GAS Journal of Education and Literature (GASJEL)

Volume 3 | Issue 6, 2026 Homepage: https://gaspublishers.com/gasjel-home/ ISSN: 3048-6777

Effect of Age on the Academic Performance of Junior Secondary Students in Osogbo Local Government, Osun State

Banke Joy Akinyemi, Safiriyu O. Adeyemo

Faculty of Education, National Open University of Nigeria

Received: *10.05.2026* | ***Accepted:*** *21.05.2026* | ***Published:*** *06.06.2026*

***Corresponding Author:** Safiriyu O. Adeyemo

DOI: *10.5281/zenodo.20569120*

Abstract **Original Research Article**

This study investigated the effect of age on academic performance of Junior Secondary School Students in Osogbo Local Government area of Osun state. The study was expo facto research deign because 2025 BECE result was collected from documentary record of the 14 Junior Secondary Schools selected. Simple random technique was used for the sampled schools. Data collected was analyzed using mean, standard deviation and t-test inferential statistics. The result showed that: there is no significant difference between the expected age at which student gain admission into junior secondary school and their academic performance, there is significant difference between the actual age student gain admission into junior secondary school and their academic performance, there is no significant difference in the academic performance of both the younger and older students of junior secondary school, there is no significant difference in academic performance of student of different ages when compared except for ages 12 vs 14, 12 vs 15, 13 vs 14, 13 vs 16, 14 vs 16 and 15 vs 16. Recommendations were made for further studies.

Keywords: academic performance, age differences, junior secondary school students, Basic Education Certificate Examination, educational achievement.

Introduction

Education is of paramount importance in Nigerian society, viewed as the principal avenue for national development. Notwithstanding these laudable attributes linked to academic success, research (Ugoji 2008; Egbule 2004) has revealed a decline in student performance. Ebenuwa (2010) posits that socio-psychological elements, including self-esteem, test anxiety, attentional deficits, stress and task difficulty, might favorably affect students' academic performance.

Certain individuals have observed a correlation between age and cognitive as well as academic capabilities. As individuals mature, their cognitive and academic competencies often enhance. Nevertheless, certain data suggested the contrary—that as individuals age, their cognitive and academic capabilities diminish. Recent studies have affirmed that cognitive capacities continue developing into early adulthood, particularly when supported by adequate educational and environmental stimulation (Knežević, 2024). Studies by Von de Embse and Childs (1979) and Frerichs et al. (1981) demonstrated that senior students achieved superior performance compared to their younger peers.

Establishing the existence of a large relative age effect is crucial, since its presence may require alterations to the educational system to prevent the admission of excessively young pupils into junior secondary institutions. Research indicates that older students often attain superior academic achievement due to maturity and relative age advantages (Allen & Barnsley, 1993) and there is broad public acknowledgment of the relative age impact.

Research framework

The Merriam-Webster Dictionary defines age as the duration in life during which a specified qualification, power, or ability is attained or terminated, or the length of existence from inception to a designated moment in time. It is a duration in which a central figure or pivotal element possesses power. This era in history was characterized by the considerable popularity of a specific object.

Types of Age

Chronological Age: This is the most prevalent and direct method for assessing age. It is the duration elapsed from birth, quantified in years, months, and days. Chronological age is utilized for legal purposes, including eligibility for voting, driving, or retirement (WHO, 2024; UN, 2024;)

Biological Age: This is also known as physiological age. It illustrates an individual's health and growth in relation to their chronological age. An individual's biological age may be affected by lifestyle, genetics, and environmental factors (Fong *et al.*, 2026).

Psychological Age: This relates to a person's level of psychological, emotional, and cognitive development, regardless of their chronological age. A person whose psychological age significantly differs from their chronological age may view themselves as older or younger than their actual age (Kuper and Marmot, 2023).

Social Age: An individual's social age is defined by society expectations and the associated actions typical for that age. It evaluates an individual's timeliness or tardiness in reaching critical social milestones. (United Nations Population Division, 2024).

Functional Age: This is a comprehensive and expertly assessed statistic that integrates an individual's biological, psychological, and social ages with their chronological age (Huang and Ying, 2024).

Piaget Theory of Developmental Stages

- Sensorimotor, ages birth to 2 years old: Kids learn about the world at this stage by employing their senses of hearing, seeing, touching, and reaching. This helps them learn that objects exist and helps them grow quickly.
- Preoperational, ages 2 to 7 years old: Kids can think without reasoning, but it helps them understand the world around them better.
- Concrete Operational, ages 7 to 11: Includes both reasonable and evolved thoughts. This stage also helps kids learn how to organize their ideas and figure out the purpose of things.
- Formal Operational, ages 11 and up: At this point, people can think for themselves, come up with ideas in different situations, and have opinions that are backed up. This is the most critical stage of growth for learning as an adult.

Education

The definition of education may differ according on context; nonetheless, most individuals agree that it entails the acquisition of new knowledge, skills, beliefs, and views.

The nature of education, its purposes, and its divergence from indoctrination through the promotion of critical thinking remain subjects of continuous discussion. These disputes affect the approaches employed to identify, evaluate, and improve diverse educational modalities. In summary, education teaches children to engage with others by conveying cultural values and conventions, while equipping them with the skills required to become productive members of society. Thus, it promotes

economic development and elevates individuals' consciousness of national and global issues. Well-structured institutions are essential to education. Governments impose laws on schools about course start dates, curriculum content, and mandatory student attendance days. UNESCO and many international organizations have substantially aided in guaranteeing universal enrollment of children in primary education. Various factors can affect the efficacy of education. Psychological elements encompass motivation, cognitive ability, and personality characteristics. Discrimination is often linked to social characteristics including race, gender, and financial status. Additional characteristics include availability to instructional technology, educator skill, and the degree of parental involvement.

Education studies is the principal academic field focused on the analysis of education. It analyzes the fundamental nature of education, its objectives, its effects on persons, and methods for enhancement. The field of education studies encompasses various disciplines, including philosophy, psychology, sociology, and economics of education. It also explores subjects including the history of education, educational approaches, and comparative education. Individuals have conventionally perceived it as the transfer of information from one generation to the next, usually within educational institutions or other formal settings. It includes both the instructional content and the methodologies utilized to enhance students' understanding and retention.

Academic Performance

Academic achievement pertains to the degree to which a student, educator, or institution has fulfilled their educational goals, whether short-term or long-term. Academic achievement is evidenced by the successful completion of educational milestones, such the acquisition of a high school diploma or a bachelor's degree.

Examinations and continual assessments are commonly utilized to gauge academic performance; however, there is no agreement on the best effective method or which elements are paramount: procedural knowledge, such as skills, or declarative knowledge, such as facts. The findings about the reliability of individual components in predicting academic performance are equivocal; aspects such as exam anxiety, environment, motivation, and emotional states must be included when formulating models of educational achievement.

Factors Affecting Academic Performance

Individual Difference: Differences in academic achievement among people are associated with variations in intelligence and personality factors (Von *et al*., 2011, Komarraju *et al*., 2011). Students who get higher scores on IQ testing and demonstrate elevated levels of conscientiousness, linked to effort and motivation for success, are likely to flourish academically. A recent meta-analysis revealed that mental curiosity, assessed via consistent intellectual engagement, significantly impacts academic achievement alongside intelligence and conscientiousness (Von *et al*., 2011). As students' progress to first grade, their semi-structured home learning environment evolves into a more systematic educational framework. Early academic performance predicts later academic success (Bossaert *et al*., 2011).

Non-cognitive Factors: Non-cognitive traits or abilities encompass a collection of attitudes, actions, and tactics that facilitate academic and professional achievement (Gutman *et al.*, 2013). These include academic self-efficacy, self-regulation, motivation, expectation and goal-setting theories, emotional intelligence, and perseverance. Sociologists Bowles and Gintis coined the term in the 1970s to emphasize elements beyond cognitive test scores.

Motivation: Motivation serves as the fundamental rationale for an individual's behavior. Research indicates that individuals exhibiting outstanding academic performance, motivation, and tenacity are more inclined to pursue intrinsic goals rather than extrinsic ones (Gutman *et al*., 2013). Moreover, persons determined to enhance their previous or future performance generally achieve superior academic results compared to their less motivated peers (Friedman *et al*., 2010; Duckworth *et al*., 2012).

Self-control: In an academic context, self-control is associated with self-discipline, self-regulation, delayed gratification, and impulse management.

Baumeister, Vohs, and Tice characterized self-control as "the capacity to manage one's responses, particularly to align with standards such as ideals, values, morals, and societal expectations, thus facilitating the achievement of long-term objectives" (Baumeister et al., 2007).

Empirical Studies

An essential consideration for educators when choosing a teaching method is the students' age (Alaka, 2011). In their 2009 study on adolescent maturity and brain development, Johnson, Blum, and Gied observed a correlation between cognitive progress and chronological age. This suggests that cognitive capacity is either commensurate with or dependent on age. The student's understanding and analytical skills enhance with maturity.

The National Policy on Education stipulates that children should begin early childhood education (nursery school) at age 3 and fundamental education (primary school) at age 6. Nevertheless, parents often want their children beginning education at an earlier age for socio-economic reasons. Educators (Ede, 2004; Grissom, 2004) are also debating the ideal age for youngsters to begin their education. The inquiry pertains to the appropriateness of enrolling children under six years of age in foundational education. Should educational institutions let children under the age of six into elementary education?

Age is typically defined as the duration of an individual's existence in relation to time. Egbule and Ugoji (2004) assert that age and maturity significantly affect the cognitive development of school-aged children. Scholars contend that psychologists state that learning achievement escalates with development. The National Policy on Education (1981), as referenced by Ossia (2013), delineates the several phases of education—pre-primary, primary, post-primary/secondary, and post-secondary—to demonstrate the potential impact of age on the learning process. Okolie (2017) asserted that age substantially impacts pupils' academic performance. Academic achievement denotes students' performance and success in their educational endeavors and courses (Sharma, 2013). Ezenwosu and Nworgu (2013) contend that academic achievement is typically evaluated through classroom activities, assignments, continuous assessments, and both internal and external tests. An ongoing discussion persists concerning the extent to which a learner's age or cognitive development impacts their academic achievement. DaSilva asserts that cognitive maturation and, by extension, age are critical determinants in identifying the most suitable educational and learning methodologies. She also indicated that older pupils are more predisposed to utilize deep learning strategies characterized by active involvement and self-motivation, which generally lead to enhanced learning results.

Yesil and Jones (2012) did a comparable study and discovered that older children exhibited superior mathematical competence compared to their younger peers. This indicates that younger students are more prone to underachieving in mathematics. In contrast, Mendez, Kim, Ferron, and Woods (2015) noted in their study that certain older students exhibited inferior performance relative to their younger peers.

Fraillon *et al.*, (2020) investigated the influence of age on student engagement, academic performance, and retention regarding the instruction of computer-in-education ideas in South-South Nigeria. The study employed a pretest-posttest, non-randomized quasi-experimental, and descriptive design. The inquiry was directed by three research questions and three hypotheses. The research population comprised 2,873 undergraduate students (200, 400L). The cohort comprises 235 undergraduate students selected via a multi-stage selection procedure. The tools utilized for data collection were the Learning Platform Self-Engagement Scale (LPSES), the Computer-in-Education Performance Test (CPT), and the Computer-in-Education Retention Test (CRT). The LPSES exhibited a dependability coefficient of 0.87, ascertained via the Cronbach's Alpha formula. The CPT showed a reliability coefficient of 0.86, while the CRT had a reliability coefficient of 0.84, both calculated using the Kuder-Richardson 21 formula. Descriptive statistics, encompassing metrics such as the mean

and standard deviation, were utilized to assess the gathered data. Analysis of Covariance (ANCOVA) was utilized to assess the hypotheses at a significance threshold of 0.05. The results revealed that students aged 30 to 33 had the highest levels of engagement with the instructional methods. Pupils aged 26 to 29 exhibited the highest academic performance. Students aged 34 or older exhibited prolonged enrollment compared to their counterparts in other age groups. The research suggested that e-tutors and lecturers ought to formulate engagement tactics that are effective for all age demographics, as age does not substantially affect students' involvement levels. This will guarantee that all pupils may participate and interact.

Research Methodology

Research Design

The study utilized an ex-post-facto research design, gathering the findings of the 2025 Basic Examination of Junior Secondary Schools from chosen institutions within the Osogbo Local Government area. This methodology was appropriate given the data utilized predated the study's hypothesis. Nworgu (1991) stated that researchers employing an ex-post-facto study design endeavor to associate pre-existing observations with certain factors as causal agents, hence utilizing non-manipulative independent variables.

Targeted Population

Population of this study were the students in all Junior Secondary Schools in Osogbo local government area of Osun State.

Sample and Sampling Technique

The population consisted of junior secondary students from secondary schools within the Osogbo local government area. The study's sample consisted of 280 J.S.S. 3 students from fourteen secondary schools in the Osogbo Local Government Area of Osun State, selected by a simple random approach. The following is a list of the sample schools.

Research Instrument

The principals of each of the fourteen schools collected the 2025 Basic Education Certificate Examination for each school. The information gathered includes the age and grade of each subject that was tested. The total percentage of all subjects was compiled as data for analysis, addressing research questions and testing hypotheses at a 0.05 level of significance for the study.

The instrument employed for data collection was a pre-existing dataset, sourced from school records in alignment with the study's aims. The data gathered encompasses the name, age, sex, and grade for the 2025 BECE results.

Data Collection

The research selected schools personally and sought permission from the principal of the schools. The data collected were retrieved from the school archive. The research instrument consisted of pre-existing data sets acquired from the school archives for each student, which were duplicates of the original results provided to each student. The Osun State Examination Board had already checked the question.

Method of Analysis

Mean, standard deviation, and t-test inferential statistics were used to look at the data that was obtained.

Results.

Hypothesis 1: There is no significant difference between the expected age at which student gain admission into junior secondary school and their academic performance.

Table 1: Effect of Age on Academic Performance between Age 13 and Other Ages

Age	N	mean	Standard deviation	Degree of freedom	t-stat	p-value
13	49	53.71	11.33	193	-1.29	0.199
Others	146	56.28	12.81			

The P-value is greater than 0.05, therefore fail to reject the null hypothesis. There is no statistically significant difference in academic performance between 13-year olds and student of other ages at 5% significant level.

Hypothesis 2: There is no significant difference between the actual age student gain admission into junior secondary school and their academic performance.

Table 2: Effect of Age on Academic Performance

Age	Sample size (n)	Mean	Standard deviation	Sum of square	Degree of freedom	T-statistic	P-value
11	2	65.28	1.57	2983.61	6	7.80	$9.18x10^{8}$
12	33	60.44	9.3				
13	90	56.63	9.21				
14	59	52.62	7.05				
15	44	54.65	8.49				
16	49	61.54	4.74				
17	3	52.59	1.70				

The P-value (9.18×10^{8}) is lower than 0.05 threshold, indicating that the result reject the null hypothesis at the 5% significant level. There is significant difference in academic performance across the age group. The mean score varies and these difference are statistically significant.

Hypothesis 3: There is no significant difference in the academic performance of both the younger and older student of junior secondary school

Table 3: Effect of Age on Academic Performance of Older and Younger Students.

Age	N	Mean score	Standard deviation	Degree of freedom	T-statistic	P-value
11-13	69	54.27	11.63	149	-0.80	0.426
14-17	126	55.72	12.62			

The P-value (0.426) I greater than 0.05 indicating that we fail to reject the null hypothesis. There is no statistically significant difference in academic performance between younger student (age 11-13) and older student (14-17) at the 5% significant level. The mean core for older student is lightly higher than for younger student but this difference I not statistically significant

Hypothesis 4: There is no significant difference in academic performance of different ages when compared.

Table 4: Effect of Age on Academic Performance Pair Wise

Comparison	Mean difference	P-value	Significant(P<0.05)
11vs12	-5.12	0.9752	No
11 vs13	-8.93	.7054	No
11 vs14	-12.94	0.2705	No
11 vs 15	-10.91	0.4886	No
11 vs 16	-4.01	0.9927	No
11 vs 17	-12.96	0.5633	No
12 vs13	-3.81	0.2270	No
12 vs 14	-7.82	.0002	Yes
12 vs 15	-5.79	0.0296	Yes

12 vs 16	1.10	0.9963	No
12 vs 17	-7.85	0.6632	No
13 vs 14	-4.01	0.0460*	Yes
13 vs 15	-1.98	0.8272	No
13 vs 16	4.91	0.0108*	Yes
13 vs 17	-4.04	0.9778	No
14 vs 15	2.03	0.8625	No
14 vs 16	8.92	0.0000*	Yes
14 vs 17	-0.03	1.0000	No
15 vs 16	6.90	0.0008*	Yes
15 vs 17	-2.05	0.9995	No
16 vs 17	-8.95	0.4921	No

Discussion of the findings

This study reveals that the required age for entry into Junior Secondary School in Nigeria is 10 years. The largest number of children (90) in J. S. S. 3 are 13 years old, suggesting they enrolled at the age of 10. A growing number of youngsters are entering in school at the age of 11. Table 1 demonstrated that there was no substantial disparity in the impact of age on the academic performance of 13-year-old children relative to their counterparts. This conclusion is corroborated by Obih and Udosen (2016), who claimed that learners must be sufficiently prepared and motivated for academic achievement. Table 2 demonstrated that age significantly influenced the academic performance of junior secondary school pupils. This conclusion is corroborated by Akpan (2013), who asserted that student age affects teaching and learning, and by Shrestha (2019), who noted that learning readiness is attained when a student is physically, cognitively, and emotionally equipped for learning. Okolie (2017) also demonstrated that age greatly affects pupils' academic performance. The average score diminished as persons aged. Students aged 11 attained the highest average score, while students aged 14 and 17 registered the lowest average marks. The youngest pupils attained the greatest average score, corroborated by Mendez *et al*. (2015), who observed that certain older children underperformed relative to their younger counterparts.

Students in J.S.S. 3 aged 14, 15, 16, or 17 generally have a higher mean score than their younger peers. Yesil and Jones established that older children exhibited superior mathematical proficiency relative to their younger counterparts, hence corroborating this claim.

The performance of the oldest students (17 years old)

and the youngest pupils (11 years old) is very similar. At age twelve, performance exceeds that of ages fourteen and fifteen; at age thirteen, performance surpasses that of age fourteen but is inferior to that of age sixteen.

Conclusion

The study concluded that:

1. There is no substantial disparity between the anticipated age of children entering junior secondary school and their academic achievement.
2. A notable discrepancy exists between the age at which pupils begin junior secondary school and their academic performance.
3. There is no notable disparity in the academic performance of junior secondary school students among different age cohorts.
4. There is no notable disparity in academic achievement among pupils of varying ages, with the exception of comparisons between ages 12 and 14, 12 and 15, 13 and 14, 13 and 16, 14 and 16, and 15 and 16.

Recommendations

Based on the finding of this research on effect of age on academic performance of junior secondary school students, this research therefore recommends that:

1. Academically proficient young pupils should be allowed to enroll in junior secondary school.
2. To mitigate the age disparity among junior secondary school students, it is essential to furnish them with a supportive academic atmosphere.
3. The education board must comply with the regulation stipulating that students must be a minimum of 10 years old to enroll in junior secondary school.

References

Aïda M. Alaka. (2011). *Learning Styles: What Difference Do the Differences Make?* **Charleston Law Review, 5**(1), 133–172

Akpan, C. P. (2013). *Age and its influence on students' learning outcomes in secondary schools in Nigeria*. **International Journal of Education and Research, 1**(8), 1–10.

Allen, J., & Barnsley, R. (1993). Streams and tiers: The interaction of ability, maturity, and training in systems with age-dependent recursive selection. *The Journal of Human Resources*, *28*(3), 649–659.

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). *The strength model of self-control*. **Current Directions in Psychological Science, 16**(6), 351–355.

Bossaert, G., Doumen, S., Buyse, E., & Verschueren, K. (2011). *Predicting children's academic achievement after the transition to first grade: A two-year longitudinal study*. **Journal of Applied Developmental Psychology, 32**(2), 47–57.

Duckworth, A. L., Quinn, P. D., & Tsukayama, E. (2012). *What No Child Left Behind leaves behind: The roles of IQ and self-control in predicting standardized achievement test scores and report card grades*. **Journal of Educational Psychology, 104**(2), 439–451.

Ebenuwa-Okoh, E. E. (2010). Influence of age, financial status, and gender on academic performance among undergraduates. *Journal of Psychology and Education Research*, 18(2), 99–110.

Ede, A. (2004). *Is My Child Really Too Young for Kindergarten?* **Childhood Education, 80**(4), 207–208. https://doi.org/10.1080/00094056.2004.10522625

Egbule, J. F. (2004). *Fundamentals of educational psychology*. Whyte and Whyte Publishers.

Egbule, J. F., & Ugoji, S. O. (2004). *Practical Guide to Effective Teaching Methods and Strategies*. Owerri: Nigeria: Versatile Publishers.

Ezenwosu, S. U., & Nworgu, L. N. (2013). *Assessment of students' academic achievement in secondary schools: Continuous assessment approach*. **Journal of Education and Practice**, 4(10), 55–60.

Fong, S., Koh, W. P., & Gruber, J. (2026). Reframing biological age as risk-equivalent age. *Nature Aging, 6*, 2–5.

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Duckworth, D. (2020). *Preparing for life in a digital world: The ICILS 2018 international report*. Springer

Frerichs, A. H., & Eldersveld, P. J. (1981). *Predicting successful and unsuccessful developmental mathematics students in community colleges*. Paper presented at the Annual Meeting of the American Educational Research Association, Los Angeles, California. ERIC Document ED203955.

Friedman, R. S., Deci, E. L., Elliot, A. J., Moller, A. C., & Aarts, H. (2010). *Motivational synchronicity: Priming motivational orientations with observations of others*. **Motivation and Emotion, 34**(1), 34–38

Grissom, J. B. (2004). *Age and Achievement*. **Education Policy Analysis Archives, 12**(49), 1–42. https://doi.org/10.14507/epaa.v12n49.2004

Gutman, L. M., & Schoon, I. (2013). *The impact of non-cognitive skills on outcomes for young people: A literature review*. London: Education Endowment Foundation

Johnson, S. B., Blum, R. W., & Giedd, J. N. (2009). *Adolescent maturity and the brain: The promise and pitfalls of neuroscience research in adolescent health policy*. **Journal of Adolescent Health, 45**(3), 216–221

Knežević, M. (2024). Differences in the efficiency of cognitive control across young adulthood: An ERP perspective. *Brain Sciences, 14*(4), 347.

Komarraju, M., Karau, S. J., Schmeck, R. R., & Avdic, A. (2011). *The Big Five personality traits, learning styles, and academic achievement*. Educational Psychology **Personality and Individual Differences**, 51(4), 472–477.

Kuper, N., & Marmot, M. (2023). Subjective age and health: A growing area of gerontological research. *The Journals of Gerontology: Series B, 78*(5), 821–829.

Mendez, J. L., Kim, E. S., Ferron, J. M., & Woods, B. K. (2015). *Age-related differences in academic achievement trajectories among school-aged children*. **Journal of School Psychology, 53**(3), 201–215

Nworgu, B. G. (1991). *Educational research: Basic issues and methodology*. Ibadan: Wisdom Publishers Limited.

Okolie, U. C. (2017). *Influence of age on students' academic performance in secondary schools in Nigeria*. **International Journal of Educational Research**, 16(2), 45–52.

Sharma, R. K. (2013). *Educational psychology*. Delhi: Goyal Publishers.

Shrestha, M. (2019). *Learner readiness and its role in effective learning in higher education*. **Journal of Education and Practice, 10**(12), 45–52.

Ugoji, F. N. (2008). *The impact of counseling on the academic performance of secondary school students* (Unpublished research work).

United Nations. (2024). *Ageing*. https://www.un.org/en/global-issues/ageing

Von de Embse, T., & Childs, B. (1979). *Effects of chronological age on academic performance among university students*. Unpublished study, Midwest State University.

Von Stumm, S., Hell, B., & Chamorro-Premuzic, T. (2011). *The Hungry Mind: Intellectual Curiosity Is the Third Pillar of Academic Performance*. **Perspectives on Psychological Science**, 6(6), 574–588.

World Health Organization. (2024). *Ageing*. https://www.who.int/ageing/en

Yeşil, R., & Jones, M. G. (2012). *The effect of age differences on students' mathematics achievement*. **Educational Studies in Mathematics, 81**(2), 245–262

Zili Huang and Kejun Albert Ying. (2024). *Not just a number: Science is redefining how we understand ageing*. World Economic Forum. Published November 1, 2024. Available at: World Economic Forum article