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GENDER AND ACADEMIC PROGRAMME INFLUENCE ON MANIFESTED LEARNING DYSFUNCTIONS IN CROSS RIVER UNIVERSITY OF TECHNOLOGY, CALABAR NIGERIA

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ABSTRACT: *The present study sought to investigate the prevalence of learning disorders among undergraduate students in Faculty of Education in Cross River University of Technology, Calabar. Learning disorders otherwise learning disabilities are an umbrella term for a wide variety of learning problems. Learning problems may not be correctly understood as low intellectual level but are likely disorders or difficulties associated with certain aspects of learning. The study therefore investigated the prevalence of these disorders or difficulties among students, the most common types of these disorders associated with undergraduate students and the sex difference in manifestation of the disorders. The common types of disorders considered in this present study were dyslexia, dysgraphia, dyscalculia and attention deficit hyperactive disorder (ADHA). The study population comprised all the undergraduate students in Faculty of Education and a sample of 240 respondents. Data collection instrument was a structured questionnaire titled 'Learning disorder questionnaire (LDQ). The major findings were that the highest manifested learning difficulty among undergraduate students is dyscalculia followed by dysgraphia. There was a positive correlation between dyslexia (poor reading and pronunciation ability) and dysgraphia (problem in spelling, organization and coherence in writing). It was also found that only the level of manifestation of dyslexia is not significantly higher than the expected value. Significant gender difference exists only for dysgraphia. All other gender differences were not significant. Differences between academic departments were significant except for ADHD. It was recommended that students should be made to copy notes in class and be more engaged in written assignments. Build on their strengths and use assistive technology, take medication to improve concentration and depression.*

KEYWORDS: Attention deficit hyperactive disorder, dyslexia, dysgraphia, dyscalculia and gender.

INTRODUCTION

Success or failure in academic does not solely depend on the student's intelligence level. Several genetic and environmental factors are involved including learning disorders; learning disorder otherwise learning disabilities are an umbrella term for a wide variety of learning problems.Kemp, Melinda, Smith and Segal (2017) said learning disability is not a problem with intelligence or motivation; learners with learning disabilities aren't crazy or dumb. In fact

most are just as smart as anyone else. Their brains are simply wired differently. This difference affects how they receive and process information.

Simply put, children and adults with learning disabilities see, hear and understand things differently. This can lead to trouble with learning new information and skills, and putting them to use. The most common types of learning disabilities involve problems with reading, writing, calculation, listening and speaking. Some of the characteristics and symptoms of learning disabilities, by Bordino are quoted in Akonde, Olowonrejuaro; Abolarin (2010) in reading disabilities (dyslexia). Problems of reading and comprehension signs, reading difficulty include problems with better and word recognition, understanding words and ideas, reading speed and fluency and general vocabulary skills.

Learning disabilities in writing (dysgraphia) involve the physical act of writing or the mental activity of comprehending and synthesizing information. Basic writing disorder refers to physical difficulty forming words and letters. The following problems are noticed:
Neatness and consistency of writing, accurately copying letters and words, spelling consistency, writing organization and coherence. Learning disabilities with language (aphasia dysphasia) is also considered on output activity because it requires organizing thoughts in the brain and calling upon the right words to verbally explain something or communicate with someone else. Signs of language base learning disorder involve problems with verbal language skills such as ability to understand the meaning and use of words, parts of speech, etc.Others disorders are: difficulty with mathematics (dyscalculia) problem doing calculations. Sensory integration disorder (dyspraxia) - problem with hand-eye coordination, balance, manual dexterity.

Another form of disorder which is not strictly considered as a learning difficulty IS ADHD (Attention deficit hyperactivity disorder). Though not considered a learning disability, it can certainly disrupt learning.Children with ADHD often have problems sitting still, staying focused, following instructions, staying organized and completing homework.Autism – difficulty mastering certain academic skill – can stem from pervasive developmental disorders such as autism and asperger's syndrome. Those with this problem have difficulty in learning basic skills and communicating.

Blackley (2012) whose research has included studies on writing and written language, refers to handwriting as "language by hand" to stress that it involves not the visible motor processes of spelling and of sentence… She found that dysgraphia is often related to other problems such as dyslexia and even oral expression, since both require mental activities. A study in Canada by Sauve' (2016) revealed that 75% of students with learning disabilities abandon their post-secondary education and 27% of disabilities identified at the post-secondary level at Quebec relate to learning disabilities and attention deficit disorder. A study by MacGregor Oleson and Jacobson (2016) identified learning disability (LD) as a serious cause of academic setback among youths in the US. LD which denotes a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. Thus, study by (Rave & Lewis, 2011) quoted by MacGregor et al (2016) revealed that 31% of all students at the post-secondary level nationwide have learning disabilities of all kinds. Learning disability is a hidden disability and, as such, the challenges faced by students with learning disability are often unnoticed or misunderstood

(Shaw, 2006) especially at the post-secondary level since it requires self-disclosure from the student, whereas elementary and secondary schools are mandated to identify students with disabilities, post-secondary schools are not. It is not surprising then, that post-secondary student with LD take longer time to earn a degree and are more likely to leave post-secondary schooling without earning a degree (Newman, Wagner, Knokey, Marder, Nagle, Shaver Schwarting, 2011).

Moll, Kunze, Neuhoff, Bruder, and Schulte-Kome (2014). In their study observed proportion of boys and girls was compared to the proportion in the representation sample (50.5% sample) more boys than girls showed isolated spelling deficit and combined reading. While more girls were impaired in arithmetic.

In Cross River University of Technology, Calabar, Nigeria, Faculty of Education in particular, many students find it difficult to acquire knowledge or skills in the same ways as their peers. This means they struggle to learn and therefore find themselves indulging in various forms of malpractices, and impersonation to succeed in assessment, tests and exams. Another behaviour of student which manifests problem of learning disability is their inability to carry out independent work, poor construction and coordination of ideas, spelling and grammatical problem, low level of concentration and general poor performance in course subjects.

Purpose of the study

The study aimed at investigating the prevalence of learning difficulties among undergraduate students in Faculty of Education, Cross River University of Technology, Calabar. The following were the specific objectives for this research.

1. To determine the manifestation of learning difficulties among undergraduate students in Faculty of Education, CRUTECH, Calabar.
2. To find out if the level of manifested learning difficulties are significantly different from the expected level.
3. To compare the levels of the four learning difficulties.
4. To find out if there are gender-based differences in the levels of learning difficulties.
5. To find out if there are academic programme=based differences in the levels of the learning difficulties.

Research questions

1. To what extent do undergraduate students in Faculty of Education manifest learning disorders?
2. What are the most common types of learning disorders associated with undergraduate students in Faculty of Education?
3. How do manifested (four) learning difficulties differ?
4. What is the nature of the gender-based differences in learning disorders?
5. To what extent do students in different academic programmes differ in the level of manifested learning difficulties?

Hypotheses

1. There is no significant difference between the level of manifested learning difficulties and the expected level.
2. There is no significant difference in the levels of manifested learning difficulties.

3. Male and female undergraduate students in Faculty of Education do not significantly differ in manifestation of learning disorders.
4. There is no significant gender-based differences in the level of manifested learning disorders.
5. There is no significant academic programme-based differences in the level of manifested learning dysfunctions.

METHODOLOGY

A 27-item instrument was constructed and validated by the researchers for this study. The instrument had two parts (A and B). Part A required information about respondents personal data on year of study, gender and academic Department while Part B measured the manifestation of four learning dysfunctions – dyslexia dysgraphia, dyscalculia and ADHD, built on a three-point modified Likert scale. The reliability co-efficient, estimated using Cronbach Alpha, were .706, 813, .789 and .814 for the four sub-scales of Part B – dyslexia, dysgraphia, dyscalculia and ADHD respectively. The instrument was face validated by two experts in psychology of learning and measurement and evaluation each. The instrument was administered on a random sample of 240 students from a population of 2017/2018 of the two academic departments in the Faculty of Education. Cross River University of Technology, Calabar, Nigeria. The sample was selected using stratified random method to reflect the year of study, academic department and gender proportionately. The data obtained by weighting the responses made by the students were analysed using frequency counts, percentages, descriptive statistics Pearson product moment correlation and analysis of variance for repeated treatments, while independent t-test and f-ratio tests were used to test for significance. The results were summarized in 7 different tables.

RESULTS

The data for this study were collected from a random sample of 240 students of year one to four in the Faculty of Education, Cross River University of technology, Calabar, Nigeria. There were 112 (46.7%) from the Department of Curriculum and Instructional technology and 128 (53.3%) from the Department of Educational Foundations and Administration. by gender, 125 (52.1%) were males and 115 (47.9%) females. The Faculty admits students from all the 36 States of Nigeria. Thus, the sample was considered heterogeneous enough for the study.The descriptive statistics mean, standard deviation, standard error, minimum and maximum values-of-the four types of learning dysfunctions – dyslexia, dysgraphia, dyscalculia and ADHD – the whole sample were computed, the results are shown in Table 1.

Table 1: Descriptive statistics of the four learning difficulties

Type of leaning difficulty	Mean	Std dev.	Std Error	minimum	maximum
Dyslexia	51.00	13.803	.891	33	100
Dysgraphia	56.68	10.142	.655	33	89
Dyscalculia	70.28	16.017	1.034	33	100
ADHD	53.54	12.854	.830	33	89

The results in Table 1 show that the highest manifested learning difficulty is dyscalculia (X = 70.28) followed by dysgraphia (X = 56.68) and the least is dyslexia (X = 51.00). This comparison is valid because ~~the~~ learning difficulties were measured usi~~ng~~ the same number of items and response options.To find out the nature of the relationship among the manifested learning difficulties, the Pearson product moment correlation coefficient was computed for all possible pairs of the learning difficulties, together with the associated p-values. The results obtained are shown in Table 2.

Table 2:Inter-variable Pearson Product Moment Correlations with their p-values

Difficulty	Dyslexia	Dysgraphia	Dyscalculia	ADHD
Dyslexia	1.00**	.475*	.083	.171*
Dysgraphia	.000	1.000	.105	.389*
Dyscalculia	.200	.106	1.000	.168*
ADHD	.008	.000	.009	1.000

*Significant at .05 level p <.05
** Values above mean diagonal are correlation coefficients and below it are corresponding p-values.

The results in Table 2 show that ADHD correlated significantly with dyslexia (r=.171, p=.000) dysgraphia (r=.389, p=.000) and dyscalculia (r=.168, p=.009), Dysgraphia correlated significantly with dyslexia (r=.475, p=.000). Dyscalculia did not correlate significantly with dyslexia and dysgraphia. All the correlation coefficients are positive, indicating that an increase in one is associated with an increase in all the other difficulties.To find out if the level of manifested learning difficulties was significantly different from the expected level, the one sample population t-test was applied. The results are shown in Table 3.

Table 3: One sample t-test for significance of the learning difficulties against expected level

Type of leaning difficulty	Observed Mean	Std dev.	Std Error	Expected mean	Mean difference	t-value	P-value
Dyslexia	51.00	13.803	.891	50,00	.995	1.117	.265
Dysgraphia	56.68	10.142	.655	50.00	6.682	10.207	.000
Dyscalculia	70.28	16.017	1.034	50.00	20.278	19.613	.000
ADHD	53.54	12.854	.830	50.00	3.542	4.268	.000

*Significant at .05 level p<.05

The result in Table 3 show that only the level of manifestation of dyslexia is not significantly higher than the expected level, because the p-value (.265) associated with the computed T – value (1.117) is greater than .05. All the other three learning difficulties are significantly higher than their expected level. To compare the levels of the four learning difficulties, repeated measures analysis of variance was carried out. The repeated measures ANOVA allows for the removal of differences due to individual persons from the total variance just as the interaction between persons and types of learning difficulties are removed and tested for significance, the results are shown in table 4.

Table 4: One way – ANOVA of learning difficulties by type

Source of variation	**Sum of square**	**df**	**Mean square**	**F-value**	**P – value**
Corrected model	221732.546	951	233.157	.806	.728
Intercept	3191676.087	1	3191676.087	11033375	.000
Persons	67151.567	237	283.340	.979	.579
Difficulty types	53002.166	3	17667.389	61.075	.000
Person by difficulty types	101454.733	711	142.693	.493	.959
Error	2314.198	8	289.275		
Total	**3439491.716**	**960**			
Corrected Total	**224046.743**	**959**			

- Significant at .05 level. P<.05

The results in Table 4 reveal that the intercept is expectedly significant (F=9955.840, P=.000), just as the difficulty types showed a significant main effect (F=61.075, P=.000).To find out the pair of means that was responsible for the observed main effect of learning difficulty types, least Significant Difference Test was carried out. Their results are in Table 5

Table 5: LSD post hoc multiple comparison of learning difficulties by types.

Dysfunction type	**Dyslexia**	**Dysgraphia**	**Dyscalculia**	**ADHD**
Dyslexia	50.887**	5.69*	19.28*	2.55
Dysgraphia	.006	56.598	13.60*	3.14
Dyscalculia	.000	.000	70.191	16.74*
ADHD	.140	.078	.000	53.443

*Significant at .05 level p<.05 ** Values along main difficulties and below it are corresponding from the results in Table 5, there is no significant difference between the levels of manifestation of ADHD and dyslexia (MD=2.55,P=.140>.05) and dysgraphia (MD=3.14,P=.078>.05). All the other paired comparisons were significant, since the P-values (.000≤P≤.006) associated with the mean differences (5.69≤MD≤16.74), are all less than.05.

To find out if gender differences exist in the manifestation of the four learning dysfunctions, independent sample t-test was carried out. The results obtained are given in Table 6

Table 6: Independent sample t-test for gender differences in manifested learning dysfunctions

Dysfunction type	**Gender**	**N**	**Mean**	**Etd dev.**	**Std error**	**Mean diff.**	**t- value**	**p-value**
Dyslexia	Male	125	50.89	12.168	1,088			
	female	115	51.11	15.439	1.440	.222	.124	.901
	Total	240	51.00	13.803	.891			
Dysgraphia	Male	125	58.43	9.528	.852 .978			
	female	115	54.79	10.484	.655	3.641	2.819*	.005
	Total	240	56.68	10.142				
Dyscalculia	Male	125	68.98	15.413	1.379			
	female	115	71.69	16.601	1.548	2.713	1.313	.190
	Total	240	70.28	16.017	1,054			
ADHD	Male	125	53.33	12.221	1.093			
	female	115	53.77	13.559	1.264	.435	.261	.784
	Total	240	53.54	12.854	.830			

*Significant at .05 level p<.05.

From the results in Table 6, significant gender difference exist only for dysgraphia (t=2.819,p=.005<.05). All the other gender differences are not significant.

To find out if programme of study with respect to academic department had any influence on the manifested learning dysfunctions, independent t-test was again carried out. Table 7 is summary of the results obtained. Independent t-test for influence of academic department on manifested dysfunctions.

Table 7

Dysfunction type	Academic department	N	Mean	Std. dev.	Std. Error	Mean difference	t-value	p-value
Dyslexia	CIT	112	48.46	10-472	990			
	EFA	128	53.21	15.877	1.403	4.750	2.694*	.008
	Total	240	51.00	13.803	.891			
Dysgraphia	CIT	112	54.05	9.452	893			
	EFA	128	58.98	10.200	902	4.934	3.868*	.000
	Total	240	56.68	10.142	.655			
Dyscalculia	CIT	112	67.86	15.089	1.426			
	EFA	128	72.40	16.556	1.463	4.539	2.208*	.028
	Total	240	70.28	16.017	1.054			
ADHD	CIT	112	52.88	12.699	1.200			.455
	EFA	128	54.12	13.010	1.150	1.246	.749	
	Total	240	53.54	12.854	.830			

*Significant at .05 level p<.05

The results in Table 7 shows that for ADHA alone there was no significant difference (t=.749,p=.455>.05). All the other differences were significant, as the p-values associated with the computed t-values were all less than .05, the chosen level of significance.

DISCUSSION

Research has revealed manifestation of learning dysfunction among undergraduate students in Faculty of Education, Cross River University of Technology. Results of the present study show that the highest manifested learning difficulty by undergraduate students in Faculty of Education, CRUTECH, Calabar, is dyscalculia, followed by dysgraphia. In other words, many students manifested the problem of solving simple mathematical or calculation problem thus dyscalculia. The other highly manifested learning dysfunction, (dysgraphia) indicates that many students have problems in spelling words correctly, organization and coherence in writing, comprehending and synthesizing information, logical writing sequence etc.

The present study found positive correlation between learning dysfunctions or difficulties. Thus, dysgraphia (writing dysfunction) correlated significantly with dyslexia (reading dysfunction). This relationship indicates that an increase in reading dysfunction is very much likely associated with an increase writing dysfunction and others. This finding corroborates Blackley (2012) findings that dysgraphia is often related to other problems such as dyslexia and ADHD.

The present study also found gender difference to be significant in the manifested learning dysfunctions though this is for only dysgraphia. The result showed that male undergraduate students in Faculty of Education of Cross River University of Technology have more problems with writing skills than the female. This finding corroborates Moll, Kunze, Neuhoff, Bruder and Schulte-Kome (2014) finding that more boys than girls showed spelling deficient and combine reading. The finding that significant differences were not found with other learning disorders by the present study contradicts Moll et al (2014) finding that the girls were more impaired in dyscalculia (Arithmetic). Faculty of Education in CRUTECH has two major

departments thus: Curriculum and Instructional Technology (CIT) Department and Educational Foundations and Administration Department, both departments have different units in respect to academic programmes. CIT is basically sciences and vocational education programmes. Findings by academic programmes indicates a significant difference in all the learning dysfunctions except for ADHD (attention deficient)

CONCLUSION

There are manifestations of various learning dysfunctions among undergraduate students in CRUTECH. However, some of these dysfunctions are found to be closely linked to gender like, dyslexia and dysgraphia favouring females and dyscalculia favouring males. While others are linked to various academic programmes. Irrespective of the variables linked with any learning dysfunction it should be noted that learning disabilities are interrelated. In which case, a particular learning dysfunction can subsequently cause another form of dysfunction is not significantly manifested.

Recommendations

The following are recommendations for managing learning disabilities.

1. Adopt psycho-social behavioural therapies – teaching individual to maximize their strengths and compensate for their weaknesses.
2. Special reading and writing seminars/programmes should be organized for those with the dysfunction.
3. Medications can be used to improve concentration problems and other conditions such as depression.
4. Teaching should be simplified as much as possible and multiple commands avoided.
5. For dyslexic, dysgraphic students who brave difficulty in spelling and poor penmanship, grading papers should be more focused on content rather than on spelling and neatness.
6. Allow students with specific learning difficulties to use assistive technology such as word processors, calculators, spellers, etc.

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