necessary	Useful but not essential	Essential	CVR for 9 panelists
Value Scale	Not applicable	Not applicable	Recommended	.8
STEMIS Scale	Not applicable	Not applicable	Recommended	.9
Expectancy Scale	Not applicable	Not applicable	Recommended	.7
Personality Scale	Not applicable	Not applicable	Recommended	.9
Overall battery	Not applicable	Not applicable	Recommended	.8

CVR = Coefficient of Validity Ratio

A CVR of .8 for the content validity was very satisfactory.

Construct validity (Principal Component Analysis, Varimax Rotation Method)

	Values	interest	Expectancy	Personality
Values	1.00	.400	.222	.510
interest	.400	1.00	.310	.350
Expectancy	.222	.310	1.00	.390
Personality	.510	.350	.390	1.00

PCA=Principal Component Analysis

The correlations provide evidence for convergence and therefore divergence. Hence, construct validity. (Observe that when taken in turns, each set of items correlate the most with their mirror images and the least with different set of items.)

Table 36

STEM Interest Survey Scale

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	,415
		N of Items	10[a]
	Part 2	Value	,697[b]
		N of Items	10[c]
	Total N of Items		20
Correlation Between Forms			,401
Spearman-Brown Coefficient	Equal Length		,572
	Unequal Length		,572
Guttman Split-Half Coefficient			,526

a. The items are: I wish to pursue my studies in science, My family is ok with the subjects am offering in school, A career in science will be fun , My family is happy that am offering science, Skip this question please, I intend to offer science in the university, Will like to do things with the help of science, I prefer to work in a field related to science, Work related to science gives respect, Please skip this question.

c. The items are: Sharing ideas with others in science is interesting to me, We live better lives with the help of science, Working in science related field is easy, Doing science is challenging, Maths is not interesting to me, I like science, I don't like making new products, Electronics do not interest me, Science is easy, I pass maths easily.

Source; research survey

Table 37

Summary item statistics (STEM Interest survey scale)

		Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
				Summary Item Statistics				
Item Means	Part 1	2,754	2,205	3,231	1,026	1,465	,187	10[a]
	Part 2	2,628	2,077	3,154	1,077	1,519	,121	10[b]
	Both Parts	2,691	2,077	3,231	1,154	1,556	,150	20
Inter-Item Correlations	Part 1	,058	-,471	,551	1,023	-1,170	,059	10[a]
	Part 2	-,039	-,592	,597	1,189	-1,008	,064	10[b]
	Both Parts	,027	-,592	,699	1,292	-1,181	,058	20

a. The items are: I wish to pursue my studies in science, My family is ok with the subjects am offering in school, A career in science will be fun , My family is happy that am offering science, Skip this question please, I intend to offer science in the university, Will like to do things with the help of science, I prefer to work in a field related to science, Work related to science gives respect, Please skip this question.

b. The items are: Sharing ideas with others in science is interesting to me, We live better lives with the help of science, Working in science related field is easy, Doing science is challenging, Maths is not interesting to me, I like science, I don't like making new products, Electronics do not interest me, Science is easy, I pass maths easily.

Source; research survey

Table 38

Item-total statistics STEM Interest survey scale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
			Item-Total Statistics		
I wish to pursue my studies in science	50,7179	26,260	,331	,857	,280
My family is ok with the subjects am offering in school	50,6667	28,175	,207	,753	,320
A career in science will be fun	51,2821	24,418	,462	,686	,230
My family is happy that am offering science	51,4359	27,621	,136	,914	,332
Skip this question please	51,6154	29,717	-,009	,847	,371
I intend to offer science in the university	51,4615	22,939	,588	,893	,181
Will like to do things with the help of science	50,5897	30,564	-,073	,857	,381

I prefer to work in a field related to science	50,7692	25,077	,455	,839	,243
Work related to science gives respect	50,5897	29,933	-,007	,764	,367
Please skip this question	51,5385	30,939	-,126	,662	,406
Sharing ideas with others in science is interesting to me	50,8718	27,062	,286	,519	,297
We live better lives with the help of science	50,7949	29,062	,055	,748	,354
Working in science related field is easy	51,4359	26,673	,266	,916	,295
Doing science is challenging	50,6667	31,649	-,184	,786	,401
Maths is not interesting to me	51,3846	33,559	-,332	,712	,452
I like science	50,9744	26,973	,200	,839	,312
I don't like making new products	51,7436	30,985	-,123	,607	,399
Electronics do not interest me	51,4872	36,204	-,504	,836	,501

Science is easy	51,3077	28,482	,116	,882	,338
I pass maths easily	51,2564	25,248	,496	,913	,242

Source ; research survey

Table 39

ANOVA (STEM Interest survey)

ANOVA

		Sum of Squares	df	Mean Square	F	Sig
Between People		58,187	38	1,531		
Within People	Between Items	111,358	19	5,861	5,935	,000
	Residual	712,992	722	,988		
	Total	824,350	741	1,112		
Total		882,537	779	1,133		
Grand Mean = 2,6910						

Source ; research survey

Table 40

Interclass correlation for STEM Interest survey

		Intraclass Correlation Coefficient					
	Intraclass	95% Confidence Interval		F Test with True Value 0			
	Correlation	Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	,018	-,005	,061	1,376	38	741	,068
Average Measures	,273	-,103	,566	1,376	38	741	,068

One-way random effects model where people effects are random.

Source; research survey

VALUE SCALE

Table 41

Reliability statistics for Value scale

		Reliability Statistics	
Cronbach's Alpha	Part 1	Value	,777
		N of Items	13[a]
	Part 2	Value	,871
		N of Items	12[b]
		Total N of Items	25
Correlation Between Forms			,451
Spearman-Brown Coefficient	Equal Length		,622
	Unequal Length		,622
Guttman Split-Half Coefficient			,620

a. The items are: Science is interesting, Science is desirable, Science is fun, Science is meaningless, Science is tedious, Math is tedious, Math is desirable, Math is interesting, Math is fun, Math is meaningless, Engineering is desirable, Engineering is meaningless, Engineering is tedious.

b. The items are: Engineering is fun, Engineering is interesting, Technology is desirable, Technology is meaningless, Technology is tedious, Technology is fun, Technology is interesting, A career in stem is meaningless, A career in stem is tedious, A career in stem is fun, A career in stem is interesting, A career in stem is desirable.

Source; research survey

Table 42

Item statistics for Value scale

Item Statistics			
	Mean	Std. Deviation	N
Science is interesting	3,9764	2,70255	254
Science is desirable	3,8937	2,64510	254
Science is fun	3,7441	2,68826	254
Science is meaningless	3,1850	2,69702	254
Science is tedious	3,4724	2,57174	254
Math is tedious	3,4094	2,52217	254
Math is desirable	3,8268	2,51979	254
Math is interesting	3,9803	2,59591	254
Math is fun	3,7874	2,50574	254
Math is meaningless	4,0039	7,79099	254
Engineering is desirable	3,9567	2,65435	254
Engineering is meaningless	3,3661	2,65912	254
Engineering is tedious	3,5945	2,47935	254
Engineering is fun	3,9803	2,80380	254
Engineering is interesting	4,1535	2,70047	254
Technology is desirable	3,5433	2,57767	254
Technology is meaningless	2,8071	2,44912	254
Technology is tedious	2,9528	2,44419	254
Technology is fun	3,4370	2,56342	254
Technology is interesting	3,6575	2,59614	254
A career in stem is meaningless	3,6890	2,65874	254

A career in stem is tedious	3,6772	2,52225	254
A career in stem is fun	4,0984	2,60779	254
A career in stem is interesting	4,3346	2,78658	254
A career in stem is desirable	4,1929	2,57500	254

Source ; research survey

Table 43

Summary item statistics for Value scale

		Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
	Summary Item Statistics							
Item Means	Part 1	3,707	3,185	4,004	,819	1,257	,075	13[a]
	Part 2	3,710	2,807	4,335	1,528	1,544	,231	12[b]
	Both Parts	3,709	2,807	4,335	1,528	1,544	,143	25
Inter-Item Correlations	Part 1	,301	-,099	,942	1,041	-9,475	,073	13[a]
	Part 2	,361	-,020	,964	,984	-47,351	,072	12[b]
	Both Parts	,247	-,112	,964	1,076	-8,596	,056	25

a. The items are: Science is interesting, Science is desirable, Science is fun, Science is meaningless, Science is tedious, Math is tedious, Math is desirable, Math is interesting, Math is fun, Math is meaningless, Engineering is desirable, Engineering is meaningless, Engineering is tedious.

b. The items are: Engineering is fun, Engineering is interesting, Technology is desirable, Technology is meaningless, Technology is tedious, Technology is fun, Technology is interesting, A career in stem is meaningless, A career in stem is tedious, A career in stem is fun, A career in stem is interesting, A career in stem is desirable.

Source; research survey

Table 44

Item-total statistics

<table>
<tr><th colspan="6">Item-Total Statistics</th></tr>
<tr>
<th></th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Corrected Item-Total Correlation</th>
<th>Squared Multiple Correlation</th>
<th>Cronbach's Alpha if Item Deleted</th>
</tr>
<tr><td>Science is interesting</td><td>88,7441</td><td>1218,665</td><td>,483</td><td>,916</td><td>,858</td></tr>
<tr><td>Science is desirable</td><td>88,8268</td><td>1222,950</td><td>,471</td><td>,877</td><td>,858</td></tr>
<tr><td>Science is fun</td><td>88,9764</td><td>1221,739</td><td>,469</td><td>,944</td><td>,858</td></tr>
<tr><td>Science is meaningless</td><td>89,5354</td><td>1260,226</td><td>,259</td><td>,822</td><td>,864</td></tr>
<tr><td>Science is tedious</td><td>89,2480</td><td>1245,136</td><td>,360</td><td>,824</td><td>,861</td></tr>
<tr><td>Math is tedious</td><td>89,3110</td><td>1251,875</td><td>,330</td><td>,720</td><td>,862</td></tr>
<tr><td>Math is desirable</td><td>88,8937</td><td>1218,001</td><td>,528</td><td>,956</td><td>,857</td></tr>
<tr><td>Math is interesting</td><td>88,7402</td><td>1213,308</td><td>,537</td><td>,946</td><td>,857</td></tr>
<tr><td>Math is fun</td><td>88,9331</td><td>1216,853</td><td>,538</td><td>,969</td><td>,857</td></tr>
<tr><td>Math is meaningless</td><td>88,7165</td><td>1132,828</td><td>,236</td><td>,699</td><td>,893</td></tr>
<tr><td>Engineering is desirable</td><td>88,7638</td><td>1199,746</td><td>,600</td><td>,924</td><td>,855</td></tr>
<tr><td>Engineering is meaningless</td><td>89,3543</td><td>1228,230</td><td>,439</td><td>,907</td><td>,859</td></tr>
<tr><td>Engineering is tedious</td><td>89,1260</td><td>1221,771</td><td>,515</td><td>,902</td><td>,858</td></tr>
<tr><td>Engineering is fun</td><td>88,7402</td><td>1194,217</td><td>,594</td><td>,902</td><td>,855</td></tr>
<tr><td>Engineering is interesting</td><td>88,5669</td><td>1202,586</td><td>,573</td><td>,897</td><td>,856</td></tr>
<tr><td>Technology is desirable</td><td>89,1772</td><td>1199,229</td><td>,623</td><td>,928</td><td>,855</td></tr>
<tr><td>Technology is meaningless</td><td>89,9134</td><td>1239,305</td><td>,417</td><td>,916</td><td>,860</td></tr>
<tr><td>Technology is tedious</td><td>89,7677</td><td>1250,875</td><td>,349</td><td>,864</td><td>,862</td></tr>
<tr><td>Technology is fun</td><td>89,2835</td><td>1208,844</td><td>,571</td><td>,954</td><td>,856</td></tr>
<tr><td>Technology is interesting</td><td>89,0630</td><td>1213,032</td><td>,538</td><td>,946</td><td>,857</td></tr>
<tr><td>A career in stem is meaningless</td><td>89,0315</td><td>1246,102</td><td>,341</td><td>,854</td><td>,862</td></tr>
<tr><td>A career in stem is tedious</td><td>89,0433</td><td>1247,978</td><td>,352</td><td>,828</td><td>,862</td></tr>
<tr><td>A career in stem is fun</td><td>88,6220</td><td>1221,161</td><td>,489</td><td>,974</td><td>,858</td></tr>
</table>

A career in stem is interesting	88,3858	1220,831	,455	,696	,859
A career in stem is desirable	88,5276	1222,796	,487	,971	,858

Source ; research survey

Table 45

ANOVA for Value scale

		Sum of Squares	df	Mean Square	F	Sig
Between People		13329,566	253	52,686		
Within People	Between Items	873,516	24	36,396	5,104	,000
	Residual	43295,524	6072	7,130		
	Total	44169,040	6096	7,246		
Total		57498,606	6349	9,056		
Grand Mean = 3,7088						

<div align="center">ANOVA</div>

Source ; research survey

Table 46

Intra-class correlation for Value scale

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Intraclass Correlation Coefficient							
Single Measures	,204[a]	,173	,240	7,389	253	6072	,000
Average Measures	,865[c]	,839	,888	7,389	253	6072	,000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition-the between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Source; research survey

EXPECTANCY SCALE

Table 47

Reliability statistics for Expectancy scale

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	,268
		N of Items	12[a]
	Part 2	Value	,236
		N of Items	12[b]
	Total N of Items		24
Correlation Between Forms			,301
Spearman-Brown Coefficient	Equal Length		,463
	Unequal Length		,463
Guttman Split-Half Coefficient			,463

a. The items are: How often I can be promoted, Deciding on the way I work, Using others to achieve organizational goals, Ability to have my personal life, Trying new things in new situations, A chance to work and do other things, Putting people together to achieve goals, Trying new ideas to solve problems, Belonging to an established organization, Performing tasks that require thinking, The chance to distinguish myself from others, Being an important person in an organization.

b. The items are: Outstanding in my performance, Exploiting skills in other people, Courage to try new things, Knowing that work is not the only thing in my life, Getting recognition for the success of my organization, Being key in implementing organization goals, Seeing myself perform better than others, Having power due to my skills, Flexibility to work anywhere and get same results, Developing with time, Deciding without hindrance from organization, Creating something as new discovery.

Source; research survey

Table 48

Item statistics Expectancy scale

Item Statistics		
Mean	Std. Deviation	N
How often I can be promoted	3,7137	,62996	241
Deciding on the way I work	3,2573	,92207	241
Using others to achieve organizational goals	2,6473	1,18501	241
Ability to have my personal life	3,4440	,90253	241
Trying new things in new situations	3,6473	,66150	241
A chance to work and do other things	4,1120	5,78575	241
Putting people together to achieve goals	3,3693	,92225	241

Trying new ideas to solve problems	3,4232	,94170	241
Belonging to an established organization	3,4066	3,61141	241
Performing tasks that require thinking	3,2822	,86317	241
The chance to distinguish myself from others	3,2282	,98837	241
Being an important person in an organization	3,4647	,91276	241
Outstanding in my performance	3,3402	,94450	241
Exploiting skills in other people	2,8963	1,12991	241
Courage to try new things	3,5270	,80642	241
Knowing that work is not the only thing in my life	3,1162	1,06994	241
Getting recognition for the success of my organization	3,4025	,92637	241
Being key in implementing organization goals	3,2905	,86523	241
Seeing myself perform better than others	3,8174	4,48886	241
Having power due to my skills	4,0000	5,48255	241

Flexibility to work anywhere and get same results	3,3610	,82055	241
Developing with time	3,3817	,81874	241
Deciding without hindrance from organization	2,7635	,99482	241
Creating something as new discovery	3,4564	,95261	241

Source ; research survey

Table 49

Summary item statistics for expectancy scale

		Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
	Summary Item Statistics							
Item Means	Part 1	3,416	2,647	4,112	1,465	1,553	,118	12[a]
	Part 2	3,363	2,763	4,000	1,237	1,447	,118	12[b]
	Both Parts	3,390	2,647	4,112	1,465	1,553	,114	24

a. The items are: How often I can be promoted, Deciding on the way I work, Using others to achieve organizational goals, Ability to have my personal life, Trying new things in new situations, A chance to work and do other things, Putting people together to achieve goals, Trying new ideas to solve problems, Belonging to an established organization, Performing tasks that require thinking, The chance to distinguish myself from others, Being an important person in an organization.

b. The items are: Outstanding in my performance, Exploiting skills in other people, Courage to try new things, Knowing that work is not the only thing in my life, Getting recognition for the success of my organization, Being key in implementing organization goals, Seeing myself perform better than others, Having power due to my skills, Flexibility to work anywhere and get same results, Developing with time, Deciding without hindrance from organization, Creating something as new discovery.

Source; research survey

Table 50

Item-total statistics for expectancy scale

	Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
How often I can be promoted	77,6349	185,933	,350	,346	,408
Deciding on the way I work	78,0913	188,242	,129	,459	,419
Using others to achieve organizational goals	78,7012	184,844	,189	,255	,410
Ability to have my personal life	77,9046	180,762	,444	,560	,392
Trying new things in new situations	77,7012	183,027	,496	,496	,398
A chance to work and do other things	77,2365	163,973	-,034	,509	,534
Putting people together to achieve goals	77,9793	181,870	,387	,542	,397

Trying new ideas to solve problems	77,9253	185,061	,250	,400	,408
Belonging to an established organization	77,9419	168,872	,111	,175	,422
Performing tasks that require thinking	78,0664	189,412	,092	,262	,422
The chance to distinguish myself from others	78,1203	182,131	,346	,536	,398
Being an important person in an organization	77,8838	179,161	,505	,532	,387
Outstanding in my performance	78,0083	182,817	,338	,440	,400
Exploiting skills in other people	78,4523	184,874	,202	,319	,410
Courage to try new things	77,8216	187,231	,202	,183	,414
Knowing that work is not the only thing in my life	78,2324	183,621	,261	,445	,404

Getting recognition for the success of my organization	77,9461	187,135	,172	,432	,415
Being key in implementing organization goals	78,0581	188,197	,143	,524	,418
Seeing myself perform better than others	77,5311	165,717	,056	,172	,455
Having power due to my skills	77,3485	154,445	,058	,334	,479
Flexibility to work anywhere and get same results	77,9876	184,587	,318	,400	,405
Developing with time	77,9668	186,616	,226	,300	,412
Deciding without hindrance from organization	78,5851	183,960	,274	,303	,405
Creating something as new discovery	77,8921	182,830	,334	,389	,400

Source ; research survey

Table 51

ANOVA for expectancy scale

		Sum of Squares	df	Mean Square	F	Sig
		ANOVA				
Between People		1923,447	240	8,014		
Within People	Between Items	629,571	23	27,373	5,955	,000
	Residual	25372,387	5520	4,596		
	Total	26001,958	5543	4,691		
Total		27925,405	5783	4,829		
Grand Mean = 3,3895						

Source ; research survey

Table 52

Interclass correlation for expectancy scale

	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
		Intraclass Correlation Coefficient					
Single Measures	,029	,018	,043	1,708	240	5543	,000
Average Measures	,415	,303	,516	1,708	240	5543	,000
One-way random effects model where people effects are random.							

Source; research survey

PERSONALITY SCALE

Table 53

Reliability statistics personality scale

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	,349
		N of Items	22[a]
	Part 2	Value	,302
		N of Items	22[b]
	Total N of Items		44
Correlation Between Forms			,389
Spearman-Brown Coefficient	Equal Length		,561
	Unequal Length		,561
Guttman Split-Half Coefficient			,556

a. The items are: Talks a lot, Finds fault with others easily, Does my work well, Hardly gets angry, Creative, brings new ideas, Easily make friends, Cooperates with others, Somehow careless, Hardly gets worried, Likes to know a lot of different things , Energetic, Easily begins a quarrel, Hardly fails someone, Easily gets anxious, Thinks a lot about my ideas, Is passionate about how things are done, Easily forgives, Disorganized, Worry too much, Has a good imagination, Quiet, Trusts people easily.

b. The items are: Not hardworking, Emotionally stable, Can easily invent, Confident, Not warm, Perseverant, Changes mood easily, Loves arts, Shy, Generous, Works well, Very composed, Likes doing the same thing , Sociable, Looks down on others, Consistent, Easily excited, Creative in thinking, Does not really care about arts, Likes group work, Difficult to concentrate, Great gift in arts, music, culture.

Source; research survey

Table 54

Item statistics for personality scale

Item Statistics			
	Mean	Std. Deviation	N
Talks a lot	2,5833	1,25453	168
Finds fault with others easily	2,5595	1,24632	168
Does my work well	3,7143	1,15371	168
Hardly gets angry	3,0655	1,27688	168
Creative, brings new ideas	3,8452	1,12131	168
Easily make friends	3,6786	1,36387	168
Cooperates with others	4,7440	6,34629	168
Somehow careless	2,5119	1,11596	168
Hardly gets worried	2,7024	1,33385	168
Likes to know a lot of different things	4,1964	1,14389	168
Energetic	3,5417	1,25662	168
Easily begins a quarrel	2,5060	2,05609	168

Hardly fails someone	3,2440	1,19127	168
Easily gets anxious	3,1964	1,17997	168
Thinks a lot about my ideas	3,9345	1,10600	168
Is passionate about how things are done	3,9464	1,03391	168
Easily forgives	3,7143	1,25799	168
Disorganized	2,3631	1,37308	168
Worry too much	2,9107	1,30329	168
Has a good imagination	3,6131	1,03198	168
Quiet	3,1607	1,37266	168
Trusts people easily	2,6786	1,27773	168
Not hardworking	1,9881	1,22835	168
Emotionally stable	3,1548	1,33577	168
Can easily invent	3,1190	1,05427	168
Confident	3,7440	1,21860	168
Not warm	2,9226	1,23810	168
Perseverant	3,7857	,99184	168
Changes mood easily	3,2976	1,29744	168
Loves arts	3,3810	1,45927	168
Shy	3,1012	1,51890	168
Generous	4,8214	5,24755	168
Works well	3,9762	,85438	168
Very composed	3,5417	1,01989	168
Likes doing the same thing	2,8571	1,19523	168
Sociable	3,1429	1,40267	168
Looks down on others	2,0179	1,23071	168
Consistent	3,2500	1,16717	168
Easily excited	3,3988	1,16403	168
Creative in thinking	3,5119	1,20373	168
Does not really care about arts	2,4821	1,28078	168

Likes group work	3,1071	1,26697	168
Difficult to concentrate	2,3750	1,24144	168
Great gift in arts, music, culture	3,3571	1,41119	168

Source ; research survey

Table 54

Summary item statistics for personality scale

		Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Summary Item Statistics								
	Part 1	3,291	2,363	4,744	2,381	2,008	,420	22[a]
Item Means	Part 2	3,197	1,988	4,821	2,833	2,425	,404	22[b]
	Both Parts	3,244	1,988	4,821	2,833	2,425	,405	44
	Part 1	,050	-,422	,384	,806	-,911	,020	22[a]
Inter-Item Correlations	Part 2	,036	-,341	,371	,713	-1,088	,017	22[b]
	Both Parts	,045	-,422	,429	,851	-1,016	,018	44

a. The items are: Talks a lot, Finds fault with others easily, Does my work well, Hardly gets angry, Creative, brings new ideas, Easily make friends, Cooperates with others, Somehow careless, Hardly gets worried, Likes to know a lot of different things , Energetic, Easily begins a quarrel, Hardly fails someone, Easily gets anxious, Thinks a lot about my ideas, Is passionate about how things are done, Easily forgives, Disorganized, Worry too much, Has a good imagination, Quiet, Trusts people easily.

b. The items are: Not hardworking, Emotionally stable, Can easily invent, Confident, Not warm, Perseverant, Changes mood easily, Loves arts, Shy, Generous, Works well, Very composed, Likes doing the same thing , Sociable, Looks down on others, Consistent, Easily excited, Creative in thinking, Does not really care about arts, Likes group work, Difficult to concentrate, Great gift in arts, music, culture.

Source; research survey

Table 55

Item-total statistics for personality scale

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Item-Total Statistics					
Talks a lot	140,1607	273,513	-,099	,644	,528
Finds fault with others easily	140,1845	275,876	-,156	,649	,532
Does my work well	139,0298	257,107	,339	,594	,495
Hardly gets angry	139,6786	257,872	,280	,678	,498
Creative, brings new ideas	138,8988	256,834	,358	,586	,494
Easily make friends	139,0655	252,505	,383	,586	,487
Cooperates with others	138,0000	223,976	,035	,432	,595
Somehow careless	140,2321	269,724	,000	,666	,519
Hardly gets worried	140,0417	260,723	,197	,680	,504
Likes to know a lot of different things	138,5476	259,567	,274	,604	,500
Energetic	139,2024	257,635	,291	,663	,497

Easily begins a quarrel	140,2381	269,272	-,037	,642	,530
Hardly fails someone	139,5000	266,539	,077	,523	,514
Easily gets anxious	139,5476	262,525	,184	,685	,506
Thinks a lot about my ideas	138,8095	257,904	,333	,638	,496
Is passionate about how things are done	138,7976	260,079	,295	,639	,500
Easily forgives	139,0298	255,227	,352	,728	,492
Disorganized	140,3810	261,986	,160	,627	,507
Worry too much	139,8333	263,601	,134	,486	,509
Has a good imagination	139,1310	265,779	,123	,625	,511
Quiet	139,5833	262,041	,159	,650	,507
Trusts people easily	140,0655	266,732	,062	,618	,515
Not hardworking	140,7560	270,461	-,025	,586	,522
Emotionally stable	139,5893	262,926	,145	,532	,508
Can easily invent	139,6250	260,068	,288	,625	,500
Confident	139,0000	255,365	,363	,639	,492
Not warm	139,8214	262,040	,185	,517	,506
Perseverant	138,9583	263,393	,205	,545	,506
Changes mood easily	139,4464	263,758	,131	,539	,510
Loves arts	139,3631	266,544	,048	,602	,517

Shy	139,6429	260,518	,166	,597	,506
Generous	137,9226	231,150	,077	,606	,552
Works well	138,7679	264,922	,191	,556	,508
Very composed	139,2024	263,588	,192	,732	,507
Likes doing the same thing	139,8869	270,197	-,017	,644	,521
Sociable	139,6012	263,499	,121	,619	,510
Looks down on others	140,7262	270,955	-,037	,574	,523
Consistent	139,4940	258,527	,295	,623	,498
Easily excited	139,3452	258,132	,307	,762	,497
Creative in thinking	139,2321	266,551	,076	,710	,514
Does not really care about arts	140,2619	270,853	-,036	,601	,523
Likes group work	139,6369	265,358	,097	,564	,512
Difficult to concentrate	140,3690	268,929	,012	,591	,519
Great gift in arts, music, culture	139,3869	260,155	,194	,592	,504

Table 56

ANOVA for Personality scale

		Sum of Squares	df	Mean Square	F	Sig
			ANOVA			
Between People		1028,454	167	6,158		
Within People	Between Items	2923,327	43	67,984	22,838	,000
	Residual	21376,468	7181	2,977		
	Total	24299,795	7224	3,364		
Total		25328,250	7391	3,427		
Grand Mean = 3,2442						

Source ; research survey

Table 57

Interclass correlation coefficient for personality scale

	Intraclass Correlation	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
		Intraclass Correlation Coefficient					
Single Measures	,019	,011	,029	1,831	167	7224	,000
Average Measures	,454	,329	,566	1,831	167	7224	,000

One-way random effects model where people effects are random.

Source; research survey

CHAPTER FIVE

DISCUSSION OF FINDINGS

This chapter discusses the findings from the study. The chapter is made up of the following sections; summary of findings, Discussion of findings, Implications for the study, Recommendations, Limitations of the study, Suggestion for further study, References and an appendix. In retrospect, the objective of the study was to develop a Students' Career Orientation Inventory for Secondary Schools in Cameroon. The plan was to produce an instrument that is easy to use, aimed at identifying students biased towards STEM related career options. The main cause of causes was the fact that there is acute shortage of skilled labour in STEM related careers, which is a potential handicap to realizing the 2035 development goal, to raise Cameroon to a middle income economy.

As such, one was to address the shortage was to produce the SCOI which would help Career counsellors to effectively identify students who would be effective in STEM related career options, and then create a follow up plan to motivate them in that light. Like mentioned earlier, instruments exist, with various orientations and accents, largely with validations in different communities apart from which they are administered. The instrument was therefore, not a panacea for the challenges that Guidance counsellors are facing, but an added impetus to the accent that career counselling is a continuous if not lifelong process. This process is mitigated by the individuals; Values, Interests, Aptitudes and Personality (VIAPS). Therefore, a successful step for the guidance counsellor is to identify the clients VIAPS, then integrate this background appropriately into the counselling process.

Indeed, solving the problem for students and empowering the counsellors is as inherent as the impossibility to separate both ideas. One of the major concerns was the fact that Guidance counsellors face challenges addressing important student needs comprehensively, due to challenges in carrying out Psychological Assessment (PA). Assessment in Cameroon High Schools has largely been Assessment of Learning. This largely measures cognitive attributes, leaving out important attributes that are also important for intervention purposes.

All the talk on assessment as earlier said, has been on assessment of learning, quantifying performance, at the detriment of assessment for learning, which aims at seeking ways to improve learning.

There is no doubt as to the progress of assessment practices in our schools, and the strides that are being made. However, the pace and nature of progression is still a call for concern. The assessment requirements entail the need for PA to produce data bases and short live the burden to live with students for a long time to understand their VIAPS. As such, the study could not have found a better motivation than producing a bipolar instrument with acceptable reliability indices, as well as a valid construct base.

Nature of findings

The findings are discussed under five main sections which comprise the main sections in the instrument. It was important to discuss them in that way, given that the instrument is a battery. A battery in that the sections are aggregate entities that can be used on their own, as need may be. This can be done independently or in succession. The nature of sequencing of the sections too is not rigid as any section can be the entry point.

Table 58

Summary of findings

	STEMIS	Value Scale	Expectancy Scale	Personality Scale
r	.4	.5	.3	.4
p	<0.05	<0.05	<0.05	<0.05
m	2.7	3.7	3.4	3.2
Inter item r	.7	.3	.4	.5
F	5.9, p<0.01, df=253	5.1, p<0.01, df=253	5.9, p<0.01, df=240	22.8, p<0.01, df=167

Source; research survey

SECTION I: Demographic Background

Series'/ Gender of respondents /Ages

Gender roles have metamorphosed over the years like everything else, largely due to the effects of globalization. This has stemmed from a change in communication patterns; largely the development of ICTs. Enrolment in Secondary School in 2010 in Cameroon reflected a shift in pattern, in terms of gender (World Bank, 2010). It cannot be argued that global gender patterns reflect higher enrolment rates for the girl child, and that enrolment has therefore increased in this light. However, in the sciences, the disparity is still clearly biased for boys as it is in the arts for girls. The strides that have been made by educational stakeholders are laudable. In spite of that applause, the deflection for series' still entail that a lot has to be done, in as much as girls are still reluctant to take up science backgrounds, given that they constitute a majority of the student population. Randomised sampling in the study constituted 64.3% as girls.

The cultural influence on gender roles cannot be underestimated in any given community. For both sexes, the students are finishing high school at younger ages than before. The average age range was 14-17 in the study. This figure may not reflect the general trend for the following reasons. The schools that were sampled were in Yaoundé, and were English schools. A good number of the students in these colleges were migrants from North and South West. For some of them, they have repeated class in preceding or current year. As such, the figure is diluted. In other words, if the schools were in their entirety, there would have been a general drop in the average age range for the students.

However, it is logical to think of the drop in average school age in terms of the evolution that compels more and more women to work, necessitating that children leave home younger than before. The school going age for primary school has unofficially drifted in such a way that a lot of pupils are completing school before age 10. As such, by completing 6 years in secondary and 3 at university level of education, they are barely 20 and ready for the job market. This has dire consequences for the economy. Most important is the fact that this is a monumental advantage if well construed.

Ensuring that pupils get proper education, finish school on time and get ready for the labour market is applause for any economy. Indeed, it means having a productive citizenry for a longer time. However, it can also pose employment challenges especially if the working group retires early, as is the case with our economy. As such, it is very important to make

sure that waste of human resources is diminished as much as possible, given that this has huge negative returns on the per capita income, inhibiting the ability to float citizens to middle income as targeted.

The demarcations between arts and science in this study were Literature and Chemistry respectively. In the science series, 7.4% showed interest to do S3, with only .2% indicating an interest to offer S5 and S8. These series' S5/S8 are characterized by physics and mathematics. In other words, the students shun from mathematics and physics. In fact it is not surprising were shunning away from maths and physics, given that in GCE results in the past decade, percentage pass has been below average in these subjects.

Why students are shunning maths and physics, in cognisance of the fraction of STEM related fields which have these subjects as core is a tragedy. Indeed, the response to the ponder in question is cannot be straightforward. However, the implication is that students are not motivated to enrol for these subjects, in spite of the fact that mathematics is compulsory in secondary school. Once an opportunity presents itself, they drop what they regard as difficult subjects. These subjects are not theoretical subjects, and the approach to studying them may be the very cause of the causes for failure and shunning.

It is ironical that all fields of life, from fundamental science to arts and music employ mathematics at all level, yet this is the most unwelcomed subject in our high schools. We cannot prematurely make a conclusion without an independent analysis. However, shunning of maths and physics two fundamental subjects at O/L and A/L is a call for concern. A good number of the students indicated an interest to study A3 (9.7%), A2 (7.4%) and A1 (2.7%). The sharp drop to A1 can be interpreted in terms of the introduction of French language, which often experiences low performances in the English schools in the GCE Exam.

More science students were willing to take more number of subjects than did the arts students. Invariably, the performance of science students to often score all points at either levels of the exam can be explained in terms of the objectivity of science in general or the subjectivity of arts in all. Or is it imaginable that the science students work harder? If we administered an IQ test, would we find more of these arts or will it be they of the sciences at the top? What are the implications for such thinking? There is a paradoxical thinking, that students who performed well, went to grammar schools, and that the slower students went to technical colleges. Even though the conception is beginning to change, this may be a reflection of the curriculum programs than it should be the personal traits of these students.

Reliability Estimates

The item analysis for any test normally entails that the items are checked to see the extent to which they comply to detractor, difficulty, discrimination indices and so on. This is especially important in the case where the testing is norm referenced. However, in criterion referencing such as the status quo, the emphasis doesn't place accent on separating the test takers to two different groups, but rather on the need to comprehensively describe the traits of the test taker. In as much as this is the need, the fulcrum is on the ability of the test to be reliable.

It is important to recall that the development of the instrument was characterized implicitly by 6 stages; conduct a literature review to help identify relevant test items, create a broad pool of items that will test the target aspect, do a preliminary pilot testing of the items, conduct a structural analysis to determine which of the items were to be eliminated from the pool, perform reliability analysis and create subscale reliability indices.

THE STEMIS SCALE

The r value for the STEMIS scale was done by conducting a split-halve reliability analysis for the 20 items on the scale. The first set of items ranging from 'i wish to pursue my studies in science' to 'work related to science gives respect' were correlated to the second half ranging from 'sharing ideas with others in science is interesting to me' to ' i pass maths easily'. The value of .4 $p<0.05$ for Chronbach's alpha entailed satisfactory condition for accepting the r value. This value when complemented by correlation between forms that were conducted was an affirmation to using the STEMIS in our local contexts. Correlation between forms for the spearman-Brown coefficient of .6 and Guttman split-half coefficient of .5 were strong correlation coefficients.

The histograms presented in chapter 4 like earlier mentioned were an easy way to check normality to ensure that the assumptions for all these tests were satisfied. These findings are similar in their indexes to those of Albert et al (2013), who developed the STEM Career Interest Survey. It is interesting that these two groups, the current and the one to which the original STEMIS was developed corroborate closely, in spite of the variability in background between the two populations.

The two groups although divergent in terms of their cultural, religious, socioeconomic backgrounds still validate the instrument. In part, the students were compelled to think about their including questions 5 and 10, of course of which not all respected. This indicates some

classical measurement error, to mean that some students may have ticked without reading closely. The power of the scale p=1-b generally refers to the strength of the scale. If p were equal to 1, that indicated the most powerful scale. However, p=1-0.05=0.95 which reflects the confidence level. Of course, p would hardly be up to 1 in real life, as it would be an ideal scale. Actually, the consideration for the construction of the scale in terms of construct and content account for the power, as it relates to reliability indices.

The summary item statistics for part 1 of .6 and part 2 of .6 were strong reliability indices for the STEMIS scale. The items strongly inter correlated with each other in the responses. Since all the items had acceptable r values with p <0.05, there is no need reproducing them here. However, made mention is the fact that the items with the least mean if scale deleted was 'will like to do things with the help of science', 'work related to sciences gives respect'.

The Item-Total statistic; the corrected Item-Total correlation for the least was .2 'science is easy' while that with the highest r was .6, ' i intend to offer science in the university'. It is most likely to forget that these students' perceptions are not on whether they will offer sciences or not, but as to whether they have interest in science. Of course, students may be interested in a subject, but due to other contingences, they are impeded from taking up the subject. As mentioned earlier, this is out of the scope of the study, which is rather interested in whether or not the students have an interest in sciences.

Logically, there is of course a high correlation between interest in science and willingness to continue science studies in the university .6. But then, if the students are very willing to study science in the university, whether or not this happens, depends on the available accommodations and opportunities presented to them. These will normally be presented to them during career sessions and the explanation that they make. However, it is supposed to be a deliberated consensus effort to weigh lay the students into sciences.

Like literature has it, many countries have difficulty recruiting more individuals into STEM (Hil et al, 2010, Regisford, 2012). Austria, France, Germany, Honduras, Mexico, The Netherlands and Switzerland struggled at projecting the expansion of STEM fields by 2020. The US alone projected the creation of 3 million new jobs in STEM by 2020 (US Bureau of Labour Statistics, 2020). At that time, only 16% of US students, largely men, were obtaining degrees in STEM related fields. Many reasons suggest why there is difficulty in acquiring STEM backgrounds in mathematics to; lack of access to money and technology, lack of

guidance from adults knowledgeable in STEM fields and psychological barriers (like the belief that math is difficult) and lack of models in those fields (STEM Connect, 2012).

THE VALUE SCALE

The value scale aimed at examining the extent to which student's value science or STEM related backgrounds. It is important that the scale be reliable and valid. Often mentioned, is the fact that reliability is a necessary but insufficient condition for validity. The 25 items were split into two groups, unequal, with part one having 13 items. The items in part one ranged from 'science is interesting' to 'engineering is tedious'. The items in part two ranged from 'engineering is fun' to 'a career in STEM is desirable'. The reliability estimates for part 1, .7, N=13 and part 2 .8, N=12 were corroborated by Spearman-Brown Coefficient for unequal length of .6. The Guttman Split-Half coefficient of .6 was also obtained.

The overall reliability index for the value scale was .5, a satisfactory reliability index. The Spearman-Brown Prophecy determined the effect upon changing the test length. It is generally the rule that the longer the test, the more reliable it is, within certain limits. The limits come from the fact that more items increase the mean for the test. However, when it becomes too long, a number of fall backs set in; ranging from tiredness on part of the respondents reducing concentration, de-motivation and so on.

The Guttman was computed using Chronbachs' alpha for two items. Different splits produced different reliability estimates which are shown on the reliability table for the value scale. The Item Statistics produced highest means for ' a career in STEM is interesting' M=4.3, SD=2.8, N = 254 while the lowest mean was for the item 'technology is meaningless' M=2.8, SD=2.4, N=254. The extent of consistency here was interesting.

The respondents were unanimous on two important issues; that it would be fun to have a career in STEM and that technology is very meaningful. These two statements reveal the extent to which they valued STEM related careers. Since the Chronbachs' alpha is the most common statistic to describe the data's internal consistency reliability of a set of items, the Item-Total Statistic table was displayed for the value scale. The correlation between the items and the rest of the items were displayed in the 4th column with all values assuming values >> 0.3 with all items satisfying the reliability coefficient limits. Therefore all the items were retained. However, the item with the highest scale mean if item deleted was 'technology is meaningless' 89.9 while that with the lowest scale mean if item deleted was 'a career in

STEM is interesting' 88.4. These two statements again corroborate previous statements in the value scale for science.

Having said all these, an ANOVA for between people and within people was conducted with F=5.1, P<0.01, df=253, with a grand mean of 3.7. This answered the question as to whether the variance between the two populations was the same, which became an affirmation. The correlation was highest for 'technology is desirable', r=.6 while being least for 'maths is meaningless' r =.2 and 'science is meaningless', r=.3. The intra-class correlation coefficient described how units strongly resembled each other (CA BoBak, 2018 recommends ICC for measuring scale units), the most perfect being 1. It was however .2 for single measures and .9 for average measures.

EXPECTANCY SCALE

Chronbachs' alpha was run for 24 items in split half reliability. The Spearman-Brown prophecy for equal length was .5 and .5 as well for unequal length. The Guttman split half coefficient yielded .5. The expectancy scale was geared at identifying thematic expectations of the student or client. The items in part one constituted ' how often i can be promoted' to 'being an important person in the organization'. The second part constituted of the remaining 12 items, 'outstanding in my performance' to 'creating something as a new discovery'.

A table with the mean incorporated every respondent for each item was presented in the second column of the item statistics for Expectancy Value. The mean (M=4.1) and SD=5.7 provide an estimate of the variability and agreement per item. Low SD indicates that responses were clustered around the mean. High SD indicates that responses were clustered around the mean. High SD however would have indicated that there was more spread or high divergence in responses.

The item with the lowest SD was the answer to the question about promotion M=3.7, SD =.6 while that with the highest was 'an ability to work and do other things'. The conduction of the Item Total statistic of the Expectancy Scale necessitated the rephrasing of the following Items from the scale; 'deciding on the way i work', using others to achieve organization goals', ' a chance to work and do other things', 'belonging to an established organization', 'performing tasks that require thinking', 'getting recognition for the success of my

organization', 'being key in implementing organization goals', 'seeing myself perform better than others', 'having power due to my skills'.

The Item Total Statistic was below the expectation validating the fact that these items were not correlated to the rest of the items. If they were not checking for the same constructs, there would have been the need to rephrase and retest these items. An F test was conducted to evaluate the ratio of the variances. The required test was satisfactory, $F = 5.9$, $P<0.05$, DF=240. It factored the variance with each group. The sum of the squared distances was divided by the degrees of freedom. The variance would have been small if the data points within each group were closer to the group mean.

The personality scale

The Chronbach's alpha was conducted for the personality scale that comprised of 44 items. The part one value of .3 and part 2 value of .3 resulted from equal splits of 22. Correlation between forms was .4 and the Spearman Brown Prophecy was .6 for equal length as well as for unequal length. The Guttman Split-half coefficient was .6 as well. Items constituted in part 1 ranged from 'talks a lot' to 'trusts people easily'. Those in the second part were ' not hardworking' to 'great gift in arts, music and culture'.

With all r values being $r>.3$, there was no room for doubt as to the validity of any of the coefficients. The Item Total Statistic (ITS) produced the mean and the SDs for N values. The item on the expectancy scale with the highest mean was 'generous'; M=4.8, SD = 5.2, N =168. That with the lowest mean was 'not hardworking'; M = 1.9, SD =1.2. Evidently, most of the students saw themselves as generous and hardworking people.

The ITS identified 'somehow careless' as the item with the least corrected item total correlation; and 'easily makes friends' (r=.4) as the value with the highest corrected item total correlation. Similarly, to assess the amount of variability within the groups in other to determine if the means were statistically significant, the ANOVA and F-test were conducted. With a grand mean of 3.2, F=22.8, p<0.05, df=16, it was an affirmation.

Normally, ANOVA did say that the means were significant when the results were statistically significant but did not tell which particular group. This necessitated the pos hoc test. However, they were not conducted in the study, given that the in between group split half reliability methods were employed, undermining the need for a pos hoc result. Reliability estimates stem from classical test theory; $X = T+E$. Recall that errors can result from measurement scales that are poorly made, subject inconsistencies like halo effect, poor construction of the instrument, poor test equipment and so on.

R generally represented the proportion of the total variance that was measuring the true score differences among subjects. E represents the mean error over several trials and is 0. The r ranges from 00 (all variances in measurement error) to 1 (no error in measurement). In real life, r is always <1.

The scales VIAPS invariably can be used to promote CGC in High Schools in Cameroon. Their reliability indices indicate satisfaction and a validation that they can be employed in the Cameroonian setting. As indicated in the reliability table, the instrument can be employed by CGCs in English Grammar Schools. This will help them identify the VIAPS. It has been mentioned that each can be administered without the others or in any order. What is important is that the CGC should identify the section that answers their particular need.

Of course, TFT CGC is an approach, and in this light, it is important to administer all the parts if the CGC does not have any knowledge about the learner. The instrument is not aimed at solving all career problems, but a specific problem; to identify students with interest in STEM related careers, and then motivate them adequately. It could so be that a student is not interested in science. It is then the place of the CGC program to find out why it is so, and also intervene appropriately.

Abubakar (2016) concurred that VIAPS were important to understanding the clients. He called them; capacities, interests and aspirations. He also mentioned that three steps were important for CGC, orientation was an important step. It is in the course of the orientation that the testing takes place. In fact, the interaction with the counsellor reveals insights about the client. However, there is normally still the need to conduct systemic assessments that reveal un-accidentally, more about the students.

The Inter Item correlation for the instrument were good, ranging above .3 in all. This implies that the reaction of clients or students to them was consistent. Students would react similarly to items if their understanding of the items is congruent and if the items are within the same

constructs. Having said this, the value with the least inter item correlation was the expectancy scale. It is likely that this is an indication of the need for clarification on some constructs.

In other words, the scale that was least understood was the expectancy scale. This was expected in that it is the need for clarification about 'tomorrow' that necessitated the development in the first place. Rashed et al (2009) applauded similarly that there was no difference in the exploration in terms of gender. Their t-test and regression analysis did not reveal any differences nor did the F-test and ANOVA. In the study, their concluding recommendations included that more students needed to be absorbed into the sciences as this would reduce the over burden due to crowding in the arts in Nigeria.

The view in this study is not different. Just like Cameroon, the over-crowding in the arts leads to unequal balance, where in, there are more job seekers in non-STEM related fields than the employment opportunities presented. The irony is that there would even be vacancies in STEM related fields, without enough man power to occupy them. If this instrument can identify STEM interest students, it takes another mechanism to exploit the opportunities, depending on the ingenuity of the GC Program.

The Delphi Technique essential theoretical bases for this work. recall that this procedure entails cyclical administration of questionnaires and elimination of those with poor performance on the 'item if deleted' table. As such, the technique reduced the number of administrations of the instrument that would have been required. It is logical that the less the number of cycles required, the more rigorous was the development of the items.

It was an applause that the technique was employed in such a way that it waved the cycles. Similarly, the use of a split half reliability technique reduced the need for more administrations of the instrument. In the SCNS, the scale was screened from 100 to 52. This was to improve the reliability indices. Fortunately for the VIAPS, very few items were shunned, to produce the final scale. The same technique employed, with an average age of 17. Unlike the SCNS, that factored the items, the Cronbach's Alpha, and Spearman were complemented by an F-test to validate the significance level. They were all significant.

Mean scales were similar to the SCNS, which produced 5.5 for male and 5.36 for female. The reliability of the scale stood at above .8, for the other scales. In the current study, there were higher but greater than .3 and .4. it is ok to have reliability indices greater than .7 as was the case of the SCNS and as low as .3 and .4 due to the fact that these are two different tests with

different underlying assumptions and procedures, but more so, because these were two different population groups.

Made mention is the fact that scaffolding is a process of helping people achieve results that they otherwise would not have been able to achieve on their own. Bringing the gap between what people can do on their own, and what they can do with the help of others. The CGC here is the one, making use of the resources in the GC program, to scaffold the client. The scaffold here includes the interventions that the CGP is supposed to do. However, it is not possible to design these interventions until the individual is understood. As such, the test is one tool that is used to identify the areas, broad areas, in which intervention is required. Similarly, like full scaffolding hinders learning (Berk, 2000, 2002), there is need for caution on how this instrument is used.

Every life is an evolution and everyone is dynamic. People metamorphose. This implies that CGC although at the mercy of the client must shun the likelihood to impose on the client or the tendency to over prescribe. The idea is to describe the attributes of the client as much as possible, and then compare to evidence on best practice and combination. At every point in time, let the client however be at the epicentre of the decision making process.

Some sections provide a fast key at the end of the test that can easily be scored by the client themselves. This belittles the burden that overwhelms some counsellors at work. in fact, in group counselling scenario, the entries can be made by the individual client, and then the CGC can use an excel sheet for example to produce summary statistics that are important as they provide an overall blueprint of the nature of the clientele that is being dealt with.

In as much as the summary statistics does not describe any individual client and vice versa, they provide a quick guess and hints as well as clues about the group and techniques to be employed in exploring the group. Ideally, the instrument should be used at individual level, but more so, if a whole class of mixed ability points to a particular career option, it is an opportunity to verify or find out the possible cause of the biasing. What if students offering dissimilar subjects are all interested at following a particular career pathway?

There are models in the environment. These models are strong anchors on which clients or students can gain inspiration. There is however the classroom teacher, who through classroom processes and the didactic situation, battling with other mitigating circumstances such as peer pressure, is an architect in the lives of these students. One thing about career orientation is the non-permanency of ideas. They change, depending on the situation at hand,

but some ideas are transcendental in that they endure irrespective of the status quo. As such, traits such as personality can be taken advantage of, to intervene in the career counselling situation.

IMPLICATIONS OF THE STUDY

This study is part of an ongoing educational revolution, ranging from pre-colonial to post colonial and now, education in the technological era. Briefly recall that in the pre-colonial era, the method of education was 'learning by doing' which was characterized by modelling. In this case, 'parents' passed on their knowledge, skills and attitudes to younger ones by having them simulate. In colonial times, the accent on education was to teach the 3rs which were to enable people read the bible. At the end of the colonial era, the accent was on training people to take over white collar jobs which had been abandoned by the erstwhile colonial masters.

However, due to globalization, resulting in a multitude of issues to be tackled; ranging from increased school enrolments, a rise in unemployment, government has had more urgency in finding out what the schools are doing. In other words, the schools are not just here to transmit knowledge, skills and attitudes that have been handed by preceding generations, but rather, there is a dire need to transmit that which can address the needs of the society in terms of quantity and quality.

We cannot afford to have people stay in school and study 'what they want', but rather, through a concerted effort, we need to have people in school studying what we need. The 'we' here is a systems kind of thinking, in which the education sector is the processes, while the various occupations are the products of such processes. Most importantly, the inputs should include having a look at the nature of programs we are 'encouraging' students to go in for.

It is clear by now, that the GC program is at the epicenter of the endeavour to have students in the right programs in school. It is however important to understand that the counsellors cannot advise students to take up courses that do not exist in the first place. As such, it is important for them to work with other educational stake holders to put in place the right programs in the first place.

Someone could begin to wander to what extent this is possible, given that we are referring to people who only implement policy. But even at the level of every college, the latitude in the

subject combination is already a lee way to future opportunities or career aspirations of the students. How often the GC are involved in the subject combination in the schools is an important issue to ponder upon.

One take home message from this study is the fact that at every level; micro, meso and macro, there is need for a concerted effort as is the need in the short, medium and long term goals to bring every stakeholder on board. Having said this, the instrument has the potential to ratify counseling practice and provide more informed decision making procedures, which overall should improve career counseling practice.

Many schools have the counselor 'teach' in their programs. In as much as we cannot underscore the need for this stance, we can take advantage of this time to exploit the students and obtain vital information from them, which would be kind vital for the career program. During these teaching periods, the counselor is in a position to 'understand' more about these students and can take advantage to integrate this in the counseling sessions.

Insisting that GC do testing is a way to have them reflect about their procedures in the counselling program. Of course, the counselling session is a long process. It could be shortened to introduction, working and follow up stages. Recall, that it is at this introductory stage that the testing is introduced, which provides much of the background information and evidence that should be used in the process, to give direction to future behaviour.

More and more students are interested in offering arts. As we conclude on this study, many of the respondents are English speaking citizens. Because of the fluidity resulting from socioeconomic crises in the English Cameroon, many students have had themselves registered in the arts series' for obvious reasons. The arts series' do not have stringent conditions as do the sciences. Every science student is required to have a laboratory manual that is marked after laboratory sessions and constitute a percentage of the exam.

In such a situation, it becomes difficult for students moving from one town to the other, given that they change schools, which follow slightly different programs. This is a natural deterrent to the already existing stereotypes as far as science is concerned. Apart from this, it is more expensive for the already over burdened students to register science subjects at the GCE A/L, given the socioeconomic condition. It is understood that the fee is to run the exam, but considering eliminating registration fee for sciences could be a booster to have students enrolled for sciences.

Most of the students should an interest to become managers and professionals in the 10 categories of professions. One of the reasons for choosing to conduct this study in grammar schools of course was due to the 'grammatical nature of studies in grammar schools'. The students have not yet been lodged in particular professional lines. That is possibly why it was comfortable for them to choose managers and professionals, since these two brackets are blanket terms.

The answer to why these students were reluctant to choose the other professions lies in the fact that they did not see themselves as they. We can bet that if the questions were asked in technical schools, more of students will choose professions that are lodged in their departments. For example, those doing wood work would choose wood related occupations; those in the department of electricity would have chosen electrical engineering fields and so on.

Therefore, the idea of grammar schools, certainly is an issue that can be revisited, to understand the stakes involved, and the possibilities that could transform them to more functional schools. Had it been that a student in a technical college for example, studying electricity, shows interest to become a woodwork engineer, we could begin to identify incongruence. However, the situation in the grammar schools is masked by the unpleasant situation in which students would spend 7 years in school and are not sure what they want to become.

If the students are not sure what they want to become, what are they spending their time studying. Therefore, there is need for students to have a locus of identity in which case, we can identify students to belong to different career groups, with 'real' life occupations. The terms manager and professional are by the way misleading in themselves; managers of 'what' and professional of 'what'.

It should be made notice that the instrument can be self administered by students. If this be the case, it actually lightens the work of the counsellor. If the student can come to you already telling you who they are, it is easier than when you have to begin by finding out whom they are. That advantage comes from the simple score keys that appear at the end of each section of the test. The students can be thought to do this, as a meta-cognitive endeavor that places them at the centre and responsible for their career aspirations.

In the recommendation section we will shed more light on how the instrument should be used, but as far as we can conclude, we need to carry out more robust testing in our schools,

gather more data, and act more based on the data such that our judgments should be more empirical and logic driven than should they be on sentiments.

RECOMMENDATIONS

On career counselling practice

The Trait and Factor Theory approach to career counseling is at the core of this study. The study recommends strongly that career counselors employ more conventional and classical means to gather evidence about the traits of learners and other factors that are commensurate to their career aspirations. By so doing, it will be possible to recommend to clients, based on objective than subjective analysis.

First and foremost, it is recommended that career counselor, during the introductory stage of the counseling process; identify the traits of the students and factors that can lead to their success. In the same lamb light, there is need to identify the factors that are deterrent or a hindrance to the career aspirations of the students or clients.

There are many ways to identify these factors. Testing is one important of such ways. By testing, the counselors can gain a lot of time as compared to intimate dialoques, which although may through deeper insight, but may not be able to consistently probe and prompt into the same direction. Various tests exist, which can be used, but this one is strongly recommended, given that it has been validated in our context. The test is very friendly, and although as a whole it may take up considerable time, made mention should be the fact that they are not necessarily to be administered in situ.

This test can be should be administered as a test battery, in succession. During each counseling session, the counselor may decide to focus on each section of the test. This makes it less cumbersome, with the client taking the test and not having to look at it like taking an exam. The client should be made to understand that this is not a conventional or regular classroom test with correct and wrong answers, or where students fail, but that it is just a simple of way of knowing about the client.

Furthermore, an easy way to gain time, and allow an ecological setting for the student, is to sometimes have them take the test at home and then return with it to the counselor at their convenience. In this case, the counselor should explain the purpose of the test to the client, explain to them what they are supposed to do in other to take the test, and show them the way to score themselves at the end of each section. When they do this, they can now bring their

final score alongside the test. There is however need to always cross check to see that the student has done what was expected of them.

Like mentioned before, it will not always be necessary to take all sections of the test. However, there is no harm if the counselor deems it necessary. The section on abilities is just a simple way of finding out about the clients strengths and weaknesses as far as academics are concerned. Other evidence can be drawn from other tests to understand the clients' strengths and weaknesses.

The ability section focuses on conventional subjects that are taken in school. This is ready made data that already exists, on which the counselor can take advantage. But it is important to understand that these are not permanent labels on the students. In other words, it does not mean that a student who has not been passing in mathematics and physics cannot perform well in science careers. However, the weaknesses give more insight into the possible choices and direction.

It is however logical to understand that learning takes time, and damages over a certain period of time on the academic life of the child can become very fatal. This implies that the transcripts of students should reveal some pertinent issues about their academic trajectory, which often than not, has a high correlation to their career pathways. In this light, if students are having current difficulties, they can be regressed to their previous performances in an attempt to better understand the situation at hand. It is not possible that the problems such as poor performance or excellence in some subjects or thematic areas occur over night. Rather, they are usually a non-exponential function of little efforts. It is important for the counselor to look at the students' performance differently from their achievements in various fields. The effort they put in should not be undermined, but rather, other psychological parameters should be considered in understanding their progression (Tchombe, 2019).

During the counseling process, the tests should suggest traits about the client, without undermining the need for the counselor to infer from the client themselves to attest to the results from such testing. If the client rejects the outcome of the test, there is no need for alarm, but it provides an opportunity to ask them to through more insight as to why they think so.

However, recall that students will use different tactics or defense mechanisms when they do not excel in particular fields. These can easily cloud the minds of these students and provide

regular prejudices and biases. It should be understood that counseling being a science and an art, the testing should be regarded in that light.

The results of the test are not much more important than the interpretations that are made of them. And as such, the counsellor should endeavour at all cost to get the client fully involved in the interpretations that are made. If there are any recommendations based on these, the client should also take the lead, given that they are the ones to implement them.

Let it be clear that students may take the test at different periods and yield different results. It is ok. The test may not change, but the perceptions of the client of themselves change. In fact, they should change during the course of the program. At any point in time, they should point to the direction and the interests that the client has at a particular point in time.

It is absolutely important for the counselor to work in hand with the data base office of the school. This refers to the vice principal in charge of records or to the dean of studies and the discipline master. These people hold vital records about the client. Most importantly, the dean of studies should have the clients overall progress in school or transcript which should be requested for such purposes.

For students who have transferred college, it is important to request a transcript from their previous school, or any other information that could be of help. Most colleges in Cameroon do not request students' transcripts. This is poor practice in that it first and foremost undermines the efforts of teachers working hard to provide summative and formative assessments to these students and document them. Secondly, once the students know that their results now will not count tomorrow, they are more likely to put in less effort.

Therefore, the counselors should take upon themselves the responsibility to provide at least an archive for students visiting them, whether or not the school provides resources for this. These data bases do not only help them, but also reduce the burden for other counselors who will have to deal with the student especially in a different level or form.

Lastly, but not the least, researchers should develop a program to motivate students into STEM related disciplines.

To policy makers

There are many reasons why more students enroll into arts; ranging from enrolment opportunities to cost and spacing or infrastructure. Schools logically will enroll less number

of students in science due to extra accommodations that are required, such as laboratory spaces. If you ask many schools, they would usually begin to run arts series' in high school prior to running the sciences. As such, the students leaving form five or secondary school therefore already have more chances and choices which often than not, help to sway students away from the sciences.

Furthermore, there has been a classical reasons why the performance in math reading and science is the way it is. The methods that are being employed in the sciences and math may not be appropriate enough. For this reason, the CGC should have particular precedence on the results of students in maths and science or STEM, and should go an extra mile to provide intervention programs in synergy with the school stakeholders.

The STEM are practical subjects and students who love practice will not excel if the subjects are kept at theoretical level. Therefore, the schools should endeavor that in spite of the scarce resources; they should make demonstrations more regular, and have to dissuade the mindset that the classroom is made up of a bench and blackboard, and seek other a venues for learning. These could include; parks, workshops, garages and so on.

The sciences and arts clubs in some schools can be very good medium of modeling. These clubs can be headed by science teachers and student leaders who have a zeal for science. By so doing, they can do science spheres more regularly every term, to motivate and model various occupations. A lot of experiments do not require many expenses, but rather time and planning. Hands on activities should allow students to see the link between theory and practice in the school and out of school. The sciences should be linked to the daily lives of the students. Assignments should be affordable and meaningful projects that should be part and parcel of the students' life. This is the role of the teacher to bias students towards maths and science.

Policy makers should consider public funding of the GCE exam or it should cost the same for arts and science, so that science students should not be tasked with the extra expenses to offer science, which gives students unfair advantage. This should allow more students to enroll into the sciences. Furthermore, there should be an accent on career fairs. Schools and the industry should work together to advertise science spheres. They should allocate resources to give prices, sponsorships, scholarships and so on to meritorious students. Companies should be encouraged to give special recruitment to students graduating with distinction. As such,

the students should see the need and the advantage involved in pursuing careers in the sciences and math.

In service training seminars should update old GC on current practices. During such seminars, the exchange should focus on what is working for each school and others can emulate and promote such practices in their own schools. By so doing, the experiences of more knowledgeable counselors would be shared and made use of.

There is need for partnerships between schools and the informal institutions such as apprenticeships that deal with electrical engineering, soap manufacturing, animal husbandry, horticulture, and laboratory and carpentry workshops. All these should create partnerships with grammar schools such that during holidays or specific periods of the school year, the students in grammar schools can experience hands on education.

This is an opportunity for some of them to see the links between science and other fields like refrigeration, iron works, mobile phone repairs, ICT shops and general electronic maintenance. It is necessary in that school life can be complemented by industrial life. If the student finds it difficult to find a place for internship in their particular discipline, it becomes an opportunity for entrepreneurship in that field. If they find a place, it is an opportunity to integrate their theory to practice, considering the polemics of the environment in which they find themselves.

Last but not the least, this test should be introduced in the CCP to get students counselors acquainted in teacher training colleges.

In service training should disseminate and enlighten counselors on the test and other current counseling procedures.

Parents should try to be realistic to the dreams and aspirations of the students, basing on evidence such as that from testing and keep sentimental counseling in the past. The counsel should not be based on stereotypes and biases but on two important factors advocated by this study; the child's environment and the traits of the child.

The interpretation from the test should be in a concerted effort. The child or client, the parent, teachers and counselors should all be listened to as far as the interpretations are concerned, since two heads are better than one.

LIMITATIONS OF THE STUDY

If we have to wait till everything is right before we conduct a study, we may never begin. Therefore, in spite of all the strides that were made to ensure that the study was very successful, there are a number of changes that if made would have made the work better than what it was.

The research design could have employed triangulation to employ both split halve and parallel forms to ascertain the reliability indices.

A comparative study between Grammar and Technical schools should have allowed insight into the career options of the students. This should have underlined the extent to which lodging of the students in particular career fields affects their career choices.

Furthermore, a stratified sampling to include technical schools would have allowed a t-test to verify if there was a significant mean difference between the scores of the scores of the groups.

SUGGESTIONS FOR FURTHER RESEARCH

The research design to replicate this study and triangulate to employ both split halve and parallel forms should be conducted to ascertain that there are no methodological differences

A comparative study between Grammar and Technical schools should be carried out to allow insight into the career options of the students. This will underline the extent to which lodging of the students in particular career fields affects their career choices.

Furthermore, a stratified sampling to include technical schools should be carried out to allow a t-test to verify if there is a significant mean difference between the scores of the scores of the groups.

This test should be administered to counselors and their perceptions about its usefulness and possible modifications taken into account.

A follow up study should develop a comprehensive program to encourage students to pursue STEM careers.

Introduction to the Cameroon Stem Orientation Inventory (CAMSOI)

The CAMSOI is a response to some of the needs to be addressed by the education sector, Career orientation, in an endevor to meet up with the challenge for providing man power requirements for emerging Cameroon before 2035.

Purpose of instrument

- The instrument is aimed at identifying students in Grammar High Schools, who have an interest in STEM related occupations, and motivating them to pursue STEM fields.
- Although the instrument can be self administered, the overall interpretations are ideally done by the synergic efforts of a student and Guidance Counsellor.

Ability section

- The section of Ability can be completed by consulting the transcript of the student to study their academic progression.
- It is from this academic progression that the counsellor will understand more about the students' strengths and weaknesses in academics.
- From the change of school, environment and so on, clue will be provided about the difficulties that the learner may have had.
- It is always important to identify the teacher who taught within particular periods. (And the impressions about them can be discussed to provide more hints to the challenges that may be inherent).
- We can briefly distinguish that a student was good in science or arts, but within each, it is very important to identify the particular subjects in which the student is facing difficulties in. It is also important to find out the possible causes for such brilliant or poor performances from both the teacher, parent and student.
- It is sometimes helpful to consult friends of the students or peers and cohorts, as they can provide invaluable information about the learner which would otherwise be cumbersome to get. They can provide useful links to the insights as to why the student is facing particular challenges in the subject area.
- Other factors affecting students learning should not be underestimated, in understanding students strengths and weaknesses in the potential subject area.

How to use the instrument

- The instrument can be used in the following specific ways;
    1. To provide comprehensive information about the learners' VIAPS as a range of attributes.
    2. To provide in section, the attributes that may be useful to the learner.
    3. To provide a general data base about students in a group counselling situation.
    4. To provide a data base about students for research purposes.
    5. To provide a data base for intervention purposes.

Duration of test

- The test can be taken between 30 minutes and above an hour.
- Since this is a power test, one does not need to worry about how long it takes them to answer the questions.
- Rather, the most important thing is to answer the questions as objectively as possible.

Progression

- The test can be administered in any order.
- It is possible to skip some sections as deemed by the counsellor.
- However, you need to complete all the items on a section once you decide to check that section of the test.

Scoring

- At the end of each section, sum the entries and cross check them with the key.
- The expectations about career provide a scoring guide. When you sum up all the entries, the one with the higher magnitude represents your most important values. For example if you score, 4 three times, you end up with 12. If you score 1 three times, you end up with 3. That provides a simple way of classifying those values for you.

The personality scale also provides a key. The items are grouped such that you belong to the personality that gets the greatest score. Items describing a particular personality are grouped together. The scores you give to each of them are summed up to say where your personality lies. For example, Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36. If you score 5 for each of these items, you end up with 40 which is the highest score. Similarly, if you score 1, you end up with an 8. When you score all these items, you group them as such to get your personality.

- The interpretations presented at the end of the sections are based on scientific research. However, they are just possibilities that are more likely to the majority of the students. If the student or counsellor should observe contrary to the expectations, it is their responsibility to do more inquiries and find out possible causes for the scenario. It is partly by so doing that the consciousness of counselling as a process is further thought provoked. That is the ultimate end of the instrument.

- It is hoped that this instrument is used at the preliminary, during the introductory phase of the counselling. The model referenced here reduces the counselling process to a three phases; introduction, body or working and closing or follow up stages.

- Students can be asked to take home and check the instrument at their convenience before returning it to the counselling office.

Please select only one level of agreement to indicate your opinion

STEM Interest Survey (STEMIS)

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

S/N	Item	SA	A	D	SD
1	I wish to pursue my studies in science				
2	My family is ok with the subjects am offering in school				
3	A career in science will be fun				
4	My family is happy that am offering science				
5	I intend to offer science in the university				
6	I prefer to work in a field related to science				
7	Sharing ideas with others in science is interesting to me				
8	We live better lives with the help of science				
9	Working in science related field is easy				
10	I like science				
11	Science is easy				

12	I pass math easily

SECTION D: Values

Please tick one square between each pair to show the extent to which you feel about these values. (STEM here means; Science and Technology, Engineering and Mathematics)

To me, science is;

	To me, science is;	SA	A	D	SD
1	interesting				
2	desirable				
3	fun				
4	meaningless				
5	tedious				
	to me, math is;				
	item	SA	A	D	SD
6	tedious				
7	desirable				
8	interesting				
9	fun				
10	meaningless				
	to me, engineering is;				
	item	SA	A	D	SD
11	desirable				
12	meaningless				

13	tedious				
14	fun				
15	interesting				

to me, technology is;

s/n	item	SA	A	D	SD
16	desirable				
17	meaningless				
18	boring tedious				
19	fun				
20	interesting				

to me, a career in stem is;

s/n	item				
21	meaningless				
22	tedious				
23	fun				
24	interesting				
25	desirable				

This section provides an easy section to STEM in terms of meaning, stress level, fun, excitement and desirability. The counselor should reverse score negative items before summing the answers to make it easy. Responses to this section should open the gateway to technical intercourse between client and counselor. There is need to probe and prompt clients' responses to provide detailed insight into the mitigations of their values. Endeavor to relate the world of work to their concurrent syllabuses. This should provide a lee way on non-eminent challenges that they are facing and possible routes for redress.

Section F: Personality

The Big Five Inventory

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

1=Strongly Disagree (SD), 2=Disagree, , 3=Agree, 4=Strongly Agree

	Statement	SD=1	D=2	A=3	SA=4
	I see myself as someone who/that/is	No response for this statement			
1	Does my work well				
2	Hardly gets angry				
3	Creative, brings new ideas				
4	Easily make friends				
5	Cooperates with others				
6	Somehow careless				
7	Hardly gets worried				
8	Likes to know a lot of different things				
9	Energetic				
10	Hardly fails someone				
11	Easily gets anxious				
12	Thinks a lot about my ideas				
13	Is passionate about how things are done				
14	Easily forgives				
15	Disorganized				

16	Worry too much
17	Has a good imagination
18	Quiet
19	Trusts people easily
20	Emotionally stable
21	Can easily invent
22	Confident
23	Not warm
24	Perseverant
25	Changes mood easily
26	Loves arts
27	Shy
28	Generous
29	Works well
30	Very composed
31	Sociable
32	Consistent
33	Easily excited
34	Creative in thinking
35	Likes group work
36	Difficult to concentrate
37	Great gift in arts, music, culture

Scoring

BFI scale scoring ("R" denotes reverse-scored items):

Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36

Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42

Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R

Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39

Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

Counselors should identify the students' personality and then consult Holland's' Personality Hexagon to predict the kind of work environments that are corroborative the client. This should provide a clue on possible causes for dissimilarity or similarity on career interests and open a discussion on career routing.

Knowledge of work environment

The knowledge of work environment is simplified from Hollands career hexagon. The section on expectations and choice of major occupational title should provide a background on the skill level and background required. Therefore the counselor should use their ingenuity to triangulate the information from the test battery and that from the client. The discourse is largely qualitative, but the pebbles on which the route map is formed in such trait and factor approach is the empirical evidence provided from the testing.

Section E: Expectations about career

	My expectations about career are based on the importance following				
	item	SA	A	D	SD
		4	3	2	1
1	How often I can be promoted				
2	Deciding on the way I work				
3	Using others to achieve organizational goals				
4	Ability to have my personal life				
5	Trying new things in new situations				
6	Putting people together to achieve goals				
7	Trying new ideas to solve problems				
8	Belonging to an established organization				
9	Performing tasks that require thinking				
10	The chance to distinguish myself from others				
11	Being an important person in an organization				
12	Outstanding in my performance				
13	Exploiting skills in other people				
14	Courage to try new things				
15	Knowing that work is not the only thing in my life				
16	Getting recognition for the success of my organization				

17	Being key in implementing organization goals
18	Seeing myself perform better than others
19	Having power due to my skills
20	Flexibility to work anywhere and get same results
21	Developing with time
22	Deciding without hindrance from organization
23	Creating something as new discovery

Scoring

	Item				Total
1	Competition	**1**	**11**	**19**	
2	Freedom	**2**	**21**	**23**	
3	Management	**3**	**7**	**14**	
4	Life balance	**4**	**6**	**16**	
5	Organization membership	**9**	**12**	**17**	
6	Expertise	**13**	**20**	**22**	
7	Learning	**5**	**10**	**18**	
8	Entrepreneurship	**8**	**15**	**24**	

The section on Expectation about careers provides a projective interjection into the future aspirations of clients. Everyone dreams on becoming something, depending on their core values. Although this section on expectation is generic, the client and counselor will hold talks about future possibility with respect to the dominant core value above. Counselors should not forget that the overarching background is to bias students into STEM. Therefore,

the dominant core value should be discussed with the client, with respect to STEM relationships.

Table: Career options

SN	Career	Place a tick on the best option
1	Managers	
2	Professionals	
3	Technicians and Associate professionals	
4	Clerical support workers	
5	Service and sales workers	
6	Skilled Agricultural, Forestry and Fishery workers	
7	Craft and related trade workers	
8	Plant and Machine Operators and Assemblers	
9	Elementary occupations	
10	Armed forces occupations	0

This is another section that that is closely related to expectancy. The client-counselor intercourse should be underpinned by their characteristics (VIAPS), their expectations and type of major occupational group they vie for. The expectation and major occupational group are the components of the work environment. These work environments and the client as a person are supposed to congruent to some extent to achieve maximum potential outcome.

Table: Skill levels

4	6	Second stage of tertiary education (leading to an advanced research qualification)
	5a	First stage of tertiary education, 1st degree (medium duration)
3	5b	First stage of tertiary education (short or medium duration)
2	4	Post-secondary, non-tertiary education
	3	Upper secondary level of education
	2	Lower secondary level of education
1	1	Primary level of education

Source; ILO

This table provides a clue on the career needs of the client in terms of skills acquisition. It enables the client adequately prepare for future opportunities. Without adequate skills, they may not have the chance to participate in the careers in question.

Table: skill levels and major occupational groups

ISCO-08 major groups	Skill level
1 Managers	3 + 4
2 Professionals	4
3 Technicians and Associate Professionals	3
4 Clerical Support Workers	2
5 Services and Sales Workers	
6 Skilled Agricultural, Forestry and Fishery Workers	
7 Craft and Related Trades Workers	
8 Plant and Machine Operators, and Assemblers	
9 Elementary Occupations	1
0 Armed Forces Occupations	1 + 2 + 4

Source; ILO

The major groups and skill levels have been corroborated to show the extent of sophistication required. Discussions would therefore route or reroute learning opportunities adequately.

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