International Journal of Social and Development Concerns

ISSN 2524-1478 (Online)

Vol. 28 | Post COVID-19 Recovery and Sustainable development
Vol. 28 Article 5 | September 11, 2025

Influence of Gestational Age on the Learning Styles of Children Aged 2 – 13 at Braeburn Nanyuki International School, Kenya

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Cite as: *Otieno, J. A., Obura, C., & Wambiya, P. (2025). Influence of Gestational Age on the Learning Styles of Children Aged 2 – 13 at Braeburn Nanyuki International School, Kenya. International Journal of Social and Development Concerns, 28(5), 57–75.*
https://doi.org/10.5281/zenodo.17103384

Abstract: *The study aimed to explore the influence of gestational age on a child's learning style in Nanyuki International School. The study focused on the specific learning styles adopted by children between ages 2 - 13 born preterm, full-term, and post-term, and how these styles differ and correlate within these gestational ages, with a focus on children at Braeburn Nanyuki International School in Kenya. It was guided by the following research questions: What are the preferred learning styles of learners at Braeburn Nanyuki International School? The study was anchored on Howard Gardner's Multiple Intelligence theory. It employed a mixed-methods research design and specifically utilised the convergent parallel approach combining the phenomenology and cross-sectional design. The target population for this study included 238 children attending Braeburn Nanyuki International School in Kenya, whose age range is between 2 -13 years as well as their 12 teachers and 168 parents. This study utilised both stratified random sampling and purposive sampling technique with a 10% sample size which was 24 children with 8 from every gestational age. Data was collected using an observation guide, VARK model questionnaire and interview guide. The reliability of the instruments was determined using the Cronbach's alpha coefficient for the standardised VARK questionnaire whilst triangulation, member checking and peer review were used for interview guides. Data collected using qualitative approach was analysed using thematic analysis whereas quantitative data was analysed using descriptive statistics. Ethical issues in this study were addressed by seeking the appropriate approvals before carrying out the study. The findings of this study revealed that learners had a preference in a variety of learning styles with kinaesthetic and visual learning as the most significant styles. It was evident that the gestational ages of learners influenced both their cognitive and behavioural abilities. The children born preterm and post-term displayed the need for early intervention to aid them develop a variety of preferred learning styles. The research concluded that a child's preferred learning styles were influenced by both the cognitive and behavioural outcomes that were shaped by their distinctive gestational ages. The study recommended that teachers should employ adaptive teaching by offering learners with a range of teaching styles to cater for every child's individual learning preference needs.*

Keyword: *Gestational Age, Learning Styles, Children age, Cognitive Development, Visual, Kinaesthetic, Auditory*

1.1 Background of the Study

A child's gestational age at birth can have long term consequences and can strongly influence on their early development. According to the World Health Organisation (WHO) (2018), the gestational age is defined as the time between a woman's last menstrual period (LMP) to the child's birth, which can be expressed in completed days or weeks. In completed weeks, it is categorised in the following ways:

preterm (before 37 weeks), full-term (37-42 weeks), and post-term (beyond 42 weeks). The variations in gestational ages may be linked to a variety of health and developmental consequences. These consequences include physical health problems, cognitive impairments, and abnormalities in behaviour and learning (WHO, 2018).

Preterm birth has often been seen as the leading cause of neurodevelopmental, cognitive and behavioural impairments throughout one's life worldwide (Boardman, et al., 2020). This has been estimated to affect 10.6% of child births around the world including Kenya and equating it to 14.84 million births every year (WHO, 2018). Premature birth increases the risk of developmental problems in children, including emotional and social issues, difficulties with attention, and learning impairments (Aarnoudse-Moens et al., 2009; Bhutta et al., 2002). Preterm babies are more likely to have learning disabilities, attention problems, and language development issues, according to a wealth of research conducted in high-income nations like the USA and the UK. They are also at a greater risk for auditory and visual impairment, speech delays and respiratory complications.

According to Hua et al. (2022), less studies have been done around the effects of gestation on neurodevelopmental delays within the full-term range, which refers to births occurring between 37 weeks and 41 weeks. Studies have also indicated that a longer gestation period is often associated with better psychomotor and cognitive development (Rose, et al. 2013).

On the other hand, research on post-term births have suggested that the cognitive abilities that were improved at the term age which is defined as births occurring between 37 weeks and 41 weeks during the gestation period may begin to decrease when approaching post term age (Noble, et al. 2012). It has always been assumed that the impacts of term and post term births on a child's development could be homogenous; however, an increased risk in significant cognitive and behavioural delays have been noted in both gestational ages (El Marroun, et al. 2020). According to recent research, longer gestations often benefit development up to a limit, beyond which developmental gains may stagnate or decline, and even full-term and post-term babies may exhibit differences in cognitive and behavioural outcomes (Rose et al., 2013).

Research conducted in Sub-Saharan Africa has mostly examined the cognitive scores, physical growth, and survival rates of preterm infants, frequently ignoring the behavioural and educational ramifications. Perumal et al. (2021), for instance, discovered a connection between gestational age and teenage neurocognitive outcomes in Tanzania; however, they did not investigate learning preferences. Similarly, poor neurodevelopmental outcomes in preterm infants were noted by Mansur et al. (2022) in Nigeria, but they did not investigate how this affected classroom learning experiences. Research on the relationship between gestational age and learning behaviour is scarce in Kenya. Onyango's (2004) study found that students' preferences for perceptual learning varied, but it made no connection between these preferences and the time of birth. Given the growing focus on inclusive, learner-centred education in varied academic settings, such as foreign schools, this disparity is significant.

It is very crucial to understand that children have different learning styles depending on their gestational ages. Manolis, et al. (2013) defines learning styles as the process with which individuals perceive and process information. These include; converging (doing and thinking), diverging (feeling and watching), assimilating (watching and thinking), and accommodating (doing and feeling). Learning styles can also

be referred to as the varied ways in which individuals prefer to process and understand knowledge. These styles can be visual, aural, kinaesthetic, or any combination of the above ((Honigsfeld & Dunn, 2009)). Fleming (2012) has also defined learning styles through the presentation of a VARK model which describes individuals preferred sensory approach for absorbing information. These styles are visual (learning by using charts, diagrams and pictures), auditory (learning by listening to spoken information, discussions or lectures), reading and writing (it involves text-based learning) and kinesthetic (learning through hands-on activities and practical examples). Acknowledging these inclinations might improve a child's educational success. The learning preferences of infants born at different gestational ages have been the subject of recent research in the US and NZ, which have shown several intriguing traits (Fleming, 2012).

Fleming (2019) explains that visual, auditory, and kinaesthetic preferences are examples of learning styles, which are essential for tailoring instructional strategies to individual needs. The way we learn and the age of birth have a complex and nuanced relationship. Neurodevelopmental outcomes associated with preterm birth have been found to influence learning style preferences (Laxman et al., 2020). According to Charkaluk et al. (2021), preterm children are more likely to experience difficulties with auditory sequential learning and recall, which causes them to prefer visual and kinaesthetic learning modalities. Because their brains grow more normally, full-term children can use a range of learning strategies (Chen et al., 2020). Even while post-term kids are usually on par with their full-term peers, they could be more vulnerable to illnesses such macrosomia, which could subtly affect their cognitive development and preferred learning styles (Tavares et al., 2021).

Infants who are born at different gestational ages face distinct learning challenges that influence their school experiences. Preterm children sometimes face challenges in normal academic settings due to their executive function, attention, and language skills (Burnett et al., 2020). According to Laxman et al. (2020), these deficits may manifest as problems with language comprehension, sustained attention, and task completion, requiring specialised therapies. Although they may still have individual differences in cognitive and behavioural development, full-term children frequently face less learning challenges (Santos et al., 2021). Due to delivery complications, post-term children may face challenges including increased risk of developmental delays, which can hinder their learning and call for early identification and treatment (Johnson & Marlow, 2022).

The environment of learning and academic achievement are significantly impacted by the behavioural and cognitive outcomes associated with gestational age. Classroom problems can arise from preterm children's regular struggles with uninterrupted focus, impulse regulation, and social connections (Charkaluk et al., 2021). To effectively manage their exceptional needs, these kids could need individualised assistance and accommodations (Barrett et al., 2020). Even while full-term kids with more typical developmental paths frequently do well in cognitive and behavioural domains, they still need individualised care to get the most out of their education (Chen et al., 2020). Although post-term children often behave similarly to their full-term peers, their delivery conditions may cause minor alterations in their cognitive flexibility and problem-solving skills (Tavares et al., 2021).

According to research by Johnson (2007) at Illinois, preterm babies frequently have lower IQ scores than full-term babies and have difficulties with simultaneous information processing and nonverbal reasoning. Research conducted by Aarnoudse-Moens et al (2009) revealed that very preterm children

tend to show moderate to severe deficiency in their academic excellence, attention and behavioural issues. Although research has shed light on the impact of behavioural and cognitive difficulties linked to different gestational ages, very little focus has been placed on how these differences show up as distinct learning styles in Kenya or within the Braeburn Group of Schools.

It has been observed at Braeburn Nanyuki International School that some children have distinct preferences in the way they process and react to the content; however, there hasn't been any research done across the Braeburn schools to find out if gestational age affects these learning preferences. The diversity of children in the school offers a great chance to investigate how gestational age may influence distinct preferences for learning.

Despite the increased interest in adaptive teaching, differentiated learning and inclusive education on a global scale, there is a clear lack of locally conducted studies on how biological characteristics, including gestational age, may influence learning preferences in Kenyan International Schools. This research aims to close this gap by investigating the correlation between a child's gestational age and their learning style through creating inclusive and differentiated teaching and learning methods to meet the individual needs of every learner.

1.2 Research Questions

The following research question guided this study:

i. What are the preferred learning styles in Braeburn Nanyuki International School?

1.3 Theoretical Framework

This study was anchored on Multiple Intelligence theory proposed by Howard Gardner (1983) states that intelligence does not consist of a singular fixed trait, but it is made up of several different traits. Intelligence includes multiple independent constructs and not just a single unitary construct (Gardner, 1983). This theory distinguishes nine distinct intelligences that are relatively independent of each other (Ravihchandran & Toran, 2025). The multiple intelligence theory aligns with this study on the basis that the learning styles of children vary because of their neurodevelopment variations relating to gestational age. Due to the difference in gestational ages, children may lean towards distinctive intelligences or learning styles (Taraves et al., 2021). The theory provides a deeper, more comprehensive framework for analysing learning styles, considering the cognitive, emotional, and social aspects of intelligence in addition to sensory channels. These characteristics may change depending on the brain's developmental trajectory and the gestational age. The concept that schools should modify their teaching strategies to fit the needs of every child rather than the other way around is supported by Gardner's theory, which promotes differentiated and adaptive education. Teachers at Braeburn Nanyuki International School can create activities that accommodate a variety of abilities by considering the fact that intelligence has multiple dimensions, particularly for children with developmental delays or distinct gestational histories.

1.4 Review of Related Literature

According to Himami et al (2023), learning style is referred to as how individuals absorb, organise, process, and retain information during the learning process. An individual tends to adapt to learning strategies through exploration and experimentation. Learning styles display the differences between every learner's ability, making it important to ensure that each child is assisted in recognising the preferred style that suits them. Saga, Qamar, and Trali (2015) explained that learning styles are classified into three types: visual, auditory, and kinaesthetic. VARK stands for the four learning styles: visual, auditory, reading, and kinesthetic. The VARK model recognises that learners absorb information in

different ways, known as "preferred learning approaches." Whilst some children learn better through verbal presentations (lectures and talks), others prefer visual presentations (pictures and illustrations).

Putri et al. (2020) found that learning styles impact learners and identified the three categories of learning styles: visual, auditory, and kinaesthetic. They suggested that pupils' learning styles can be identified through observation, surveys, or tests. When accommodating the different learning styles in a classroom, educators must consider using visual resources, encouraging pupils to read aloud, and allowing the learners to explore their surroundings while learning.

Clavido and Macalisang (2024) conducted a study to investigate the correlation between teachers' teaching styles and students' learning styles, as well as how these factors impact academic success. It was carried out to Grade 6 instructors and students in public primary schools in Lopez Jaena District, Misamis Occidental in Philippines during the 2022-2023 school year. The researchers sought to determine if aligning teaching methodology with students' preferred learning modes may improve academic achievements, emphasising the importance of instructional strategies that accommodate learner variety. The study used a descriptive-correlational research approach, which detected and analysed correlations between learning and teaching styles, and academic achievement.

In this study, the researchers could investigate whether congruence between teaching and learning styles predicted superior academic accomplishment. O'Brien's learning style inventory and Grasha-Riechmann teaching style survey questionnaires were used as the primary data collection instruments, and used a combination of Spearman's Pho Correlation Coefficient, mean and standard deviation as well as frequency count and percentage were used as the data analysis tools. The research's findings were that the teachers mostly utilised the "expert" teaching style, exhibiting significant knowledge of content and confidence, which boosted the engagement among pupils. Majority of learners preferred visual learning and demonstrated higher understanding when learning featured slides, handouts, videos, and diagrams, emphasising the importance of visually rich education. Overall, the students did "very satisfactorily," with an average GPA of 85.707, showing good teaching and learning. A substantial positive connection (Spearman's rho =.512, $p < .05$) between teaching and learning styles implies that matching teaching techniques with students' preferred learning methods improves engagement and academic success. Another research carried out by Arni, Utami, Khoirunnisak and Amelia (2024) that explored how different learning styles (visual, auditory and kinaesthetic) impact children's academic outcomes in science at elementary level, which was done at SD Negeri 244 Palembang, in Palembang City, in South Sumatra Province in Indonesia.

The study was driven by observations that the school's standard method of instruction was not engaging enough, with children frequently seeming preoccupied or inattentive during classroom instruction. The researchers used a quantitative experimental study approach, concentrating on a single experimental class of 40 pupils. This design sought to assess the influence of incorporating learning styles into the science learning process, as well as the extent to which student results improved. This study's data collecting instruments comprised a questionnaire and documentation, which involved collecting photographic evidence of the learning activities that took place in this study. The questionnaire was created to determine students' learning styles and impressions of the learning experience. The research discovered that learning styles (visual, auditory, and kinaesthetic) have a favourable and substantial

influence on students' scientific learning results. The findings validated the theory that when teaching approaches are aligned with students' chosen learning styles, academic performance increases.

Verdugo, Guamán and Díaz (2023) carried out a study at the Santa Rosa de Lima Educational Unit in Cañar, Ecuador, during the 2022–2023 school year. The research explored the impact of learning styles on the academic performance of middle school students. The study involved 88 children and 3 teachers. A mixed-method approach which combined qualitative and quantitative data collection was used; including the VARK test for learning styles, academic grade records, and teacher observation sheets. The key findings in this research were that the kinaesthetic and visual learning styles were the most prevalent among students. Visual learning style showed a positive correlation with higher academic performance, while auditory, reading/writing, and kinaesthetic styles did not show significant correlations. The students demonstrated high academic performance overall, with an average score of 9.34 across subjects. Social Studies and Natural Sciences had slightly higher averages compared to Language and Literature and Mathematics. Teachers predominantly relied on text-based methods and did not adequately address the diversity of learning styles. There was limited use of ICTs, multimedia, and differentiated tasks, which hindered the adaptation of teaching practices to students' learning preferences. Visual learning style was the only one significantly correlated with better academic performance, highlighting the need for teaching practices that cater to this style. The study emphasises the importance of adapting teaching methodologies to diverse learning styles, particularly kinaesthetic and visual, to enhance academic performance. It calls for innovative pedagogical practices to address the developmental needs of middle school students. Despite high academic performance, the reliance on traditional methods and lack of diversity in teaching approaches remain challenges. Whilst the study investigated the kinaesthetic and visual learning styles in depth, it does not address why the read/write and auditory learning styles did not correlate with higher performance of the students and how these preferred styles could be supported better in the teaching and learning processes.

Ismail, Hasanuddin and Chandra (2023) researched on the relationship between a child's thinking style and learning style and how these impact their academic success. This study was carried out in North Sumatra, Indonesia. The study aimed to investigate the effects of thinking and learning styles on learning achievement in Islamic education conducted at a private Islamic university in North Sumatra. A quantitative design approach was employed, and 438 students were used as the research's sample population. A Likert scale, with the thinking scale adapted from Sternberg, and Grasha's Learning Style Inventory were administered for data collection. The findings of this study expressed that both learning and thinking styles had a significant impact on the student's performance. Students whose cognitive and learning styles were compatible with successful processing and engagement approaches performed more successfully on an academic level. It has been noted that learning styles influence how learners interact with knowledge, whereas thinking styles influence how they perceive and utilise it. The study also validated its hypothesis that students' cognitive inclinations vary, and that educators ought to acknowledge these distinctions to improve their educational outcomes.

While the research findings made a significant contribution by emphasising the relevance of individual variability in educational psychology, the correlational design has limitations in its capacity to derive causal inferences. The study's validity and reliability are limited due to the lack of specific methods (such as sample size, demographic data, and instrument reliability and validity assessments). Furthermore,

while the theoretical foundation is rich and based on cognitive psychology, the study could need a more comprehensive examination of real-world implications for teachers and the developers of the curriculum. In Africa, Sayed et al (2024) did research that aimed to personalise education by predicting students' preferred learning styles (visual, auditory, kinaesthetic) and suggesting the most effective assessment methods for them based on their interaction data from a Learning Management System (LMS), specifically Moodle. The study was carried out in Egypt and utilised information from the Open University Learning Analytics Dataset (OULAD). The researchers developed a model that combines various machine learning algorithms, including K-Nearest Neighbor (KNN), Random Forest (RF), Support Vector Machine (SVM), and Logistic Regression (LR), integrated with semantic association techniques. The model analysed the clickstream data from students' interactions on the LMS to classify their learning styles. The suggested framework predicted students' learning styles and recommended suitable evaluation techniques with a high accuracy of 98%. By adjusting instructional materials and tests to each student's unique learning preferences, it tackles the issue of poor student engagement in online learning. The study highlights how crucial it is to comprehend student interactions and engagement trends in order to enhance the educational process. One of the study's drawbacks was its reliance on online conduct, which would have obscured the students' offline preferences. There was a lack of qualitative data where the perception of both the teachers and students would have added more depth to this research.

A research conducted in South Africa by Bosman and Schulze (2021) discusses the relationship between English learning styles, academic achievement, and demographic variables among secondary school students in South Africa, emphasising the importance of tailoring teaching methods to diverse learning preferences. The purpose of the study was to investigate how classroom diversity and student learning styles may enhance English instruction. The association between several demographic characteristics and academic success in English was the main focus of this study. To collect thorough data, a mixed-method study strategy that included quantitative and qualitative techniques was used. A standardised questionnaire and interviews with high-achieving pupils were part of the study. 240 pupils from an independent school in South Africa's North-West Province made up the sample. Learning styles and demographic factors were assessed using a standardised questionnaire. For qualitative insights, ten of the highest-achieving students were interviewed. The investigation discovered notable disparities in English proficiency according to demographic variables as gender, age, and nationality. Additionally, there were notable differences in the learning methods of high and poor performers. As the students grew older, their English scores dropped from 64.2% at age 14 to 59% at age 18. Students who were female received higher grades (64%) than those who were male (60.2%). While poor achievers tended towards visual, kinaesthetic, and group learning methods, high achievers favoured auditory, reading, writing, and individual learning techniques. The study revealed different learning patterns between high and low English performers, showing that the former employed more productive study techniques. Individual learning techniques and reading were preferred by high achievers while learning English. The lowest performers were frequently more active learners who preferred to employ visual and kinaesthetic approaches. The study revealed that high achievers actively constructed knowledge through reading and writing. The study emphasised the importance of context in learning styles, noting that students adapted their strategies based on whether they were studying at home or in the classroom. Top achievers preferred clear explanations and constructive feedback from teachers. Group discussions and collaborative learning were beneficial for understanding complex concepts. Students expressed a preference for varied teaching methods to enhance engagement and learning.

Whilst the study is focussed on the learning preferences and styles of students, it does not examine how instructors modify or align their teaching strategies to suit these styles, nor does it evaluate teachers' knowledge or preparation of learning type differentiation. The research looks at learning English in a multilingual nation, but it doesn't go into detail on how learning style preferences or English accomplishment are influenced by first language, cultural background, or linguistic competency. Given the linguistic diversity of South Africa, this is especially crucial. Without examining whether certain learning styles (such as auditory, reading, or individual) are associated with higher accomplishment or if training is biassed or better suited to those styles rather than being intrinsically superior, the study interprets some learning styles as more "effective."

In Kenya, Wesonga and Aurah (2019) carried out a study on the instructional and learning styles as predictors of high school students' academic performance in Physics practicals in Nairobi. The research highlighted the importance of adjusting pedagogy with the students' learning style preference to enhance their academic achievement. The study employed a quasi-experimental pre-test, post-test non-equivalent control group design. Three instructional strategies were analysed including; Guided-inquiry, Cooperative learning, and Direct instruction. The sample population consisted of 519 form three physics students selected using multi-stage sampling techniques. Physics Achievement Tests, Learning Style Questionnaire, and Physics Process Skills Checklist were used as the instruments of data collection. Data analysis was conducted using multiple Linear Regression and MANCOVA.

The results indicated significant contributions of instructional strategies to academic performance, while learning styles did not show a significant effect. Instructional strategies contributed significantly to academic performance ($B=3.266$, $p<.05$). Learning styles did not significantly predict academic performance ($B=.717$, $p=.412$). Cooperative learning was most effective for visual learners, while guided inquiry benefited kinaesthetic learners. The study found notable gender differences in academic performance and process skills. Males performed better in physics process skills ($M=65.3$, $SD=14.9$) compared to females ($M=63.1$, $SD=14.8$). Females performed better than males in academic achievement ($M=65.4$, $SD=17.3$ for females vs. $M=60.3$, $SD=17.3$ for males). A significant interaction between gender and instructional strategy was observed ($F(4, 515)=4.899$, $p=.001$). The study sought to examine instructional and learning styles as predictors of academic success; however, learning styles did not substantially predict performance ($B = .717$, $p = .412$). Learning styles did not substantially predict academic achievement, despite the study's goal of examining both instructional and learning styles as predictors of academic success ($B =.717$, $p =.412$). This calls into question the usefulness and validity of the learning styles model that was used, and it implies that either a more complex framework for learning styles or the addition of new cognitive or psychological variables that would better account for performance variations are required.

Another study carried out in Nairobi by Kaitho (2019) investigated the preferred learning styles of secondary school students based on established learning theories. It highlights significant differences in learning style preferences among students and emphasises the importance of recognising these styles for effective teaching. A purposive sample of 1,317 Form Two students was used, with 659 students randomly selected for the study. The study utilised Felder Learning Style Theory and Keirsey personality learning styles theory. A reliability coefficient of .723 was established for the treatment questionnaire, indicating high reliability. Data analysis was conducted using SPSS version 22, employing percentages and means. Significant differences were found in learning style preferences: visual vs. verbal learning

styles (F (1,653) = 6.42, p = .012), intuition vs. sensing learning styles (F (1,653) = 9.77, p = .011) and sequential vs. global learning styles (F (1,653) = 6.10, p = .014). Although the study uses well-established theories to successfully identify differences in learning style preferences among Form Two pupils in Nairobi County, it doesn't investigate how these preferences affect academic achievement or if instructional methods are modified to suit them. This creates a gap in the usefulness of identifying learning styles in enhancing academic results.

1.5 Methodology

The study employed a convergent research design under mixed method research approach which integrated both qualitative and quantitative research approaches concurrently. Through qualitative insights obtained from respondent responses, this approach allowed the researcher to validate and enhance the quantitative findings based on cross-sectional methodology (Plano Clark & Ivankova, 2016). For the qualitative study, the research explored the phenomenology design which investigates individuals' experiences concerning the specific phenomenon to understand its meaning and essence (Creswell & Creswell, 2018). Children ages 2 to 13 who attend Braeburn Nanyuki International School in Kenya were part of the study's target population. There are 238 children within the age group between years 2-13 across the school, their 168 parents and the 12 class teachers who teach these children. The researcher used stratified random sampling for the quantitative probability sampling part of the study and purposive sampling for the qualitative non-probability sampling procedures. A sample size of 24 children, which represents 10% of the entire population and stratified random sampling technique was employed to guarantee each participant an equitable selection chance from age 2 – 13 and from year groups; that is, Early Years Foundational Stage (EYFS) and Year 1 - Year 8. The children were stratified into three categories which was based on their gestational age at birth: preterm (<37 weeks), full-term (37-42 weeks), and post-term (>42 weeks). Since all the 12 class teachers across the school who teach these children participated in the study, purposive sampling was used to identify these teachers. The parents of the 24 sampled pupils participated in the study. These parents were sampled using purposive sampling. The data collection instruments that were primarily employed for collecting quantitative data were open-ended questionnaires. For qualitative data, interviews and observation guides were used. Data was collected and then analysed through thematic analysis for qualitative data and descriptive statistics for quantitative data. The researcher adhered to the ethical considerations by obtaining permissions and approvals as required, confidentiality, anonymity, voluntary, and informed consent as well as protecting the rights of the respondents that volunteer to participate in the research (Mugenda & Mugenda, 2008).

1.6 Study Findings

Rate of Instruments

The research instrument that were given to the participants; were total of 60 questionnaires for 24 children, 12 teachers and 24 parents as well observation guides. All 60 questionnaires were returned. Additionally. The 100% response rate for the participants returned questionnaire, and the observations guide were all accounted for, Creswell and Creswell (2018) states that a response of 70% or more is considered acceptable, and hence the response rate for this study, which is reported in the Table 1, was suitable for data analysis with a hundred percent returned.

Table 1: Response Rate

Instrument	Issued	Returned	Percentage
Learners' Instruments	24	24	100%
Teachers' Instruments	12	12	100%
Parents Instruments	24	24	100%

Source: ***Field Data, 2025***

The findings in table 2 demonstrated that learners at Braeburn Nanyuki International school had varying preferences across visual, aural, and kinaesthetic modes, preferring diagrams, talks, experiments, or reading, emphasising the necessity of accommodating diverse learning modalities in classrooms. The preferences of the learners indicated that in class, 8 (33.3%) favoured the use of drawings or PowerPoints by the teacher, 6 (25.0%) preferred engaging in activities or experiments, 7 (29.2%) liked receiving explanations through verbal communication, and 3 (12.5%) opted for reading a book or notes. Memory retention was reported to be most effective when 8 (33.3%) heard someone discuss the topic, 5 (20.8%) learned by doing it themselves, 9 (37.5%) benefited from visual aids such as pictures, charts, or displays, and 2 (8.3%) read instructions or notes. When it came to navigating unfamiliar places, 9 (37.5%) relied on reading directions, 2 (8.3%) attempted to find it independently, 3 (12.5%) used a map or picture, and 10 (41.7%) asked someone for directions. For learning challenging material, 4 (16.7%) preferred reading from a book, 3 (12.5%) enjoyed hands-on activities, 5 (20.8%) favoured group discussions, and 12 (50%) preferred using diagrams and charts. In contrast, when learning something new, 8 (33.3%) liked to experiment by doing it themselves, 7 (29.2%) preferred listening to explanations, and 2 (8.3%) enjoyed watching videos, pictures, or diagrams as illustrated on Table 1.

This is supported by Putri et al. (2020) that learning styles impact learners and identified the three categories of learning styles: visual, auditory, and kinaesthetic. They suggested that pupils' learning styles can be identified through observation, surveys, or tests. When accommodating the different learning styles in a classroom, educators must consider using visual resources, encouraging pupils to read aloud, and allowing the learners to explore their surroundings while learning. Remarks from students stressed that they valued both the intellectual and social aspects of schooling. Their descriptions emphasised how a supportive and friendly learning environment, complemented with colourful classrooms and caring teachers, generates a sense of joy and belonging. The learner associates happiness with school not only because of friendships and recreation, but also because teachers encourage and provide personalised help. This therefore implies that the school's emotional environment has a significant impact on children's motivation and overall educational experience, reflecting the comprehensive goal of the Braeburn Nanyuki International School.

Proffered Learning Style According to Learners

The study sought to know the most preferred style of learning according to different participants. The findings are presented in the following tables.

Table 2: Learning Preferred Style According to Learners

Statement	F	%
In class, I would like the teacher to:		
Use drawings or PowerPoints	8	33.3
Let me do activities or experiments	6	25
Explain things by talking	7	29.2
Give me a book or notes to read	3	12.5
I remember best when:		
I hear someone talk to me about it	8	33.3
I do it myself	5	20.8
I see pictures, charts, or displays	9	37.5
I read instructions or notes	2	8.3
To find a place I don't know, I:		
Read the directions	9	37.5
Walk and find it on my own	2	8.3
Use a map or picture	3	12.5
Ask someone for the directions	10	41.7
When learning something difficult, I prefer:		
Reading from a book so that I can understand	4	16.7
Hands-on activities	3	12.5
Group discussions	5	20.8
Diagrams and charts made	12	50
When learning something new, I like to:		
Try it out by doing it on my own	8	33.3
Listen to someone explaining it	7	29.2
Watch videos, look at pictures, or diagrams	2	8.3

Source: ***Field Data, 2025***

Table 3 indicates that the preferences of the learners indicated that in class, 8 (33.3%) favoured the use of drawings or PowerPoints by the teacher, 6 (25.0%) preferred engaging in activities or experiments, 7 (29.2%) liked receiving explanations through verbal communication, and 3 (12.5%) opted for reading a book or notes. Memory retention was reported to be most effective when 8 (33.3%) heard someone discuss the topic, 5 (20.8%) learned by doing it themselves, 9 (37.5%) benefited from visual aids such as pictures, charts, or displays, and 2 (8.3%) read instructions or notes. When it came to navigating unfamiliar places, 9 (37.5%) relied on reading directions, 2 (8.3%) attempted to find it independently, 3 (12.5%) used a map or picture, and 10 (41.7%) asked someone for directions. For learning challenging material, 4 (16.7%) preferred reading from a book, 3 (12.5%) enjoyed hands-on activities, 5 (20.8%) favoured group discussions, and 12 (50%) preferred using diagrams and charts. In contrast, when learning something new, 8 (33.3%) liked to experiment by doing it themselves, 7 (29.2%) preferred listening to explanations, and 2 (8.3%) enjoyed watching videos, pictures, or diagrams. This supported

by Putri et al. (2020) that learning styles impact learners and identified the three categories of learning styles: visual, auditory, and kinaesthetic. They suggested that pupils' learning styles can be identified through observation, surveys, or tests. When accommodating the different learning styles in a classroom, educators must consider using visual resources, encouraging pupils to read aloud, and allowing the learners to explore their surroundings while learning.

One of the learners explained,

> *"What I like best about school is that I can play and laugh with my friends during break time, learn new and exciting things from my kind and funny teacher, draw and paint colourful pictures in art class, run and play games in the big green field, read interesting storybooks in the library, and feel happy because the classrooms are bright and full of colours, and the teachers help me when I don't understand something, and every day feels like an adventure in which I discover" (Interviewers 7, Personal Communication, July 16, 2025).*

This remark stresses that students value both the intellectual and social aspects of schooling. The description emphasizes how a supportive and friendly learning environment, complemented with colourful classrooms and caring teachers, generates a sense of joy and belonging. The learner associates happiness with school not only because of friendships and recreation, but also because teachers encourage and provide personalized help. This implies that the school's emotional environment has a significant impact on children's motivation and overall educational experience, reflecting the comprehensive goal of the Braeburn Nanyuki International School. When asked what helps them learn most during teaching, one learner replied,

> *"When my teacher is teaching, I learn the most by watching what they show on the board, listening to stories and examples, and doing activities with my hands like drawing, counting blocks, or acting out little plays. When I can see, hear, and touch things, the lesson sticks in my head like glue, and I feel like I'm participating in the learning, especially when the teacher utilizes vivid visuals, colorful charts, and entertaining games to help me remember everything." (Interviewers 8, Personal Communication, July 16, 2025).*

This learner's reflection demonstrates the usefulness of multisensory learning practices in Braeburn Nanyuki International School classrooms. Thus, by combining visual, aural, and kinesthetic modalities, teachers improve comprehension and retention. The learner's emphasis on "seeing, listening, and touching" demonstrates that participatory learning not only enhances memory but also fosters a sense of belonging in the classroom. The discovery confirms that interactive, hands-on learning makes abstract concepts more understandable, increasing both confidence and interest.

> *"On the question of enjoyable lessons, one participant recalled:*
> *I truly enjoyed learning about different creatures from throughout the world. The teacher showed us videos of animals running, jumping, and eating within their homes. We colored drawings of them using crayons and markers, made animal sounds together and laughed, and even played a game where we had to pick the animal based on its sound or movement. It was enjoyable and simple because I enjoy animals; I could see them in the photos and videos, and we all shared the thrill." (Interviewers 5, Personal Communication, July 16, 2025).*

This testimony highlights the effectiveness of experiential and playful learning at Braeburn Nanyuki International School. The mix of multimedia, art, and role-playing made the session memorable, strengthening academic comprehension as well as peer social connections. The learner's excitement and passion demonstrate how integrated teaching techniques may convert classrooms into places of inquiry and discovery. Such innovative ways not only broaden knowledge but also promote intrinsic motivation and a good attitude toward learning.

On the challenges faced in class, a learner explained,

> *"I feel confused in class when we have to read really lengthy words or large numbers that I don't understand, when the teacher speaks so quickly that I can't write everything down, or when we have to perform math without using blocks or images. It feels heavy in my head, but I feel better when the teacher explains slowly, gives me extra time, or uses games and analogies to help me grasp." (Interviewers 4, Personal Communication, July 16, 2025).*

This reflection demonstrates the academic challenges that students encounter when instructional tempo or subject complexity surpasses their preparedness levels. Long words, sophisticated mathematics, and fast explanations underscore the significance of scaffolding at Braeburn Nanyuki International School. The learner's comment that they feel better with slower explanations and visual assistance demonstrates how tailored instruction can alleviate learning challenges. Importantly, this shows teachers' adaptive role in assisting students emotionally and academically, ensuring that no kid feels left behind.

Table 3. Preferred Learning Style According to Teachers

Statement	F	%
When teaching new content, the child responds best to:		
Spoken instructions	3	25
Videos, diagrams, charts, or visual aids	7	29.2
Hands-on activities	2	8.3
During class discussions, the child:		
Writes points down or summaries	2	8.3
Uses physical gestures or examples	6	25
Looks for visual cues or draws	1	4.2
Actively participates by speaking	3	12.5
When assessing comprehension, the child shows understanding best through:		
Drawing or labelling diagrams	6	25
Practical applications or models	3	12.5
Verbal explanations	3	12.5
In group activities, the child tends to:		
Lead in on hands-on experiments or aspects	5	20.8
Focus on posters or visual presentation	2	8.3
Engage in discussion and conversation	3	12.5
Organize written plans or take notes	2	8.3
When giving feedback, the child responds better to:		
Practical demonstrations on how to improve	2	8.3
Visual charts or progress graphs	6	25
Verbal praise or discussion	3	12.5
Written comments	1	4.2

Source: *Field Data*, 2025

The findings in Table 4 indicate that when introducing new content, the majority of children respond most effectively to videos, diagrams, charts, or visual aids at (29.2)%. This is followed by spoken instructions at (12.5%) and hands-on activities at (8.3%). During class discussions, most students utilize physical gestures or examples at (25%), while some engage by speaking at (12.5%), writing points or summaries at (8.3%), and a smaller group seeks visual cues or draws at (4.2%). In assessing comprehension, children demonstrate understanding best through drawing or labeling diagrams at

(25%), with equal numbers using practical applications or models and verbal explanations, both at (12.5%). In group activities, the largest segment participates in hands-on experiments at (20.8%), while others take part in discussions and conversations at (12.5%), concentrate on posters or visual presentations at (8.3%), and organize written plans or take notes, also at (8.3%). Lastly, when providing feedback, children respond more favorably to visual charts or progress graphs at (25%), followed by verbal praise or discussions at (12.5%), practical demonstrations on improvement at (8.3%), and written comments at (4.2%). This implied by Clavido and Macalisang (2024) that investigate the correlation between teachers' teaching styles and students' learning styles, as well as how these factors impact academic success. It was carried out to Grade 6 instructors and students in public primary schools in Lopez Jaena District, Misamis Occidental in Philippines during the 2022-2023 school year. The researchers sought to determine if aligning teaching methodology with students' preferred learning modes may improve academic achievements, emphasising the importance of instructional strategies that accommodate learner variety.

One of the teachers observed that:

> *"Income effects a child's learning experience at Braeburn Nanyuki International School. Some children are unable to concentrate in class because they are obsessed with their food or uniform. Others easily dominate group projects and school activities because they have access to computers, a reliable internet connection, and parental supervision. When you assign a home assignment, you can identify who will and will not submit a completed, well-written product. It is not a lack of skill, but rather a scarcity of resources. Unfortunately, this economic disparity gets wider every term, and as a teacher, it hurts to watch potential being stifled by poverty. This firsthand observation highlights the rising socioeconomic divide in students' progress at Braeburn Nanyuki International School" (Interviewers 4, Personal Communication, July 16, 2025).*

The teacher's remark emphasizes how income inequality influences students' experiences and outcomes. Children from low-income homes struggle to concentrate in class since basic necessities like food, clothing, and transportation are not always provided. These students usually fail to finish assignments due to a lack of necessary equipment such as computers, internet access, reference books, or parental academic supervision. In contrast, students from affluent homes receive ongoing help at home, have access to sophisticated digital tools, and can finish projects with ease. This disparity not only affects individual academic performance, but it also adds to an increasing achievement gap each term. The emotional burden on teachers is clear, as they observe talented learners unable to reach their potential due to circumstances beyond their control

During focus group conversations, many students revealed that their parents had only given them basic writing supplies like pens, pencils, and practice books. A handful reported owning mathematics sets, but few have digital learning devices such as tablets or smartphones, which are becoming increasingly important at Braeburn Nanyuki International School. Most students relied significantly on the meager resources provided by the school itself. Extracurricular activities also had different participation rates. The majority stated that they rarely participated in hobbies such as swimming, skating, or music instruction, citing expensive equipment and enrollment costs as impediments. This example exemplifies how financial inequities limit access to comprehensive educational opportunities, exacerbating the disparity between learners from various socioeconomic categories.

One of the teachers noted:

> *"Our parents only bought us books and pencils. When teachers ask us to conduct internet research, we feel excluded since we have never used a tablet or computer at home. We want to join the music club, but our parents cannot afford the pricey instruments. The majority of us simply observe others when swimming or skating. There are times when we feel we're not getting the same education as everyone else." (Interviewers 6, Personal Communication, July 16, 2025).*

This conversation highlights how household income influences students' experiences at Braeburn Nanyuki International School. Learners without access to technology felt alienated when tasks necessitated internet-based research. Likewise, their participation in extracurricular activities was limited. Many youngsters were spectators rather than participants since their parents couldn't afford the additional expenditures. As a result, they believed their education was of poorer quality when compared to peers from affluent families. These experiences show how poverty not only limits academic chances, but also undermines children's sense of belonging and confidence, exacerbating educational gaps.

A considerable proportion of the parents interviewed admitted that their household income had a significant impact on their capacity to fund their children's education at Braeburn Nanyuki International School. Many low-income parents struggled to prioritize educational resources, as their earnings were already strained to meet food, rent, uniforms, and transportation costs. Parents who work casually or irregularly noted that their long, unpredictable work hours allowed little time for school activities or homework monitoring. Wealthier parents, on the other hand, reported being able to purchase digital tools, project supplies, and educational assistance for their children, providing them with a significant edge. This resource disparity between homes resulted in severe inequity in learners' access to the full benefits of the school curriculum.

Table 4: Preferred Learning Styles according to Parents

Statement	F	%
When reading a story, your child:		
Prefers reading it silently	3	12.5
Acts it out or uses props	4	16.7
Likes looking at illustrations or pictures	8	33.3
Enjoys hearing it read aloud	9	37.5
When you give your child a task, they respond best when you:		
Talk to them through it	8	33.3
Give them an article to read	2	8.3
Let them try and learn from it	6	25
Use diagrams or drawings to explain	8	33.3
When solving a problem, your child:		
Writes it down to understand	11	45.8
Uses objects or physical actions	4	16.7
Talks about it with someone	3	12.5
Uses visuals or drawings	6	25
Your child understands instructions best when:		
They read and follow a set of instructions	8	33.3
Someone clearly explains to them	3	12.5
Try it by themselves	7	29.2
They are shown diagrams or pictures	6	25

Source: *Field Data*, 2025

The findings in Table 6 indicate that a significant number of children, (37.5%), prefer to hear a story read aloud, while (33.3%) enjoy looking at illustrations or pictures. In contrast, (16.7%) like to act out the story or use props, and (12.5%) prefer to read it silently. When tasked with an assignment, children respond most effectively when they are guided through it or shown diagrams and drawings, both at (33.3%). This is followed by a preference for hands-on learning at (25.0%) and reading an article at (8.3%). In problem-solving scenarios, the majority, (45.8%), find it helpful to write down the problem to understand it better, while (25%) utilize visuals or drawings, (16.7%) use physical objects or actions, and (12.5%) discuss the problem with someone. Furthermore, children comprehend instructions best when they read and follow a set of instructions at (33.3%), attempt the task independently at (29.2%), are shown diagrams or pictures at (25%), and receive clear explanations from someone at (12.5%). This supported by Kaitho (2019) that the preferred learning styles of secondary school students based on established learning theories. It highlights significant differences in learning style preferences among students and emphasises the importance of recognising these styles for effective teaching.
One of the parents observed that:

A considerable majority of parents interviewed admitted that household income had a significant impact on their capacity to support their children's education at Braeburn Nanyuki International School. Many low-income parents had to prioritize educational resources while also meeting basic requirements like food, housing, clothing, and transportation. Parents working in informal or casual jobs reported long, irregular schedules that left them with little or no time to participate in their children's education. Wealthier parents, on the other hand, have the means to purchase learning materials, project tools, internet bundles, and digital devices. This gap resulted in unequal learning settings at home, providing children from higher-income families a significant advantage. One parent explained:

> *"We want the best for our kids, but it isn't easy. I leave the house at 5 a.m. and return at 7 p.m. only to earn enough money for food and rent. When teachers request project materials or digital research tools, I feel powerless because I cannot afford them. My youngster frequently tells me that they are left behind in group activities because they have nothing to give. As a parent, it hurts tremendously, but survival comes first. (Interviewers 7, Personal Communication, July 16, 2025).*

This parent's statements exemplify the difficulties experienced by low-income families: while they value education, survival necessities take precedence. Long working hours and insufficient income prevent parents from effectively supporting school projects or extracurricular activities. As a result, their children feel excluded from group activities, exacerbating inequity caused by poverty rather than indifference.
One parent demonstrated that:
Many children prefer visual learning, with bright films and visuals that break down complex topics into simple steps. Stories, melodies, and rhymes help make lessons more engaging and memorable. Most students thrive on hands-on experiences such as creating simple models, drawing diagrams, cooking with measures, and conducting tiny science experiments with household objects. Flashcards with words and pictures, interactive tablet games (for those with access), illustrated storybooks, and singing rhymes were all cited as effective techniques for memorizing knowledge.
One parent summarized:

> *"My child enjoys learning at home by watching colorful films, listening to stories, and, most importantly, doing things with their own hands." Simple experiments, such as drawing or constructing objects, pique their interest and aid comprehension. Flashcards, short illustrated novels, and songs can also assist students connect what they see, hear, and do. This demonstrates*

the versatility and creativity of youngsters in using whatever materials are available. However, the divide remains clear: children who have access to tablets and digital games learn more interactively, whilst others who do not have such resources rely solely on basic, inexpensive materials". (Source: Interviewers 11, personal communication, July 16, 2025).

1.7 Conclusion

According to the study's findings a child's gestational age is a vital influence on their cognitive, behavioural and preferred learning style. Preferential learning methods were found to be impacted by both cognitive and behavioural outcomes that were shaped by gestational age disparities. Due to their difficulties on executive functioning, working memory and auditory-sequential learning, preterm learners were more likely to rely on kinaesthetic and interactive learning techniques. The study demonstrated a strong influence of learners' gestational age disparities and difficulties with classroom involvement. Long reading assignments, maintaining focus, and reacting quickly to oral instructions were all challenges for preterm learners especially those aged between 2 – 8 years. Abstract ideas and activities demanding higher-order thinking skills were difficult for some of the post-term learners. Even though full-term students had less difficulties, they still needed chances for involvement and diverse pacing to enhance engagement. The results showed that a single-mode teaching strategy is inadequate for all groups and that using multiple pedagogical techniques improves engagement among learners.

1.8 Recommendation

Drawn from the research findings and conclusions, this research makes the following recommendations:

i. Preterm and post-term learners would benefit from specific and targeted assistance, such as scaffolding, task breakdown, chunking, and enhanced use of visual aids and practical exercises, given their behavioural and cognitive challenges.

ii. Teachers should also be provided with continuous professional development on adaptive teaching and learning strategies, learning styles and inclusion education for them to effectively meet the varied developmental and learning needs of their learners.

iii. Parents should be involved in their children's progress in school; working closely with their teachers to ensure that any early identification of both cognitive and behavioural difficulties is meet with timely interventions.

iv. To identify students with behavioural or cognitive difficulties associated with gestational age, education authorities should support early developmental screenings in schools.

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