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Relationship among Guidance and Counselling Intervention, Artificial Intelligent and Academic Performance of Senior Secondary School Students in Sokoto Metropolis

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Abstract

This research investigated the relationships among guidance and counselling intervention, Artificial Intelligent and academic performance of senior secondary school students in Sokoto metropolis. Correlational Survey Design employed for this study. The total population for this study was11,830. Six secondary schools were purposively selected and participated in this study. 381students served as the sample for this research. 3 null hypotheses were generated and tested. The instruments used in this study were three sets of questionnaires. Students' artificial intelligent, Guidance and counselling rating scale and self-designed academic achievement tests in Chemistry and English. Pearson Product Moment Correlation Coefficient statistical analysis tool was used to test the three null hypotheses. The three null hypotheses were tested and rejected at an alpha level of 0.05. The major findings of this study are there are significant relationship between Guidance and Counselling intervention and Artificial intelligent and students' academic performance. It was concluded that Guidance and counselling intervention have positive relationship with the variables studied. Recommendations were forwarded amongst which is that since Guidance and counselling intervention have significant relationship with student's artificial intelligent and students' academic performance, the Sokoto state government should employ^ a qualified counsellors and post one or two of such to each secondary schools in the state.

Keywords: Guidance and counselling intervention, Artificial intelligent, Academic performance

Introduction

In recent years, the global education system has increasingly adopted artificial intelligence (AI) tools to improve the effectiveness of teaching and learning. For example, AI is embedded in curriculum development, adaptive learning platforms and virtual laboratories, providing educators with the opportunity to attract students in a more interactive and immersive way (Kukulska-Hulme, 2020). Guidance and counselling interventions play a vital role in fostering students' academic success, personal growth, and career development. However, the impact of AI on guidance and counselling services and academic performance is a relatively unexplored area of research. This implies that teaching could be done through series of interconnected activities such as; Guidance and Counselling, digitalization and assessing to mention a few.

Specifically, the study seeks to examine how AI-based guidance and counselling interventions influence students' academic achievement and explore the potential benefits and challenges of integrating AI in guidance and counselling services (Kukulska-Hulme, 2020).

AI is generally believed that artificial intelligence could revolutionize the way we learn and teach, there are still some lapses in teachers and students showing ineffective and negative attitudes towards the usefulness and application of artificial intelligence to make it more personalized, engaging and efficient (Hutchins, 2021; Kautz, Etzioni, & Akgun, & Greenhow, 2022).

The findings of this study will contribute to the existing body of knowledge on the intersection of technology, guidance and counselling, and academic performance. The study's outcomes will also provide valuable insights for educators, policymakers, and stakeholders in education, informing the development of effective AI-based guidance and counselling interventions that promote academic excellence and support the holistic development of senior secondary school students (Aguolu, 2019).

The rapid advancement of technology has transformed the education sector, with AI emerging as a key driver of innovation. AI-powered tools and platforms offer immense potential for enhancing teaching, learning, and guidance and counselling services.

Despite the growing interest in AI-based education, there is a dearth of research on the impact of AI on guidance and counselling services and academic performance, particularly in the context of senior secondary school students in Nigeria.

Some philosophical perspectives.

1. Humanistic Perspective:

Student-centered approach: Guidance and counselling intervention should prioritize students' unique needs, interests, and values.

Holistic development: Academic performance is just one aspect of a student's overall development. Guidance and counselling intervention should address the whole person - cognitive, emotional, social, and physical.

Empowerment through AI: Artificial intelligence can enhance student autonomy and agency by providing personalized support and feedback.

2. Social Constructivist Perspective:

Sociocultural context: Academic performance is influenced by sociocultural factors, such as socioeconomic status, cultural background, and social support networks.

Constructing knowledge: Guidance and counselling intervention should acknowledge that knowledge is constructed through social interactions and experiences.

AI as a tool for social construction: Artificial intelligence can facilitate social interactions and knowledge construction by providing opportunities for collaboration and feedback.

3. Critical Perspective:

Power dynamics: Guidance and counselling intervention can perpetuate or challenge existing power dynamics, such as those related to socioeconomic status, race, or gender.

Cultural relevance: Artificial intelligence and guidance and counselling intervention should be culturally relevant and responsive to the needs of diverse student populations.

Neutrality of AI: Artificial intelligence is not neutral; it reflects the biases and values of its creators. Guidance and counselling intervention should critically evaluate the role of AI in shaping academic performance.

These philosophical perspectives offer diverse lenses through which to examine the complex relationships among guidance and counselling intervention, artificial intelligence, and academic performance based on evidences (Aguolu, 2019).

Statement of Problem

The integration of artificial intelligence (AI) in education has transformed the learning landscape, offering innovative opportunities for enhancing academic performance. However, the impact of AI on guidance and counselling services and academic performance remains unclear. Senior secondary school students in Sokoto metropolis face numerous challenges that affect their academic performance, including inadequate guidance and counselling services, limited access to career development resources, and insufficient support for students with special needs.

Despite the potential benefits of AI-based guidance and counselling interventions, several concerns have been raised about their effectiveness, accessibility, and suitability for senior secondary school students in Sokoto metropolis. There is a lack of empirical evidence on the relationship among guidance and counselling interventions, AI, and academic performance in this context.

With the launching of the Universal Basic Education (U.B.E) in September, 1999 the government is ensuring the right to education of every citizen. The U.B.E. is supposed to encompass all primary as well as Junior Secondary Education for a total of nine (9) years of formal education. Young Nigerians will enroll at about six years of age and emerge out of the school at the age of fifteen (15) years. Thus, the children will be in the school through their sensitive and formation years, the period when physical and intellectual development, sound societal values and religious and moral values will be taking firm roots in these children. By the time they emerged from the school they would already

have established the patterns of their further academic and training pursuits and therefore their likely careers choice. They would have been put into the mold which is hoped to turn them into honest and productive members of the society. It is therefore, in the light of the above that guidance and counselling and artificial intelligent is considered very important part of the educational process and achievement.

The main thrust of this study therefore, is to examine the relationship between guidance and counselling intervention, artificial intelligent and academic performance of students in senior secondary schools in Sokoto metropolis.

Research Questions:

1. What is the relationship between guidance and counselling interventions and academic performance of senior secondary school students in Sokoto metropolis?

2. What is the relationship between artificial intelligent and academic performance of students in senior secondary schools in Sokoto metropolis?

3. What is the relationship between guidance and counselling intervention and artificial intelligent of students in senior secondary school in Sokoto metropolis?

Hypotheses

This study tested the following null hypotheses:

1. There is no significant relationship between guidance and counselling intervention and academic performance of students in senior secondary schools in Sokoto metropolis.

2. There no significant relationship between artificial intelligent and academic performance of students in senior secondary schools in Sokoto metropolis.

There is no significant relationship between guidance and counselling intervention and artificial intelligent of students in senior secondary school in Sokoto metropolis

Literature Review

In Contemporary academic era, the global education system has increasingly adopted artificial intelligence (AI) tools and Guidance and counselling to improve the effectiveness of teaching and learning. For example, AI is embedded in curriculum development, adaptive learning platforms and virtual laboratories, providing educators with the opportunity to attract students in a more interactive and immersive channel (Gysbers, & Henderson 2012): This study found that comprehensive guidance and counselling programs have a positive impact on students' academic achievement and career development.

Lapan (2012) believe that, teachers can address learners‟ needs by using a variety of teaching methods so that learners are exposed to multiple ways of learning there by ultimately giving them opportunities to excel. Students differ in their readiness level in learning a particular concept, they also differ in interest and learning profiles. Lapan's study highlighted the importance of school counsellors in promoting students' academic success and career readiness.

Baker & Siemens (2014): claimed that the teaching of the subject still characterized with the use of conventional method of teaching which does not give room for active participation of learners in the teaching and learning of the subject. They stated further that conventional method of teaching is teacher centered in nature. The use of this inappropriate method of teaching and poor guidance and counselling often leads to poor academic achievement of learners in the subject. This study explored the potential of AI in education, including its application in personalized learning and assessment.

Luckin,, Holmes, Griffiths, & Forcier (2016), documented that AI for education and Guidance and counselling can provide virtualized academic achievement, simulation tools, and artificial intelligence-oriented platforms to help simplify complex scientific concepts However, these benefits are often hampered by gaps in infrastructure and teacher preparation, especially in underdeveloped nation with less infrastructural development in classrooms. Discussed the role of AI in enhancing teaching and learning, including its potential to support guidance and counselling services.

Theoretical Framework

Social Cognitive Career Theory (SCCT): This theory, developed by Lent, Brown, and Hackett (1994), explains how individuals develop career interests and make career choices. SCCT can be applied to understand how guidance and counselling interventions, AI, and academic performance interact.

Self-Determination Theory (SDT): SDT, proposed by Deci and Ryan (2000), emphasizes the importance of autonomy, competence, and relatedness in motivation and learning. This theory can be used to explore how AI-based guidance and counselling interventions affect students' motivation and academic performance.

Hattie (2009): Hattie's study identified factors that influence academic achievement, including student motivation, teacher support, and parental involvement.

Schunk and Meece (2012): Schunk and Meece's study explored the relationship between motivation and academic performance, highlighting the importance of self-efficacy and goal-setting Intersection of Guidance and Counselling, AI, and Academic Performance

Kim and Lee (2015): This study examined the impact of AI-based guidance and counselling systems on students' academic achievement and career development, it also

revealed that effective AI based Guidance and Counselling improve academic achievement.

Wang and Zhang (2020): Wang and Zhang's study explored the effectiveness of AI-powered guidance and counselling interventions in improving students' academic performance and reducing dropout rates.

These literature references provide a foundation for exploring the relationship among guidance and counselling intervention, artificial intelligence, and academic performance of senior secondary school students.

Educational counseling has a profound impact on student's lives and futures Subasinghe, (2016), as the choice of a specific field of study upon entering higher education holds immense weight in shaping a student's career path and can significantly impact the likelihood of securing employment in a related field, as well as the potential for long-term career growth and success Silver, (2023): Kim, (2020), & Ersoy (2018). This makes educational counseling a fundamental component in establishing a smooth connection between the realms of academia and the professional sphere. (Maree & DiFabio 2018). Educational counselors hold a critical responsibility in guiding students to make informed decisions regarding their choice of majors Paolini. (2019), especially given the high rates of field of study changes observed among students. Research conducted by the U.S. Department of Education found that approximately 30% of first-time associate and bachelor's degree students changed their majors within three years. Leu, (2017). Furthermore, a survey conducted in 2014/2015 with 1725 participants revealed that receiving effective academic advising during the first and second years of college can significantly.

We implemented a simple and user-friendly interface using Py Charm (2020) software to facilitate students' interactions and explore the application's services, enhancing the counseling experience with innovative functionalities.

In many countries, including Morocco, counseling services are unavailable in schools, and counselors can only visit schools once or twice a year due to limited human resources. Sellamy.; Fakhri & Moumen, (2022). This lack of support leads to many students facing confusion, depression, and other mental health challenges as they struggle to pave a path toward a prosperous future Hinkelman & Luzzo. (2007), Hammoudi, Soltani, Dalli.; Alsarraj. & Malki, (2022). Making an ill-informed decision about one's academic or career pursuits can result in severe consequences, such as dropping out of school. Subasinghe, (2016), poor job performance, decreased community involvement, and, ultimately, the hindrance of society's growth.

Methodology

The research design used in this study was the correlational survey design. This is because the research is a correlational study which is a type of descriptive research that is

concerned with determining the relationship between variables. Neuman (2000) & Robson (1995) observed that the correlational method is the most appropriate for obtaining factual data or attitudinal information or for research questions about self-reported beliefs, opinions, values, motives, ideas, habits, feelings, desires, characteristics and present or past behaviors. Since the present study sought to obtain data from senior secondary schools' students, on their artificial intelligent, their Guidance and counselling intervention and academic achievement the correlational design is appropriate.

The population for this study included all senior secondary school two (SS11) students in Sokoto state metropolis. The number of senior secondary schools in the metropolis is nineteen (19) and they have a total of population eleven thousand eight hundred and thirty (12830) SS II students UBEC 2024.

The sample for this study was obtained from six purposively selected senior secondary schools in Sokoto metropolis. The decision to select only six senior secondary schools was deliberate. In the selection of the subjects that participated in this study, the simple random sampling technique was employed for this study.

A total of three hundred and eighty-one (381) SS-I1 students were randomly selected from the selected secondary schools as the sample for this study. This is evidence based according to Krejcie and Morgan (1971) three hundred and eighty-one (381) should serve as sample for a population that is up to ten thousand (10,000).

The instruments used for this study were three sets of questionnaires namely:

1. Adopted AI Inventory ("AII")
2. Guidance and Counselling Services Provision Rating Scale ("GCSPRS") constructed by Kolo (2002)
3. Self-constructed Achievement Tests in Chemistry and English.

Three out of the three aforementioned instruments were validated by different experts from departments of Guidance and Counselling SSUEs and the Academic achievement test validated by researcher.

The reliability of the two out of three instruments was established by the originator of the instruments and the following results were obtained: -The reliability of Guidance and Counselling rating scale was established by Kolo (2002) using Pearson Product Moment Correlation statistics a reliability level of 0.88 and 0.86 was achieved with an interval of two weeks between first and second administration. The reliability of artificial intelligent was established using test re-test. The instrument was administered to 20 students, 10 male and 10 females. The reliability of 0.72 and 0.74 were established after an interval of four weeks. The reliability of Academic Achievement test in Chemistry and English was established by the researcher through test re-test. Twenty students were selected

randomly selected in two schools with the Sokoto metropolis. The Pearson Product Moment Correlation statistic was used to analyzed the result and a reliability of 0.68 and 0.67 was obtained after first and second test between an interval of two weeks.

All the schools were visited by the researcher. In seeking Permission to administer the questionnaires from the principals of these schools. The researcher with the help of trained research assistants and the class teachers administered the questionnaires.

The respondents were advised to give honest answers to the questions since they will remain anonymous to assured their confidentiality. Each student was given a set of the three questionnaires for response. Out of the 381 questionnaires administered only 325 students filled properly and returned the questionnaires.

Results

The data collected were analyzed using the Pearson Product Moment Correlation Coefficient to test the 3 null hypotheses. Pearson Product Moment Correlation Coefficient is used because it is very fast and suitable for the type of data obtained.

To retain or reject hypotheses, an alpha level of 0.05 was set.

Hypotheses 1: There is no significant relationship between guidance and counselling intervention and academic performance of students in senior secondary schools in Sokoto metropolis.

Table 1: Academic performance and Guidance and Counselling Intervention

Variables	No	Mean	SD	r-cal	r-crit	Remark
Academic Achievement	325	48.751	20.52	0.794	0.336	**Rejected**
Guidance & Counselling	325	47.489	20.218			

Table 1 above, the value of correlation coefficient is of their r-cal is 0.791 while the r-crit is 0.326. As can be seen the r-cal is high which indicates relationship, the null hypothesis is hereby rejected. Meaning there is significant relationship between academic achievement and guidance and counselling intervention.

Hypothesis 2: There is no significant relationship between students' academic achievement and Artificial intelligent.

Table 2: Academic Achievement and Artificial intelligent

Variables	No	Mean	SD	r-cal	r-crit	Remark
Academic Achievement	325	48.751	20.520	0.702	0.428	**Rejected**
Artificial intelligent	325	61.378	27.727			

Table 2 above it can be seen that the r-cal is positive and stands at 0.702 while r-crit stands as 0.428. Following this finding, the correlation coefficient is high, thus there is significant relationship between students' academic achievement and artificial intelligent. Therefore, the hypothesis is rejected null hypothesis that says there is no significant

relationship between academic achievement and artificial intelligent. In other words, relationship exists between students' academic achievement and artificial intelligent.

Hypothesis 3: There is no significant relationship between guidance and counselling intervention and artificial intelligent.

Table 3: Academic Achievement and Artificial intelligent

Variables	No	Mean	SD	r-cal	r-crit	Remark
Artificial intelligent	325	58.455	24.143	0.680	0.336	**Rejected**
Guidance & Counselling	325	47.479	20.218			

Table 3 above we can see that the correlation coefficient between scores on artificial intelligent and those of guidance and counselling is both significant and positive. The value of the r-cal stands at 0.680 while r-crit stands at 0.336. This indicates a strong and positive relationship between the variables. This discovery also leads us to reject null hypothesis therefore, there is significant relationship between guidance and counselling and artificial intelligent.

Findings

The major findings of the study are:

1. There was significant relationship between guidance and counselling intervention and academic performance of students.

2. There was significant relationship between students' academic achievement and Artificial intelligent.

3. There was significant relationship between guidance and counselling intervention and artificial intelligent.

Discussion

The findings in this study indicated that there was significant relationship between guidance and counselling intervention and academic achievement. In other words, the provision of guidance and counselling in these schools has made the students to attained success in their Education. This can be seen from the analysis of hypothesis one. Therefore, guidance and counselling if well designed, guided and effectively provided the capacity of improving the academic performance of students. This finding is in line with Lapan (2012) who identified that students’ academic performance has significant positive relationship with guidance and counselling

From the result of the findings of hypothesis two, it was observed that significant relationship exists between students' academic achievement and Artificial intelligent.

This study also observed that there is significant relationship between academic achievement and artificial intelligent. This can further be seen from the result of the

analysis of hypothesis three. This indicated that the provision of guidance and counselling in these schools has made the students to develop positive attitude toward utilization of artificial intelligent in the school. This is in agreement with Wang & Zhang (2020) states that guidance and counselling provide an integral part of the educational process because it motivates the student to improve and fit in the school with artificial system. When a child adjusts well in school and is assisted in finding his way around the complicated curriculum, he will definitely develop positive digital attitude towards the school.

This study also discovered that there is significant relationship between students' academic achievement and parental expectation. The way children perceive their parental expectations towards them, greatly influence their behaviour because it leaves the deepest and most profound marks on the children's digital behaviour and this leads to either positive or negative academic achievement depending on the parental influence.

Conclusion

From the findings of this study, it is concluded that guidance and counselling have positive relationship on students' academic achievements, Artificial intelligent and students' academic achievement as well as Guidance and counselling and artificial intelligent also assists students to overcome negative parental expectations toward schooling. It is also concluded that Guidance and Counselling intervention and students' artificial intelligent have significant relationship with their academic achievement. It is also concluded that students in secondary school needs guidance and counselling intervention and that guidance and counselling in secondary schools should be provided by professionally qualified counsellors.

Recommendations

Based on the above findings, the research makes the following recommendations:

1. Truly, guidance and counselling have significant relationship with students' academic achievement, the Sokoto state government should employ qualified guidance counsellors and post at list one or two of such counsellors to each secondary school in Sokoto state.

2. The government should effectively monitor and support the efficiency with which the guidance and counselling services are rendered. They should give support to guidance and counselling in all secondary schools by providing available facilities and equipment for effective functioning of the guidance program in schools.

3. It was also found that guidance and counselling have significant relationship to students' artificial intelligent in school therefore, the principals should provide initial needs for the effective running guidance and counselling toward utilization of artificial intelligent in their schools. This includes, computers, internet, office

space, time set on the time-table during which students will be free from regular teaching-learning chores to seek guidance on individual or group basis.

4. Counsellors should know that students no matter what level of education they are, need to understand themselves, their individuality, their aptitude, attitudes and abilities to plan, decide and choose to succeed in life. They should provide relevant and useful materials. These materials should include information that is valid and accurate, which will assist the student in making choice and adjustment.

5. The counsellor needs to encourage the students to open up to them, so that they can help them especially those with negative parents. They should assist the students by guiding them to choose the right subjects. Left alone the students are prone to choose subjects without directly relating them to their interest, abilities and aptitude and without thinking of their future careers and subject that are pre-requisite for them.

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