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TIERED INSTRUCTION AND INDEPENDENT STUDY AS PREDICTORS OF ACADEMIC ACHIEVEMENT AMONG HIGH-ABILITY SECONDARY SCHOOL STUDENTS IN IMO STATE, NIGERIA

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Abstract

This study investigated tiered instruction and independent study as predictors of academic achievement among high-ability secondary school students in Imo State, Nigeria. Three objectives and research questions were raised to guide the study. Survey research design of correlational type was adopted for the study. Twelve out of 27 Local Government Areas (LGAs) in Imo State were randomly selected. Purposive sampling was used to select one public senior secondary school per LGA. The Slosson Intelligence and High Ability English Language and Mathematics Achievement Screening (HAELAS) Tests with index score of > 60% were used to select 265 HASSS. The instruments used were English Language and Mathematics Achievement Test (r = 0.84); Tiered Instruction (r = 0.86) Independent Study (r = 0.87)

Keywords: Tiered Instruction, Independent Study, Academic Achievement and high-ability student

Introduction

Academic achievement is an important learning outcome that shows how well pupils have mastered the academic assignments that their teachers have given them. Students are required to meet desirable academic standards based on the instructional objectives teachers set for certain lessons. This highlights how crucial it is for students to develop the appropriate skills, expertise, and values in their educational pursuits because this has a significant impact on overall school effectiveness. Academic success is an educational outcome that measures how well students accomplish their learning objectives (Afolayan, Donald, Onasoga, Adeyanju, and Agama, 2013).

The success of students in their academic endeavours has a tremendous impact on their lives and the life of their families, community and nation and is determined by a number of factors. These factors include the ability of students to cope with change or adjust, as well as personality attributes including self-control, efficacy, levels of anxiety, study routines, and the level of test preparation. Environmental variables also have an impact. Academic and non-academic factors that affect academic performance include prior academic achievements like end-of-term or end-of-session grades, scores from a variety of aptitude tests, as well as specific physical characteristics like gender, age, marital status, race or ethnicity, residential background, and prior work experience (Parveen, 2008). In other words, there are relationships between students' learning in terms of affective and psychomotor elements as well as their performance on cognitive tasks. The academic performance of students is determined by their grades in each topic, and students themselves have attitudes towards learning and work hard to succeed in school (Bulacan State University, 2011).

Teachers, professionals, and families are concerned when highly gifted students perform poorly in academics. These students could grow alienated and disengaged if their issues are not handled, which could result in them leaving the educational system and constituting upset in the community. Recent evidence shows that despite continuous reforms aimed at enhancing curriculum quality and teaching standards, low academic achievement remains a persistent challenge in Nigeria (UNICEF, 2022; World Bank et al., 2022). Studies further indicate that this concern extends beyond Nigeria to the wider West African sub-region, where countries such as Ghana continue to grapple with widespread underperformance in basic and secondary education (UNESCO IIEP & Ghana MoE, 2021; Mensah, 2024). In Nigeria, secondary school students consistently struggle to achieve satisfactory outcomes in public examinations such as WASSCE, with national statistics showing fluctuating and often disappointing results (Aremu, 2000; Ogunfowora, et al., 2005; Etsey, 2005; AACRAO, 2024; National Bureau of Statistics, 2024).

High-ability students (HASs) are individuals that continuously receive excellent grades and test scores, according to researchers like Bainbridge (2020). These students must complete their assignments successfully, displaying good planning and time-management abilities. They are also renowned for submitting orderly and timely work. HASs often behave well, adjust well to the educational setting, and enthusiastically participate in class activities along with their academic performance. HASs have a sense of autonomy in choosing their own learning goals and confidence in their capacity to attain those goals, which better prepares them for lifelong learning, according to Candeias, et al. (2012). High ability depends on motivation, effort, and learning chances rather than being a set quality. It grows gradually in a setting that offers the right amount of support and difficulties (Foster, 2019).

The HASs are students who possess a minimum of Intelligence Quotient (IQ) of one hundred and twenty (120) or above average. In most cases, they demonstrate high potential in virtually all school subjects. However, some HASs fall below expectations in their academic achievement, thus failing to fulfill their potential. Students with high ability are found in every community and classrooms in Nigeria, just as it is obtainable in other communities of the world whether developed, developing or underdeveloped. However, in a developing country like Nigeria, these students encounter a lot of challenges in their academic achievement due to poor identification processes, lack of early interventions and poor management processes compared with their counterparts in the developed countries. Indeed, poor academic achievement of these group of students place them, at disadvantageous position among their friends, families and societies who are reaping from achievements being recorded by them in their various endeavours in the developed countries. Moreover, it is worrisome that there are no specific classes for students with high ability in Nigeria. They are lumped up in the same classroom and taught with the same strategies, under the same regular classroom teachers, classroom condition and obsolete facilities without even making an allowance for their individual differences.

Ineffective teaching methods may be a factor in pupils' general poor academic performance and behavioural issues. Because of this, it is essential to give High Ability Students (HASs) academic assignments and teaching methods that are in line with their objectives in order to improve their academic performance and adaptability. Since teaching tactics like the Enrichment Triad (ET) and School-wide ET Model (SEM) play a key role, experts in the field of education for HASs have devised several strategies to manage this group of students inside the school structure and improve their achievement and adjustment.

Renzulli (1977) described the ET model, which acknowledges both positive and negative aspects of gifted classrooms. Students indicated they enjoyed being in gifted classrooms and valued the flexibility they had there. However, the learning materials and teaching methods included in the educational programmes for these ET programmes were varied (Borland, 2012). With flexibility and assistance, students can operate as mini-professional, creative producers under Type III of Renzulli's model. Type I of Renzulli's model encourages students to broaden their horizons. Type II of Renzulli's model enables students to develop their critical, creative, and problem-solving skills. The comprehensive School-wide ET paradigm (SEM), which incorporates strengths-based teaching strategies and opportunities for all students throughout the entire school, is built on the ET paradigm (Renzulli and Reis, 1997, 2014). Early versions of the ET and SEM were more concerned with student interests and aptitudes than with specific subject matter (Renzulli, 1977; Renzulli and Reis, 2014). Nevertheless, over the years, the SEM and ET have evolved and modified for domain-specific contexts such as mathematics, science, social studies, reading, art, and the integration of technology (Gavin and Renzulli, 2018; Heilbronner and Renzulli, 2015; Renzulli, 2016). To produce memorable and lasting learning experiences, these models have also been coupled with other evidence-based educational practises.

Tiered instruction and individual study enrichment programmes are the two categories of ET programmes that this study focuses on. Based on the students' prior knowledge and skills, differentiated instruction is provided. It enables students to pick up necessary abilities at a rate of learning that corresponds to their instructional level. On the contrary hand, independent study entails each student working on their own educational tasks with little oversight (Moore, 2009). In most cases, students and teachers choose a research topic together, and the student receives direction from the teacher for a set period of time and number of credits (Winebrenner and Brulles, 2012). Both kinds of ET programmes support students in finding their purpose in life, improving their creative abilities, developing moral character, and fostering an engaged learning environment.

Al-Zoubi (2014) found that academic achievement of gifted and talented students can be improved through enrichment programming. In order to meet the unique needs of high-ability students in a variety of areas, such as cognitive, affective, creative, and psychomotor development, enrichment programmes modify and supplement the conventional curriculum. Research by Bonney, Amoah, Micah, Ahiamenyo, and Lemaire (2015) also emphasises the value of enthusiastic teachers as mentors. In addition to adapting to different learning styles and classroom dynamics, these educators also show their efficacy by using cutting-edge classroom management strategies that promote a secure, resourceful, and productive learning environment. Fakolade and Adeniyi (2010), which examined the impact of enrichment programmes and self-directed learning models on the academic achievement of a group of chosen gifted children in multiple secondary schools, are in conflict with this finding. Their research showed that the individuals' post-test academic achievement levels were significantly improved by the treatment. Furthermore, the study failed to find any gender-based significant main impact. It was interesting to see that gifted male students who experienced both enrichment and self-directed learning models outperformed their female counterparts in terms of mean test scores. These findings imply that enrichment activities have the ability to improve gifted children' school experiences.

Statement of the Problem

The academic success of high-ability students has continued to attract attention among educators, psychologists, and policymakers because of the vital role these students play in national development. High-ability learners often demonstrate advanced cognitive potential, faster learning pace, and greater curiosity than their peers. However, these students are frequently underserved in mainstream classrooms, where instructional strategies are designed for the average learner. As a result, their potential is either underutilized or suppressed, leading to underachievement despite their intellectual capacity.

Tiered instruction and independent study have been identified as effective strategies for addressing the diverse learning needs of high-ability students. Tiered instruction provides differentiated levels of tasks within the same content area, ensuring that high-ability learners are sufficiently challenged without being isolated. Independent study, on the other hand, gives students autonomy to explore areas of interest, build research skills, and deepen understanding beyond the prescribed curriculum. While these approaches have been widely recognized in literature from Western and some African contexts, their effectiveness and correlation with academic achievement among high-ability secondary school students in Imo State remain underexplored.

In Nigeria, most studies on instructional strategies focus on general classroom practices, inclusive education, or interventions for students with learning difficulties, with less emphasis on the needs of high-ability learners. Consequently, there is insufficient empirical evidence on how tiered instruction and independent study influence academic achievement specifically among high-ability students in Imo State. This creates a gap in knowledge, as teachers and educational planners often apply generalized methods without clear guidance on how these specialized strategies impact gifted learners.

Therefore, it becomes necessary to investigate the extent to which tiered instruction and independent study serve as correlates of academic achievement among high-ability secondary school students in Imo State. Addressing this gap will not only enrich the body of knowledge in gifted education but also provide practical implications for teachers, curriculum planners, and policymakers seeking to maximize the academic potential of high-ability learners.

Objectives of the Study

The objectives of the study are to investigate:

1. the levels of tiered instruction and independent study programmes among HASSS in Imo State.
2. the relationship among independent variables (tiered instruction and independent study programmes and dependent variables (academic achievement among HASSS in Imo State).

Research Questions

Answers were supplied to these questions:

1. What is the level of tiered instruction and independent study programmes among HASSS in Imo State?
2. What is the relationship between ET programmes (TI and IS) and academic achievement among HASSS in Imo State?

Methodology

This study employed a mixed-methods sequential design to investigate the relationship between tiered instruction, independent study programmes) and the academic achievement and adjustment of High-Ability Secondary School Students (HASSS) in Imo State, Nigeria. The quantitative component of the study involved a survey of 265 HASSS from selected senior secondary schools in Imo State. The students were identified as having high ability using their past academic records, teacher nominations, the Slosson Intelligence Test, and the High Ability English Language and Mathematics Achievement Screening (HAELMAS) Test. The data analysis involved mean, standard deviation as well as Zero Order Correlation.

Results

RQ1: What is the level of the TI programme by HASSS in Owerri, Imo State?

Table 1: Level of TI Programme by the Respondents

S/N	Items	SD	D	A	SA	$\bar{x}$	S.D	Rank
1	Instruction is based on learning needs of HAS and the curriculum.	38 14.3%	31 11.7%	113 42.6%	83 31.3%	2.91	1.000	4th
2	Learning goals are adjusted for students based on their needs	29 10.9%	28 10.6%	135 50.9%	73 27.5%	2.95	0.905	3rd
3	Teachers place emphasis on critical and creative activities for HAS	35 13.2%	69 26.0%	112 42.3%	49 18.5%	2.66	0.928	17th
4	Teachers match HAS to specific informational resources based on their learning needs and abilities.	35 13.2%	63 23.8%	127 47.9%	40 15.1%	2.65	0.893	19th
5	HAS are allowed to advance at own pace and based on readiness levels	30 11.3%	73 27.5%	119 44.9%	43 16.2%	2.66	0.882	18th
6	HAS self-regulate and have a more enjoyable learning environment	26 9.8%	67 25.3%	128 48.3%	44 16.6%	2.72	0.857	15th
7	Variances are accepted as teachers give many ways to show learning	37 14.0%	50 18.9%	121 45.7%	57 21.5%	2.75	0.950	14th
8	HAS have liking for a traditional lesson format, where everyone moves together	40 15.1%	42 15.8%	107 40.4%	76 28.7%	2.83	1.011	10th
9	HAS prefer leveled lessons, where everyone moves on at their own speed	35 13.2%	56 21.1%	102 38.5%	72 27.2%	2.80	0.987	12th
10	Learning at my own pace has made learning mathematics more comfortable	32 12.1%	50 18.9%	105 39.6%	75 29.4%	2.86	0.975	9th
11	Learning at my own pace has made learning English language comfortable	25 9.4%	55 20.8%	127 47.9%	58 21.9%	2.82	0.880	11th
12	Regulating my own levels causes me to	30	57	123	55	2.77	0.908	13th

	feel more motivated to learn	11.3%	21.5%	46.4%	20.8%			
13	If I work hard on level one and progress it makes me feel more proud of myself	22 8.3%	41 15.5%	130 49.1%	72 27.2%	2.95	0.871	2nd
14	Leveled lessons help to alleviate pressure and help me to push myself	28 10.6%	35 13.2%	143 54.0%	59 22.3%	2.88	0.875	7th
15	Leveled lessons motivate me to try very hard because I'm a competitive person.	27 10.2%	36 13.6%	114 43.0%	88 33.2%	2.99	0.937	1st
16	Leveled lessons prevent me from working with her friends.	38 14.3%	86 32.5%	80 30.2%	61 23.0%	2.62	0.993	20th
17	A good understanding of a student's abilities and methods is important for assessing before beginning a topic.	29 10.9%	38 14.3%	136 51.3%	62 23.4%	2.87	0.895	8th
18	In TI, grouping is according to abilities and continuous monitor student progress is welcome.	30 11.3%	60 22.6%	129 48.7%	46 17.4%	2.72	0.882	16th
19	A good assessment strategy for identifying the needs and achievements of students is useful.	21 7.9%	51 19.2%	125 47.2%	68 25.7%	2.91	0.872	5th
20	HAS should be allowed to choose activities based on their interests.	31 11.7%	45 17.0%	109 41.1%	80 30.2%	2.90	0.966	6th
	Weighted Mean = 2.81							

Key: *1= Strongly Disagree, 2= Disagree, 3= Agree, 4= Strongly agree*

To measure respondents' ratings concerning tiered instruction enrichment programme for HASSS, computation of the descriptive statistics of frequencies, percentages, mean, standard deviation was done and the results are presented in Table 1. Going by the result, the weighted mean is 2.81. Also, all the 20 items had mean scores greater than the threshold of 2.50. This means that the measure of tiered instruction enrichment programme among HASSS in Owerri, Imo State is high as against the threshold of 2.50 set in this study. Looking at the table, the highest ranking item is "Leveled lessons motivate me to try very hard because I'm a competitive person." ($\bar{x} = 2.99$). This is followed by the item "Learning goals are adjusted for students based on their needs" ($\bar{x} = 2.95$), "If I work hard on level one and progress it makes me feel more proud of myself" ($\bar{x} = 2.95$), then "Instruction is based on learning needs of HAS and the curriculum" ($\bar{x} = 2.91$), and "A good assessment strategy for identifying the needs and achievements of students is useful in tiered instruction" ($\bar{x} = 2.91$). Next highly rated item is "HAS should be given the opportunities to choose activities based on their interests" ($\bar{x} = 2.90$). The least ranked items in the table were "Teachers match HAS to specific informational resources based on their learning needs and abilities." ($\bar{x} = 2.65$), and "Leveled lessons prevent me from working with her friends." ($\bar{x} = 2.62$).

RQ2: What is the level of IS by HASSS in Owerri, Imo State?

Table 2: Level of IS by the Respondents

S/N	Items	SD	D	A	SA	$\bar{x}$	S.D	Rank
1	IS connects the interests and readiness level of HASSS to essential critical thinking skills.	33 12.5%	32 12.1%	128 48.3%	72 27.2%	2.90	0.940	16th
2	IS demands creative thinking and the making of new notions.	14 5.3%	55 20.8%	141 53.2%	55 20.8%	2.89	0.786	18th
3	IS offers HASSS independence in learning process.	20 7.5%	28 10.6%	146 55.1%	71 26.8%	3.01	0.823	8th
4	IS gives HASSS challenge in the learning process	19 7.2%	41 15.5%	109 41.1%	96 36.2%	3.06	0.896	5th
5	IS provides an opportunity to design my personal learning.	9 3.4%	41 15.5%	133 50.2%	82 30.9%	3.09	0.771	3rd
6	IS gives HASSS positive learning alternative to the regular routine.	17 6.4%	50 18.9%	135 50.9%	63 23.8%	2.92	0.824	15th
7	I feel happy studying my own topic and learning more about it.	6 2.3%	31 11.7%	142 53.6%	86 32.5%	3.16	0.713	1st
8	IS helps me to choose my own area of interest in a study.	13 4.9%	45 17.0%	140 52.8%	67 25.3%	2.98	0.788	10th
9	IS encourages me to place value learning on my own.	12 4.5%	45 17.0%	151 57.0%	57 21.5%	2.95	0.752	13th
10	IS helps me to find and solve a real-world problem.	19 7.2%	30 11.3%	130 49.1%	86 32.5%	3.07	0.850	4th
11	Use of the computer for research makes the self-study interesting.	18 6.8%	31 11.7%	152 57.4%	64 24.2%	2.99	0.795	9th
12	The opportunity to present the results to an audience makes the study factual and significant.	20 7.5%	49 18.5%	134 50.6%	62 23.4%	2.90	0.844	17th
13	HASSS learn a lot by engaging in IS.	20 7.5%	26 9.8%	140 52.8%	79 29.8%	3.05	0.836	6th
14	Engaging in independent study helps me to budget my time well.	25 9.4%	34 12.8%	134 50.6%	72 27.2%	2.95	0.882	12th
15	Independent study can be both challenging and enriching.	22 8.3%	47 17.7%	124 46.8%	72 27.2%	2.93	0.883	14th
16	IS encourages personal choice and subject depth for HASSS.	24 9.1%	37 14.0%	130 49.1%	74 27.9%	2.96	0.885	11th
17	IS facilitates autonomy among students in the selection of content.	31 11.7%	75 28.3%	106 40.0%	53 20.0%	2.68	0.924	20th
18	HASSS is responsible for the direction and outcome of learning.	25 9.4%	46 17.4%	139 52.5%	55 20.8%	2.85	0.859	19th
19	IS provides HASSS feedback and guidance on a challenging task.	12 4.5%	50 18.9%	123 46.4%	80 30.2%	3.02	0.821	7th
20	IS is useful for solving community problems, uncovering new issues.	19 7.2%	27 10.2%	116 43.8%	103 38.9%	3.14	0.872	2nd
	Weighted Mean = 2.98							

Key: *1= Strongly Disagree, 2= Disagree, 3= Agree, 4= Strongly agree*

To measure respondents' ratings concerning IS for HASSS, computation of the descriptive statistics of frequencies, percentages, mean, standard deviation was done and the results are presented in Table 2. Going by the result, the weighted mean is 2.98. Also, all the 20 items had mean scores greater than the threshold of 2.50. This means that the measure of independent study enrichment programme among HASSS in Owerri, Imo State is high as against the threshold of 2.50 set in this study. Looking at the table, the highest-ranking item is "I feel happy studying my own topic and learning more about it" with a level of ($\bar{x} = 3.16$). This is followed by the item "IS is useful for solving community problems, uncovering new issues ($\bar{x} = 3.14$). Next is "IS provides an opportunity to design my personal learning" ($\bar{x} = 3.09$), then "IS helps me to find and solve a real-world problem" with a level of ($\bar{x} = 3.07$), and "IS provides HASSS challenge in the learning process" ($\bar{x} = 3.06$). Next highly rated item is "HASSS learn a lot by engaging in IS" ($\bar{x} = 3.05$). The least ranked items in the table were "HASSS is responsible for the direction and outcome of learning" ($\bar{x} = 2.85$), and "IS facilitates autonomy among students in the selection of content." ($\bar{x} = 2.68$).

RQ 3: What is the relationship between ET programmes (TI and IS) and academic achievement among HASSS in Owerri, Imo State?

Table 3: Zero Order Correlation showing the Relationship between ET (TI and IS) and Academic Achievement of HASSS

	Academic achievement	**Tiered instruction**	**Independent study**
Academic achievement	1		
Tiered instruction	.285*	1	
Independent study	.254*	.427*	1
Mean ($\bar{x}$)	70.98	56.21	59.52
S.D	8.398	9.564	7.764

** Correlation is significant at the 0.05 level*

Table 3 shows the relationship that exists between ET programmes (tiered instruction and independent study) and academic achievement of HASSS. The mean of academic achievement is 70.98, the standard deviation of academic achievement is 8.398, the mean of tiered instruction enrichment programme is 56.21, while the standard deviation of tiered instruction is 9.564, and the mean of independent study enrichment programme is 59.52, while the standard deviation of independent study enrichment programmeis 7.764.The result indicates that HASSS' academic achievement positively correlated with TI programme (r=.285) and independent study (r=.254). This implies that ET programmes (TI and IS) had significant relationship with HASSS' academic achievement.

Discussion of Findings

The finding revealed that HASSS' academic achievement positively correlated with ET programmes. This implies that ET programmes (tiered instruction and independent study) had direct relationship with HASSS' academic achievement. All of the items had mean scores that were higher than the criterion mean, which makes this finding conceivable. This means that the measure of tiered instruction enrichment programme among HASSS in Owerri, Imo State is high as against the threshold of criterion mean set in this study. These quantitative results are in consonance with the responses of the teachers with respect to in-depth interview question 2. The teachers posited that the following relationship exists between ET (tiered instruction and independent study) programmes and academic achievement among HASs in Owerri, Imo State.

The HASSS develop a sense of commitment and self-involvement in their studies when they are exposed to enrichment and SM programmes. Tiered instruction allows HAS SS to work with appropriately challenging tasks. Tiered instruction makes students to work hard to bring out the best potential in them. Tiered instruction helped in making teaching and learning easy as it reduces the stress of handling students with different skills and abilities. Independent study or working on their own brings out the competitive spirit to face other students. With this strategy, students strive to be at their best. It fosters the spirit of self-dependency which promotes school achievement and adjustment. With this, HASs are capable of covering many topics as they can on their own. It has helped teachers to be able to cover the scheme of work in less than 5 weeks.

This finding is consistent with those made by Al-Zoubi (2014), who found that academic achievement of gifted and talented students can be improved through enrichment programming. In order to meet the unique needs of high-ability students in a variety of areas, such as cognitive, affective, creative, and psychomotor development, enrichment programmes modify and supplement the conventional curriculum. Research by Bonney, Amoah, Micah, Ahiamenyo, and Lemaire (2015) also emphasises the value of enthusiastic teachers as mentors. In addition to adapting to different learning styles and classroom dynamics, these educators also show their efficacy by using cutting-edge classroom management strategies that promote a secure, resourceful, and productive learning environment.

Conclusion

This study investigated tiered instruction and independent study as predictors of academic achievement of High-Ability Secondary School Students (HASSS) in Imo State, Nigeria. The findings revealed a significant positive correlation between tiered instruction, independent study, and academic achievement, indicating that tailored instruction and student-centered learning approaches can enhance academic excellence among HASSS. By implementing tiered instruction and providing opportunities for independent study, educators can cater to the unique needs and abilities of high-ability students, fostering autonomy, self-motivation, and critical thinking.

Recommendations

As a result of findings from this study, the below were made as recommendations

1. Teachers of HASSS should employ independent study and tiered instruction in teaching and learning process of HASSS.
2. Curriculum planners should utilise the findings of this study in curriculum planning and modification for HASSS.

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