



Indigenous Riddles as Pedagogic Strategies for the Development of Pupils' Higher-Order Thinking Skills in Public Primary Schools in the North-West Region of Cameroon

Tieme Kunike^{1*}, Achu Charles Tante¹, Brenda Nachuah Lawyer²

¹Department of Curriculum Studies and Teaching, Faculty of Education, University of Buea, Buea, Cameroon

²Faculty of Letters and Social Sciences, University of Douala, Douala, Cameroon

Email: *tiemekunike@gmail.com, ctante2@yahoo.com, bdiangha@gmail.com

How to cite this paper: Kunike, T., Tante, A.C. and Lawyer, B.N. (2025) Indigenous Riddles as Pedagogic Strategies for the Development of Pupils' Higher-Order Thinking Skills in Public Primary Schools in the North-West Region of Cameroon. *Open Access Library Journal*, 12: e12849. <https://doi.org/10.4236/oalib.1112849>

Received: December 22, 2024

Accepted: January 28, 2025

Published: January 31, 2025

Copyright © 2025 by author(s) and Open Access Library Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This study examined the effect of indigenous riddles on the development of pupils' higher-order thinking skills (HOTS) in public primary schools in the North-West Region (NWR) of Cameroon. The argument for the study is anchored on Piaget's (1969) theory of cognitive development and the cognitive apprenticeship theory of Collins *et al.* (1989). The study adopted a mixed-methods approach, using the convergent parallel mixed-methods design. Data were collected using both quantitative (questionnaire) and qualitative (focused group discussion and interview guide) research instruments. The validity of the questionnaire was determined using the content validity index which stood at 0.97 while its reliability was determined using the Cronbach's Alpha with an overall reliability coefficient of 0.837. The reliability of the qualitative instruments stood at 0.92 and 0.93 for focused group discussion and interview guide respectively. The sampling techniques used were simple random to select four Divisions, convenience to select six Subdivisions and 32 functional public primary schools, and purposive to select classes four and six pupils, Levels II and III teachers, headteachers, and sub-divisional inspectors. The population of this study comprised 80,089 pupils, 3,025 teachers and headteachers, and 34 sub-divisional inspectors from 414 functional public primary schools distributed across the seven Divisions of the NWR for the 2023/2024 academic year (RDBE, 2024). The target population of this study comprised 80,089 pupils, 2,545 teachers, 414 headteachers, and 26 sub-divisional inspectors from 414 functional public primary schools distributed across the seven Divisions of the NWR of Cameroon. Using the Krejcie and Morgan Table, a sample size of 660 participants (368 pupils, 254 teachers, 32 head teachers, and 6 sub-divisional

inspectors) was drawn from an accessible population of 8050 pupils, 750 teachers, 32 head teachers, and 6 sub-divisional inspectors. Data collected were analyzed both descriptively (using frequencies, percentages, multiple response sets, mean, standard deviation, and charts) and inferentially (using Ordinary Logistic Regression). Findings showed that indigenous riddles (R-value -0.011 , P-value 0.969) have no significant positive effect on the development of pupils' HOTS. Based on the findings, it was recommended that there is a need for curriculum prioritization of indigenous riddles and community partnerships with cultural (local) experts to facilitate cultural learning continuity in schools and that the relevant educational authorities should organize seminars and workshops where teachers are taught the importance and methods of application of indigenous riddles.

Subject Areas

Pedagogy

Keywords

Indigenous Riddles, Higher-Order Thinking Skills, New Primary School Curriculum, Public Primary Schools, Pupils, Cameroon

1. Introduction

Delor [1] asserts that 21st century education should be guided by four pillars: learning to know, learning to do, learning to be, and learning to live together in peace. It is within this framework that UNESCO since 1992 has embarked on promoting education for sustainable development (ESD) to help countries restructure their curricula to enable learners to acquire higher-order thinking skills (HOTS) [2]-[4]. The New Cameroon Primary School Curriculum that was released for implementation in the 2018/2019 academic year is the State's urgent response [5]. The curriculum is organized around seven national core skills and four broad-based competences [6]. The acquisition of HOTS enhances learners' analytical, evaluative, creative, and critical thinking, as well as their communication, collaboration, problem-solving, and decision-making skills to meet 21st century challenges [7]. Indigenous riddles (IR) are oral cultural traditions or practices that require a child to carefully analyze and interpret the meaning to come up with a well-considered and well-analyzed answer. As such, analyzing and interpreting are rooted in critical thinking and problem-solving skills that learners need to possess in the modern environment [8]. Aspects of IR include short statements, phrases, questions, or puzzles presented by elders before children which require sharp mental ability to provide the correct answers to them. The development of pupils' HOTS can enhance their competence in understanding, analyzing, and interpreting IR.

Two of the objectives of education in Cameroon as stipulated in Law No 98/004

of 14 April 1998 are “to train citizens who are firmly rooted in their cultures; and to develop creativity, a sense of initiative, and the spirit of enterprise.” The former encourages the use of cultural practices as alternative pedagogic strategies prominent among which are IR, while the latter is geared towards the cognitive development of learners, specifically in HOTS. These objectives which require the use of indigenous pedagogic strategies like IR for the acquisition of HOTS in learners are far from being realized in public primary schools in the North-West Region of Cameroon. However, a critical look at what is happening in most primary schools in Cameroon is that most teachers do not adequately equip pupils with HOTS. Many factors may account for this prominent among them are teachers’ non-exploitation of IR and the teacher-centered method of teaching which promotes rote learning [9]. In addition, the overloaded nature of the Cameroon primary school curriculum seemed to discourage teachers from moving beyond the boundaries of a subject area. As a result, a good number of primary school leavers are less competitive in the global market, find it difficult to cope in secondary school, or drop out of school. In line with this, [10] asserts that to ensure that teaching in Cameroon primary schools becomes more learner-centered, and problem-solving and that it responds to the realities of the Cameroonian society, teachers should progressively abandon the predominant use of direct teaching that has continued to characterize teaching in our schools. Hence, a need for a paradigm shifts from a teacher-centered teaching approach to a learner-centered approach like the use of indigenous pedagogic strategies, specifically IR which can affect the development of pupils’ HOTS. Therefore, this study examines the effect of IR on the development of pupils’ HOTS in public primary schools in the North-West Region of Cameroon.

1.1. Background to the Study

The contextual background is twofold: the international context and the local context. The international context is grounded in international legal policy frameworks on education ratified by Cameroon while the local context focuses on local (national) policy frameworks and the classroom context. The international policy frameworks include the Dakar Framework for Action; the UNESCO 1960 Convention Against Discrimination in Education; the Salamanca Statement and Framework for Action; the 2015 Incheon Declaration for Education 2030 and Framework for Action for the Implementation of Sustainable Development Goal (SDG) 4; and the Safe Schools Declaration [11] [12].

The Dakar Framework for Action [13]: It was adopted by the World Education Forum which was held in 2000 in Dakar, Senegal to assess the extent to which states had met up with their commitments towards the achievement of Education for All targets. It reaffirmed the vision set out in the World Declaration on Education for All (EFA) in Jomtien, Thailand (WCEFA, 1990). Article 3 of its declaration apart from advocating a breakaway from rigid prescriptive educational systems towards flexible ones, recognized the existence of disparities and acknowledged

the vulnerability of particular groups to the inherent discrimination exerted on them in education. The declaration therefore agreed that active commitment must be made to remove this disparity and every person with disabilities “who should not suffer any discrimination in access to learning opportunities” should be provided with normal education as an integral part of the educational system. This emphasized the need for inclusive education as against exclusive education.

The UNESCO 1960 Convention Against Discrimination in Education: It was adopted in 1960 in Paris, France, by the General Conference of UNESCO. The convention requests member states to ensure by legislation that there is no discrimination in the admission of pupils to educational institutions, such as those arising from differences in race, colour, gender, language, religion, political or other opinion, national or social origins, economic condition, or birth in line with the constitutional mission of UNESCO which is instituting collaboration among nations to “advance the ideal of equality of educational opportunity without regard to race, sex, or any distinctions, economic or social” [14]. It also mandates member states to disallow any differences of treatment by the public authorities between nationals, except based on merit, in matters related to school fees, and grants or scholarships, and to respect the liberty of parents to choose the kind of education they desire for their children.

The Salamanca Statement and Framework for Action: It was adopted by the World Conference on Special Needs Education organized by the Government of Spain in co-operation with UNESCO and held in Salamanca, Spain from 7 to 10 June 1994. While reiterating previous sessions, the Salamanca Statement confirmed that “all children and young people of the world with individual strengths and weaknesses, with their hopes and expectations have the right to education”. For this objective to be attained, the Salamanca Statement and Framework introduced the principle of inclusion which was to find expression in inclusive schools. Such schools amongst other things should “accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions (and) schools have to find ways of successfully educating all children including those with serious disabilities” [15].

The 2015 Incheon Declaration for Education 2030 and Framework for Action for the Implementation of Sustainable Development Goal (SDG) 4: It was adopted at the World Education Forum organized in 2015 in Incheon, Republic of Korea to put up a new overarching vision for education set to be achieved in 2030, as captured in Goal 4 of the Sustainable Development Goals (SDGs) and its corresponding targets. SDG 4 of the United Nation’s 2030 Agenda for Sustainable Development focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all [16]. The framework for action for the implementation of SDG 4 which ensued from this declaration outlines indicative approaches and strategies that can be adopted in different countries for effective translation into practice of the commitments made in Incheon. It emphasizes

among others, the need for partnerships at all levels to be guided by the principles of open, inclusive, and participatory policy dialogue, along with mutual accountability, transparency, and synergy.

The Safe Schools Declaration (SSD): It is an inter-governmental political commitment to protect pupils, students, teachers, schools, and universities from the worst effects of armed conflict; it outlines a set of commitments to strengthen the protection of education from attack and to the restrict use of schools and universities for military purposes. The First International Conference on Safe Schools was held in Oslo, Norway, in May 2015. On September 10, 2018, in New York, Cameroon became the 81st country worldwide and the 22nd African Union (AU) member to join. Cameroon's endorsement of the SSD signals her commitment to better safeguard learning and mitigate the devastating damage caused by attacks on education and the use of schools by both military and non-state armed groups. However, pupils, students, teachers, schools, and universities in Cameroon continue to endure significant violence in the context of the armed conflict in Cameroon's Anglophone regions, where dozens of schools have been set on fire, and pupils, students, and teachers have been threatened, injured, killed, kidnapped, or detained.

There are existing gaps in the practical implementation of the aforementioned international conventions to which Cameroon is a signatory. This requires an examination of the national policies to further explain the international conventions. The national policy frameworks binding education in Cameroon include the national education policy Law, and the National Development Strategy (Cameroon's Vision 2035).

The adoption of the national education policy Law began with the 1995 National Education Forum organized by the Cameroon Government in Yaounde from May 22-27 and chaired by the then Minister of National Education, Robert Mbella-Mbappe [17]. Mbua [18] states that one of the rationales for the holding of the forum was "the lack of proper education policy" ([18]: p. 453). Generally, the forum held based on the problems that characterized the educational system as follows: 1) a pedagogy that fosters reproduction rather than production; 2) a system demoralized by high dropout rates, irregular attendance, and high repetition and failure rate; 3) poor quality teaching and irrelevant curriculum content with respect to geo and socio-historical circumstances of life at all levels [19]. Following the recommendations of the forum and adoption by parliament, the President of the Republic in 1998 enacted Law No. 98/004 of 14th April 1998 to lay down guidelines for education in Cameroon. This law which constitutes a major point of reference to Cameroon education policy consists of 5 Parts and 42 Sections and applies to nursery, primary, secondary grammar, and technical education, as well as teacher education. According to Section 4, "The general purpose of education shall be to train children for the intellectual, physical, civic and moral development and their smooth integration into society bearing in mind prevailing economic, socio-cultural, political and moral factors." Section 5 notes that on the

basis of the general purpose, the objectives of education shall be to: 1) train citizens who are firmly rooted in their cultures; 2) inculcate the major universal ethical values which are dignity and honour, honesty and integrity, as well as the sense of discipline into pupils and students; 3) promote family life; 4) promote national languages; 5) develop creativity, a sense of initiative, and the spirit of enterprise; 6) provide physical, sports, artistic, and cultural training for the child; and 7) promote hygiene and health education [20].

However, it has been observed that very little attention has been given to African indigenous pedagogy within the primary school curriculum per the stipulated policy Law on education. Ndille [21] points out the lack of a “Cameroon-centric” identity in school curriculum especially in the use of indigenous knowledge and national languages. Similar views are expressed by [22] and [23].

While the Law mentioned in one of its objectives the need to train citizens who are deeply rooted in their cultures, very little was said in terms of tuning the educational system towards a rural existence. In 2018 as a fallout of the 1998 Law, a New Primary School Curriculum for the English Subsystem was launched.

The National Development Strategy 2020-2030 (NDS30) which carries Cameroon’s Vision 2035 has contributed to shaping Cameroon’s educational programmes. NDS30 constitutes the new reference framework for the period 2020-2030. Cameroon’s 2035 Vision, which aims at making Cameroon “an emerging and democratic country united in its diversity,” has four overall objectives: 1) curb poverty to a socially acceptable level; 2) become a middle-income country; 3) attain the level of Newly Industrialized Country; and 4) strengthen national unity and consolidate the democratic process [24]. To sustain the 2035 emergence plan, the NDS30 intends to engage in a structural transformation of the national economy by effecting fundamental socio-economic structural changes using four main pillars.

The classroom context is the second aspect of the local context related to teaching and learning in primary school, specifically using indigenous practices (strategies and materials) to facilitate teaching and learning in public primary schools in the NWR of Cameroon. Generally, teaching and learning in primary schools follow the revised Cameroon Primary School Curriculum of the English Subsystem that was introduced by MINEDUC in 2018 for English-speaking primary schools. This curriculum is grounded in the Competence-Based Approach (CBA), which aims to empower young learners with the ability to think critically, and innovate, as well as foster lifelong learning [25]. CBA is to be achieved through innovative pedagogic strategies which include but are not limited to Project-Based Learning (PBL), Cooperative Learning (CL), and Integrated Learning Themes (ILTs). Consequently, learners develop a deeper understanding of content in their local contexts. This necessitates the use of indigenous strategies and materials to facilitate teaching and learning in primary school classrooms. The teaching of National Languages and Cultures is being stifled by the government’s policy of official English and French Bilingualism [26].

However, despite the potential of using indigenous strategies and materials to

develop pupils' HOTS, primary school teachers face several challenges. Some of these challenges include the ongoing socio-political crisis in the North-West and South-West Regions; rural-urban migration of teachers; inadequate number of teachers; insufficient instructional materials; inadequate teacher training; inadequate professional development of teachers on the New Primary School Curriculum to keep teachers abreast with the recommended pedagogic practices due to issues of accessibility to attend seminars and workshops organized at the level of the Division and Region. Some of the challenges posed by the ongoing socio-political crisis are against the Safe School Declaration that Cameroon ratified in 2018. These glaring challenges related to the development of pupils' HOTS are a call for concern and a pointer to the need for investigation of IR to see the extent to which they enhance the development of pupils' HOTS.

1.2. Statement of the Problem

The New Primary School Curriculum that was released in 2018 by MINEDUC incorporates aspects of indigenous or local content to be taught using indigenous play-based pedagogic strategies, especially indigenous riddles. The use of indigenous riddles can significantly instill HOTS in young learners such as critical, analytical, evaluative, and creative thinking, as well as communication, collaboration, problem-solving, and decision-making skills. This will contribute to human resource development in view of building a more productive workforce that can move the country to emergence. MINEDUB introduced the CBA, which requires the teacher to use pedagogic strategies that encourage active and collaborative learning so that learners can be creative. Most often, with the overloaded nature of the New Primary School Curriculum and the reduction of the number of school days from 5 to 4 due to the socio-political crisis in the two English-speaking regions, primary school learners are taught how to remember and understand contents rather than how to analyze, evaluate, and create. Consequently, owing to their weak problem-solving and decision-making abilities, these learners are bound to face problems like high dropout rates and high levels of unemployment. This will slow down the achievement of Vision 2035, which aims to make Cameroon "an emerging and democratic country united in its diversity" [24]. It is against this backdrop that the researchers intend to find out if indigenous riddles affect pupils' development of HOTS in the North-West Region of Cameroon.

1.3. Objective of the Study

The lone objective of this study is:

To examine the effect of indigenous riddles on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon.

1.4. Research Question

To what extent do indigenous riddles affect the development of pupils' HOTS in

public primary schools in the North-West Region of Cameroon?

1.5. Research Hypothesis

Ho: Indigenous riddles have no significant effect on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon.

Ha: Indigenous riddles have a significant effect on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon.

2. Conceptual and Theoretical Review

2.1. Indigenous Riddles

Indigenous riddles are brief and concise expressions of moral and societal values. Indigenous riddles, like folktales, are considered an important aspect of speech games that promote critical thinking. The importance of IR as a specific type of brain teaser cannot be overemphasized, but due to the influx of foreign games, local riddles are gradually losing their value [27]. Riddles sharpen one's reasoning skills and quickness of wit, as well as foster quick mental flexibility of a child as he/she grapples with different possibilities and probabilities in the search for correct answers to given riddles [28]. Apart from providing entertainment, IR are regarded as effective brain teasers or conversation starters that stimulate children to think about possible answers, sharpen their reasoning and critical thinking skills, and enhance their cognitive development [8]. In line with this, Banda and Morgan [29] concur that the use of riddles as brain teasers has the potential to engage young minds to higher levels of thinking. A brain teaser, in this context, is a form of puzzle that requires thought to solve. Friday and Oghenerioborue [30] state that the oral performance of riddles among children and adults subjects them to a high level of imagination and critical thinking as they make frantic efforts to provide solutions to the problems contained in them. Given the multiple functions that riddles play in society and their benefits to learners in early years' education, support the use of riddles as instructional resources. Thus, these authors examine the various competency-based skills embedded in riddles such as creative and critical thinking, cognitive, numeracy, and collaborative and environmental awareness skills. Likewise, Gachanja and Kebaya [31] in their critical examination of the pedagogical aspects of riddles among the Abagusii community emphasize that riddles should be embraced as an important instructional method, based on their educational values and skills. Similarly, Gwaravanda and Masaka [28] assert that riddles are important logical tools in the traditional system of education among the Shona in Zimbabwe. To them, riddles have important functions like socialization, recreation, and sharpening of one's reasoning skills and quickness of wit.

In traditional African communities, riddles constitute a formidable intellectual exercise because they enhance the development of a child's ability and skills for decision-making. They are borne out of cosmology and African value systems. They introduce children to the material and non-material cultures, namely:

agricultural tools, household utensils, arts, and crafts, effigies and symbols, mother tongue, belief systems, music, drama, geography, history, social ordering, and the socio-political structure of the African people. Riddles are used to pose problems for the audience to find solutions, though not always in question form [32]. Some selected examples of riddles and their correct responses according to Eseré and colleagues are: 1) tell me an object that fetches water from the soil to the sky (coconut); 2) tell me what makes a child cry in the presence of his/her mother (hunger); 3) tell me what carry children from the soil to the space (pawpaw); 4) who can tell me what has the effrontery to knock the king's head (fly)? And 5) what falls into the river without producing noise (cotton wool) (p. 263)? Some indigenous riddles are metaphoric. An example here is five elders accompanying a king to a battle. The king disappeared. All the five elders return (The five elders are the five fingers with which food is eaten. The king is the morsel of food which disappeared into the mouth where the battle of chewing and swallowing is fought) (Olatunji [33], as cited in Eseré [32]). Another example of a metaphoric riddle stated by [27] is "A water pot in the sky" (coconut).

Indigenous riddles have proven to be a form of education and entertainment that some people today call edutainment, that is, a combination of education and entertainment [34]. Besides the primary role of entertainment, riddles play important educational roles in school learning. Some relevant skills embedded in indigenous riddles that can enhance the development of pupils' HOTS include critical thinking, communication, collaboration, and problem-solving skills. Riddles promote critical thinking and problem-solving skills in children. They require a child to carefully analyze and interpret events in his or her surrounding environment to come up with a well-considered opinion. Critical thinking and problem-solving skills are important elements of intellectual (cognitive) development and children need these skills to survive in the modern environment [8]. Participation in indigenous riddles is fun and engaging, and it helps learners strengthen their critical thinking skills without knowing. Indigenous riddles serve as a form of communication that encourages the spirit of collaboration and competition among pupils. This lays a foundation for children to form future social relationships.

2.2. Higher-Order Thinking Skills

The concept of higher-order thinking skills (HOTS) is derived from the cognitive domain of Bloom's Taxonomy of Educational Objectives introduced in 1956 (Forehand [35], as cited in [36]. Human thinking skills can be classified into two major groups: low-order thinking skills (LOTS), and higher-order thinking skills (HOTS). LOTS are the first three levels of Bloom's taxonomy, which are remembering, understanding, and applying. HOTS are the last three levels of Bloom's taxonomy namely analyzing, evaluating, and creating [37]. Besides analyzing, evaluating, and creating, HOTS is broad in the sense that it not only covers the higher levels of thinking of the Revised Bloom's Taxonomy (RBT), but also includes

components of 21st century skills such as critical thinking, creative thinking, communication, collaboration, problem-solving, and decision-making skills [38]-[40].

Critical thinking is an intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or assessing information gathered from, or generated by observation, experience, reflection, reasoning, or communication, as a guide to belief and action (The National Council for Excellence in Critical Thinking, 1987, as cited in Loseby [41]). According to Facione [42], “Critical thinking is a purposeful, self-organizing judgment that results in interpretation, analysis, evaluation, and inference; it is also a description of the evidential, conceptual, methodological, criterion-based or contextual assessment upon which that judgment is built” (p. 2). Facione adds that the specific areas of critical thinking skills correspond to interpretation, analysis, evaluation, inference, explanation, and self-regulation. Critical thinking skills are characterized by the ability to question, compare, analyze, and assess/evaluate.

Analytical thinking, according to World’s Food Programme (WEF) [43], is the ability to break down problems, systems, or ideas into component parts, identify patterns or relationships among data, draw conclusions, and articulate how the parts relate to the whole. This perspective highlights the importance of skills such as critical, creative thinking, problem-solving, and communication in supporting analytical thinking. Analytical thinking, alongside skills like critical thinking, creative thinking, problem-solving, and decision-making are commonly labeled as cognitive competencies (OECD) [44].

Evaluative thinking, according to Cole [45], is learning how to learn and think critically, and combines critical, creative, contextual, practical thinking, and reflective practice. Evaluative thinking provides the tools for systematically gathering and interpreting evidence that can be used to provide information about progress and provide feedback loops for refinement, adjustment, abandonment, extension and new learning [46].

Creative thinking is defined by the OECD (Organization for Economic Co-operation and Development) Programme for International Student Assessment (PISA) as the ability to generate, evaluate, and improve ideas to produce original and effective solutions, advance knowledge, and create impactful expressions of imagination [44]. Creative thinking, which is related to the broader concept of creativity, focuses specifically on the cognitive processes needed for creative work. Closely related to creativity is innovation. Creative thinking skills are characterized by the ability to create something new and having problem-solving strategies in multiple ways. Analytical, evaluative, and creative thought all embrace creative thinking. The integration of these three components is imperative for instruction to be successful [47].

Collaboration skills are characterized by the ability to work together and build networks to solve problems while taking actions that respect others’ needs and perspectives and contributing to and accepting the outcomes [48]. An

example of a collaboration skill that has attracted increased attention is collaborative problem-solving (CPS) [49]. PISA defines CPS as the capacity of an individual to effectively engage in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution and pooling their knowledge, skills, and efforts to reach that solution [43].

Communication skills refer to the different competencies involved in the effective transmission of information. This includes non-technological competencies such as speaking, listening, reading, and writing. Skiksha [48] outlines seven essential elements of communication skills: listening (strong observational skills to fully understand the message being conveyed); non-verbal communication (body contact like posture, gestures, and eye movement); being clear (choosing the right words to deliver a message that is easy to understand); being concise (using fewer, well-chosen words to convey your message); being confident (the right messages with the appropriate non-verbal communication); being personable (a friendly tone and a simple smile can go a long way); being patient (being composed and not rushing when conveying your message). Following this, Enjei [50] contends that there are two main types of communication: verbal and non-verbal. Communication skills are characterized by the ability of children to convey ideas and information effectively through various ways [51]. [52] observe that communication has strong links with creativity, critical thinking, and collaboration.

Problem-solving skills entail brainstorming ideas without judgment or criticism and considering different perspectives and approaches [53]. The Creative Problem Solving (CPS) model has been used in education to help learners develop problem-solving skills and to promote creativity and innovation in the classroom. The CPS model consists of six stages: understanding the problem, generating ideas, developing solutions, planning for action, taking action, and evaluating results.

Lastly, decision-making skills entail choosing between alternatives. They are characterized by the ability to make constructive choices about personal behaviour and social interactions across diverse situations based on ethical standards, safety concerns, and social norms. Sub-skills that constitute decision-making skills include identifying problems, analyzing situations, solving problems, evaluating, reflecting, and ethical responsibility [54]. High-level thinking leads to decision-making based on available knowledge or experience.

2.3. Piaget's (1969) Theory of Cognitive Development and Indigenous Riddles

The theory of cognitive development was developed by Jean Piaget, a Swiss psychologist widely regarded as the father of child psychology. Piaget's theory was founded on the concept of cognitive structures. Piaget referred to these cognitive structures as cognitive schemas. Schemas are mental structures that contain all of the information we have relating to one aspect of the world around us. The schema

is used to interpret information in a way that aids in the understanding of the environment. These schemas become more complex with experience. Piaget believed these cognitive structures corresponded to stages of child development. In Piaget's theory, two major principles operate in schema development: adaptation and organization. When the child experiences cognitive conflict (a discrepancy between what the child believes the state of the world to be and what he or she is experiencing) adaptation is achieved through assimilation or accommodation. Assimilation involves the interpretation of events and incorporating new information into previously existing cognitive structures or schemas. Accommodation involves the formation of new cognitive structures or schemas when new information does not fit into existing structures. Organization refers to the mind's natural tendency to organize information into related, interconnected structures. Piaget argued that as the process of adaptation occurred, a child went through stages of cognitive development in which increasingly complex cognitive processes were used to solve environmental problems at each stage.

Piaget divided children's cognitive development into four stages, with each stage representing a way of thinking and understanding the world. Each stage is correlated with an approximate age period of childhood, which would help frame the curriculum. The four stages of cognitive development suggested by Piaget are sensory-motor, preoperational, concrete operational, and formal operational stage. The sensory-motor stage begins at birth and lasts till the child is about two years old. This stage is called sensorimotor because the child's thinking involves seeing, hearing, moving, touching, suckling, feeling, and using their senses. The main feature of this stage is object permanence (at 7 - 9 months), which refers to the child's ability to understand that objects, events, and people continue to exist even when they cannot directly be seen, heard, or touched. In other words, it is when your youngster realizes that the objects in the world, including people exist even when they aren't interacting with them.

The preoperational stage begins from two years and lasts when the child is seven years old. This stage is called preoperational because the child has not yet mastered the ability to perform mental operations. Children's thinking at this stage is governed by what is seen rather than by logical principles. The main features of the preoperational stage are symbolic thinking, animism, egocentrism, and intuition. Symbolic thinking is the child's ability to think using signs and symbols to represent something or someone else; for example, a doll may symbolize a baby. Animism is the child's belief that non-living things, such as toys, have life and feelings like people. Egocentric thinking centers on the child's view of the world, where he or she believes that his or her way of thinking is the only way to think. Intuitive thinking is based on the child's subjective judgments about situations.

The concrete operational stage ranges from seven to eleven years. This stage is called concrete operational because the child can think logically, as well as manipulate concrete or real objects. Thinking becomes less egocentric with increased

awareness of external events and involves concrete references. Piaget considered this stage as a major turning point in the child's cognitive development because it marks the beginning of logical and operational thought to make mistakes or be overwhelmed when asked to reason about abstract or hypothetical problems. At this stage, the child begins to grasp the concept of conservation by recognizing that certain properties of an object remain constant despite a change in its appearance. Finally, the formal operational stage begins from 12 years and beyond. This stage is characterized by the emergence of logical thinking and reasoning and the disappearance of physical and perceptual constraints. The main difference between the concrete operational and the formal operational stage is that concrete operations are performed on things, while formal operations are performed on ideas.

The precise stage of Piaget's cognitive development stages related to this study is the concrete operational stage. This stage depicts an important step in the cognitive development of primary school children (Piaget [55] as cited in [56]). According to Piaget, thinking at this stage is characterized by logical operations, such as conservations, reversibility, or classification, allowing logical reasoning, analyzing, and interpreting. Reasoning, analyzing, and interpreting are aspects of critical thinking. Critical thinking is one of the HOTS that teachers should instill in pupils. Concrete-operational thinking represents an important prerequisite for formal thinking and is associated with a range of learning outcomes and academic achievement, such as mathematical fluency and achievement (conservation ability), as well as reading comprehension and achievement (conservation and classification ability). The relevance of Piaget's theory to this study is that children answer a riddle question posed by associating what is asked with what they know from realities in their surroundings. Through such a process of association, children can easily learn about their local realities [57]-[60].

2.4. Cognitive Apprenticeship Theory of Collins *et al.* (1989)

The term cognitive apprenticeship (CA) was first coined and articulated by Collins *et al.* [61] in their assertion that "We propose an alternative model of instruction that is accessible within the framework of the typical American classroom. It is a model of instruction that goes back to apprenticeship but incorporates elements of schooling. We call this model cognitive apprenticeship" (p. 453). Collins *et al.* [61] defined CA as "learning through guided experience on cognitive and metacognitive, rather than physical skills and processes" (p. 456). The CA theory describes a process whereby a master with a specific skill teaches that skill to a learner or apprentice, with emphasis on cognitive rather than physical skills [62]. Cognitive apprenticeship has its roots in social learning theories, implying that one cannot engage in a CA alone, but rather it is dependent on expert demonstration (modeling) and guidance (coaching) in the initial phases of learning. It describes the design of a learning environment that helps novices become experts through guided learning

with an emphasis on the importance of learning in context [63].

Before the advent of schooling, apprenticeship was the most common means of learning and was used to transmit the knowledge required for hands-on activities [61]. Cognitive apprenticeship is an instructional model whereby teachers/experts make explicit their generally tacit cognitive processes, which help learners observe, practice, and enact highly cognitive, complex tasks. It also helps learners to gain both cognitive and metacognitive skills. Here, learners focus their observations of expert performance to facilitate skill development. Through this, learners gain autonomy through formulating personal learning goals [64]. Cognitive Apprenticeship allows learners to actively practice what they have learned in a real-life environment [65]. The CA theory consists of four dimensions: content, methods, sequencing, and sociology. Content deals with facts, domain knowledge, procedures, and generally applicable techniques for accomplishing a task and learning strategies. The methods include components and consist of modeling, coaching, scaffolding, articulation, reflection, and exploration. Sequencing deals with the way learning activities are being ordered, and sociology deals here with learning social context where learners perform tasks, which is also known as the authentic context for task accomplishment [66]-[68]. The methods of CA theory are relevant to this study.

Instructional Methods Associated with Cognitive Apprenticeship Theory

The six instructional methods of CA are classified into three groups. The first group (modeling, coaching, and scaffolding) is the core of CA, designed to help learners acquire an integrated set of cognitive and metacognitive skills through the processes of observation and guided and supported practice. The second group (reflection and articulation) are methods designed to help learners both focus their observations of expert problem-solving and gain conscious access to (and control of) their problem-solving strategies. The final method (exploration) is aimed at encouraging learner autonomy not only in carrying out expert problem-solving processes but also in defining or formulating the problems to be solved [61]. The six teaching methods of CA are briefly elaborated as follows.

Modeling: Modeling deals with demonstrating the thinking process. Here, learners observe the teacher perform an activity or task and build a conceptual model of the processes that are required to accomplish the task [62]. Teachers actively demonstrate and explain skills and procedures to learners. With this, the teacher articulates an approach to problem-solving (heuristics) and intentional thought processes (controlled processes). Learners observe the expert performing a task and ask questions.

Coaching: Coaching involves the teachers observing learners and providing specific and concrete feedback on their performance. The goal here is to bring the learner's performance closer to the expert's performance. Coaching is realized through interactions that are immediately related to specific events or problems

that arise as the learner attempts to carry out the target task.

Scaffolding: Scaffolding refers to support that is provided by the teacher to assist learners in carrying out tasks beyond their current abilities. The support can either be in the form of suggestions or help when he/she recognizes that a learner is unable to solve a certain aspect of a task, or they may take the form of physical support where the learners and the teacher solve problems cooperatively. Scaffolding occurs within Vygotsky's zone of proximal development, which is the distance between a learner's current skill level and the next skill level that the learner cannot reach without assistance. A prerequisite for such scaffolding is an accurate diagnosis of the learner's current skill level in carrying out the target activity. With this, the teacher gradually reduces support as the learner becomes more independent. This process is called fading. Fading consists of the gradual removal of support until learners are on their own. Learners feel motivated and appreciated when their instructors show interest in their prior knowledge/skills.

Reflection: Reflection deals with self-analysis and assessment; it involves a teacher prompting learners to deliberately consider their strengths and weaknesses. This method helps learners to understand their strengths and weaknesses and to process recent experiences. The teacher here asks for learners' reflections more often and then provides suggestions to reinforce their strengths and improve their weaknesses. Reflection occurs when students reflect on their problem-solving strategies and understanding of concepts and compare them to other experts and/or learners [64].

Articulation: Articulation deals with verbalizing the results of reflection and occurs when learners are allowed to articulate their understanding of a particular task, concept, or method through some type of content mastery assessment. Here, the teacher asks learners to explain their understanding and thought processes, as well as encourages learners to ask questions. This helps to deepen knowledge, understanding, and memory in learners.

Exploration: Exploration relates to the formation and testing of one's hypotheses whereby the learner can accomplish tasks and solve problems independently. The teacher offers a task/problem for the learners to solve on their own. Here, exploration is the natural culmination of the fading of supports, wherein the teacher encourages learners to set and pursue personal learning goals. Learning at this stage is self-directed and guided by learners' strengths and weaknesses [66] [67] [69] [70]. This enables learners to be engaged and focused on their learning process. This equally helps teachers identify meaningful learning experiences for individual learners.

3. Methodology

This study was carried out in public primary schools in the North-West Region of Cameroon. Public primary schools were chosen because low learning achievement in Basic Education in Cameroon remains a major challenge, with learners in urban areas and those enrolled in confessional and lay private schools performing

better than their peers in rural and public schools. Consequently, dropout rates for learners in rural and public schools remain high. Additionally, gaining access to public primary schools through authorization letters obtained from the Regional Delegate of Basic Education (RDBE) via the Divisional Delegate of Basic Education (DDBE) and the sub-divisional inspector of Basic Education (IBE) was easier and more familiar compared to confessional and lay private primary schools.

The study adopted a mixed-methods approach, using the convergent parallel mixed-methods design. This design was used because the researcher collected both quantitative and qualitative data nearly at the same time, analyzed them separately, and then combined, compared and interpreted the results to see if the findings confirm or disconfirm each other. According to Creswell [71], the purpose of using this design is to use quantitative data and results to assist in the interpretation of qualitative findings.

The instruments used to collect data were a focused group discussion guide, an interview guide, and a questionnaire. The validity of the qualitative instruments was determined using the content validity index (CVI), which stood at 0.92 and 0.93 for focused group discussion and interview guide respectively, while the reliability of the quantitative instrument was determined using the Cronbach Alpha with an overall reliability coefficient value of 0.837.

The simple random sampling technique was used to select four Divisions. This sampling technique was used to give each Division an equal chance of being selected. The convenience sampling technique was used to select six Subdivisions and 32 functional schools. This sampling technique was used to select Subdivisions and functional schools that were accessible, available, and safe. The problem of accessibility, availability, and safety arose due to the difficulty of getting to some Subdivisions and schools as a result of the ongoing socio-political crisis in the two English-speaking regions of Cameroon. The purposive sampling technique was used to select classes 4 and 6 primary school pupils, Levels II and III primary school teachers, headteachers, and sub-divisional inspectors. This sampling frame was used to select the class of interest (classes 4 and 6) because they constitute the end of Levels II (classes 3 and 4) and III (classes 5 and 6) respectively [72]. Levels II and III primary school teachers were selected because the researchers wanted to identify and work only with the Levels whom they believed could influence pupils' HOTS through their good instructional skills developed through effective headteachers' pedagogic supervision. This sampling technique justifies the exclusion of Level I (classes 1 and 2) primary school pupils and teachers from the study. Headteachers and sub-divisional inspectors were selected because they play a key role in supervising the pedagogic approaches in schools and indirectly influence instruction [73].

The population of this study comprised 80,089 pupils, 3,025 teachers and headteachers, and 34 sub-divisional inspectors from 414 functional public primary schools distributed across the seven Divisions of the NWR for the 2023/2024 academic year (RDBE, 2024). The target population of this study comprised of

80,089 primary school pupils, 2,545 teachers, 414 headteachers, and 26 sub-divisional inspectors from 414 public functional primary schools in seven Divisions and 26 Subdivisions of the NWR of Cameroon. Out of the 34 Subdivisions of the NWR, only 26 Subdivisions with functional public primary schools were targeted. Using Krejcie and Morgan's [74] Table for sample size calculation, a sample size of 660 participants (368 pupils, 254 teachers, 32 head teachers, and six sub-divisional inspectors) was drawn from an accessible population of 8,050 pupils, 750 teachers, 32 head teachers, and six sub-divisional inspectors for the 2023/2024 academic year.

In this study, after administering structured questionnaires to Levels II and III primary school teachers, the researcher randomly selected pupils from classes four and six and carried out a focused group discussion (FGD) with them. The researcher equally carried out in-depth interviews with headteachers and sub-divisional inspectors which enabled him to obtain additional information. Therefore, the qualitative method was dominant (with three data sets) whilst the quantitative method (with one data set) was embedded, or nested, in it [75]. For easier appreciation of the questionnaires, the global mean score was used to reach a decision point as follows:

$$Mean(\bar{X}) = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.5$$

A mean score of 2.5 and above indicates the extent to which participants agreed with the opinion expressed in an item or the entire objective, while a mean score of less than 2.5 shows the extent to which they disagreed. Data collected were entered into SPSS version 26.0 software and analyzed both descriptively (using tables, frequency counts, percentages, multiple response sets, mean, standard deviation, variance, and charts) and inferentially (using the Ordinary Logistic Regression). Qualitative data were analyzed using the thematic and content analyses, with the aid of themes, sub-themes, grounding, and sample quotations. The reliability analysis report for the quantitative instrument is presented in **Table 1**.

Table 1. Reliability analysis report.

Variables	No. of items	Variance	Cronbach alpha coefficients
Indigenous riddles	6	0.145	0.818
Higher-order thinking skills	18	0.055	0.856
Overall reliability analysis value	24	0.1	0.837

Table 1 indicates that the consistency of participants' responses was satisfactory with the coefficient values ranging from 0.818 to 0.856 which is considered to be a good reliability level. The overall coefficient value of the questionnaire is 0.837 above the recommended threshold of 0.7. The low overall variance of 0.1 denotes that the respondents had similar views irrespective of their demographic information.

4. Findings

The findings are presented based on the specific research question and hypothesis earlier stated. The qualitative findings are presented before the quantitative findings because most of the data collected were qualitative.

Research Question: To what extent do indigenous riddles affect the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon?

Qualitative findings on pupils' perceptions of IR indicate that while many pupils enjoy IR for their playful nature, some found critical thinking required to solve them difficult as represented in the following statements "*Yes. I like traditional riddles*", "*I enjoy riddling*", "*No, because answers to riddles are hard*", "*No, because you need to think well*". This duality highlights the need for balance in pedagogical approaches. Responses revealed riddle learning takes place mainly through informal family interactions rather than the formal curriculum. Specific topics cited ranged from household items to the natural world, conveying riddles' cultural significance as expressed in the statements "*My mother teaches me riddles about things in the house*", "*My parents teach me riddles about tools that we use in the farm to work*", "*My father and mother teach me riddles about types of trees*", "*My elder brother teaches me riddles about types of animals*", "*My grandfather teaches me riddles about growing old*". The primacy of intergenerational transmission beyond school suggests riddles hold value as a family tradition but may lack curricular priority or teacher expertise. Community engagement thus appears crucial to sustain this element of oral tradition. Further insights could be gained by examining why IR is not officially taught and how school-community collaboration could strengthen their educational role. Pupils' views on optimal facilitation styles may also offer useful guidance. Qualitative findings on pupils' perceptions of IR were supported by those gleaned from head teachers.

Qualitative findings on head teachers' perspectives on IR revealed that while acknowledging riddles' educational merits, head teachers reported them as generally having an unnoticeable curricular presence and dependent on individual teachers' cultural knowledge and discretion as depicted in their statements "*Indigenous riddles are taught at the discretion of teachers*", "*Some teachers are not well-versed with some specific oral traditions*". Others consented to riddles' teaching through the availability of resource persons as expressed in the statement "*The council supports the payment of resource persons to teach riddles and other aspects of culture*". Most of them perceived the majority of pupils as not familiar with traditional riddles due to urban upbringings lacking cultural grounding as portrayed in the statement "*Many children are not very familiar with traditional riddles due to the lack of a cultural background*". This signals potential barriers to meaningful learning. Headteachers provided insightful recognition of riddles' cognitive and socio-emotional contributions as represented in the statements "*Questions that are asked are not straight. The child needs to reason in order to bring out answers*",

“Indigenous riddles promote speculative thinking in pupils by making indirect instead of direct references to things”, “Traditional riddles develop in pupils the spirit of competition, winning, and accepting defeat”. However, responses implied limited guidance and expertise potentially diminish these benefits for some pupils. To strengthen delivery, heads suggested dedicated curricular prioritization, specialized teacher training, and initiatives like cultural experts/resource persons in schools. Qualitative findings on head teachers’ perceptions of IR were validated by those derived from sub-divisional inspectors.

Qualitative findings on sub-divisional inspectors’ perspectives on integrating IR showed that they recognized riddles’ varied learning affordances, but noted their general lack of curricular visibility and reliance on individual teacher initiative for inclusion as depicted in the statement *“The teaching of traditional riddles depends on teachers’ initiative”*. This points to gaps in systematic prioritization and guidance. On familiarity, inspectors attributed to lack of exposure mainly to larger societal forces diluting traditional learning channels like urbanization and parental disengagement from the cultural transmission as captured in their statements *“Most children who live in the urban areas are not familiar with traditional riddles”, “Some parents neglect to teach their children some traditional cultural values at home like traditional riddles”*. Beyond linguistic and analytical development, inspectors highlighted cross-cutting benefits such as nurturing collaborative spirit and cultivation of reflection and moral discipline as expressed in the statements *“Children listen attentively during indigenous riddle sessions in order to bring out meaning”, “Pupils need to carefully analyze and interpret riddles to bring out their meaning”, “Indigenous riddles are usually told as children sit in groups, thus promoting group learning...”, “Traditional proverbs are useful in inculcating discipline in pupils”, “Pupils reconsider their actions when they reflect on the caution embedded in proverbs”*. However, responses implied current delivery models may not adequately serve pupils from diverse backgrounds or maximize identified potentials. To strengthen impact equitably, inspectors appear to suggest that more robust curricular provision, teacher capacity building, and community-based experiential learning initiatives should be explored. **Figure 1** presents a knowledge chart on common emerging themes on IR from data gleaned from head teachers and inspectors.

As illustrated in **Figure 1**, in associating the data gleaned from head teachers and inspectors on IR, the following common emerging themes were identified: IR is unnoticed in the curriculum, taught with the availability of resource persons, pupils are both familiar and not familiar, critical thinking (particularly analyzing and reasoning), and creative thinking skills (specifically imagination) as key pedagogic values for school learning. **Figure 1** reveals that a considerable number of head teachers and inspectors both upheld the view that IR is unnoticed in the curriculum and pupils are not familiar with it. Qualitative data gleaned from pupils, head teachers, and inspectors on IR were reinforced with quantitative data gleaned from teachers as presented in **Table 2**.

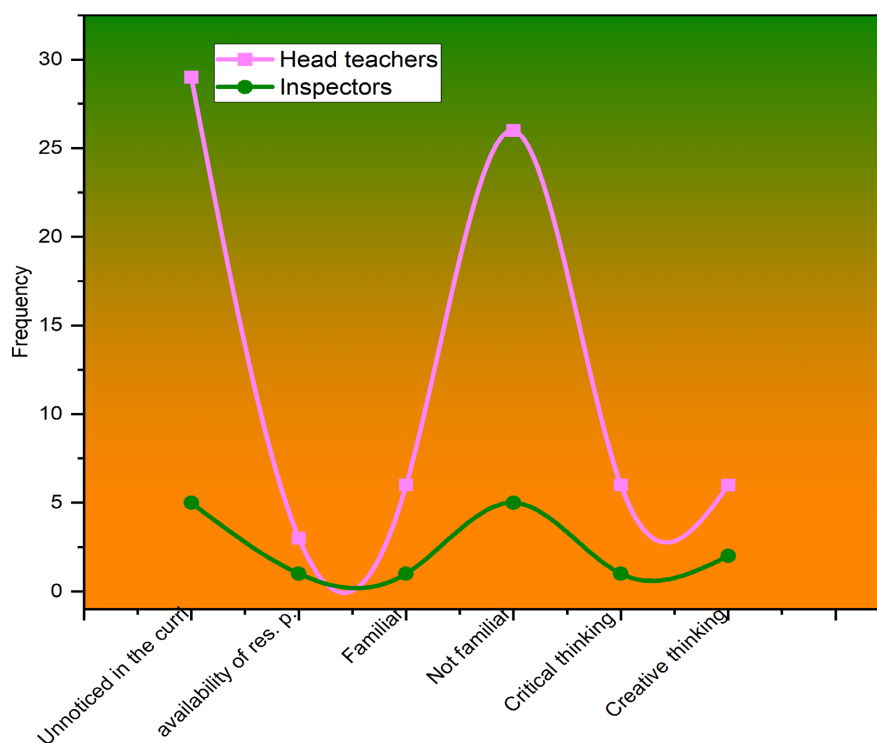


Figure 1. Knowledge chart on emerging common themes in indigenous riddles.

Table 2. Teachers' opinions on indigenous riddles.

S/N	Items	Always	Often	Sometimes	Never	Mean	Std. Dev.
1	I frequently use indigenous riddles to develop pupils' ability to question stated assumptions (critical thinking skills)	71 (28%)	61 (24%)	96 (37.8%)	26 (10.2%)	2.303	0.989
2	I frequently use indigenous riddles to develop pupils' intellectual ability in material, as well as non-material cultures (cultural skills)	43 (16.9%)	61 (24%)	126 (49.6%)	24 (9.4%)	2.516	0.883
3	I regularly use indigenous riddles to develop pupils' competitive spirit	44 (17.3%)	77 (30.3%)	98 (38.6%)	35 (13.8%)	2.488	0.936
4	Once in a while, I use indigenous riddles to create fun in pupils' learning	52 (20.5%)	58 (22.8%)	112 (44.1%)	32 (12.6%)	2.488	0.956
5	I regularly use indigenous riddles to develop pupils' ability to interpret and come up with well-considered opinions (interpretation skills)	51 (20.1%)	39 (15.4%)	137 (53.9%)	27 (10.6%)	2.555	0.938
6	I usually use indigenous riddles to promote pupils' ability to speculate meaning (speculative thinking)	76 (29.9%)	61 (24%)	100 (39.4%)	17 (6.7%)	2.228	0.955
Multiple response set (MRS)		337 (22.1%)	357 (23.4%)	669 (43.9%)	161 (10.6%)	2.430	2.829

Table 2 highlights teachers' opinions on IR. Two out of the six items (2, 5) scored an average mean of 2.5, while four items (1, 3, 4, 6) scored a low negative

mean of 2. The global mean of the six items is 2.430, which is still below the 2.5 decision point. This indicates that a majority of teachers maintained that the use of IR negatively affects the development of pupils' HOTS. The findings were supported by those obtained from teachers' appraisal of pupils' HOTS in **Table 3**.

Table 3. Teachers' appraisal of pupils' HOTS.

S/N	Items	Always	Often	Sometimes	Never	Mean	Std. Dev.
Analyzing							
1	My pupils usually relate with others to solve a problem encountered when learning	145 (57.1%)	62 (24.4%)	45 (17.7%)	2 (0.8%)	1.622	0.799
2	My pupils usually re-examine their opinions objectively when learning	37 (14.6%)	99 (39%)	96 (37.8%)	22 (8.7%)	2.406	0.841
3	My pupils usually interact appropriately with team members when learning	120 (47.2%)	98 (38.6%)	33 (13%)	3 (1.2%)	1.650	0.727
4	My pupils frequently make use of oral communication when learning	170 (66.9%)	50 (19.7%)	30 (11.8%)	4 (1.6%)	1.480	0.763
5	My pupils regularly make use of written communication when learning	66 (26%)	87 (34.3%)	70 (27.6%)	31 (12.2%)	2.260	0.979
6	My pupils usually make use of facial expressions to convey ideas when learning	90 (35.4%)	63 (24.8%)	81 (31.9%)	20 (7.9%)	2.122	0.988
Evaluating							
7	My pupils occasionally evaluate their learning process	53 (20.9%)	67 (26.4%)	107 (42.1%)	27 (10.6%)	2.425	0.936
8	My pupils regularly revise information given to guard against uncertainty when learning	72 (28.3%)	68 (26.8%)	98 (38.6%)	16 (6.3%)	2.228	0.934
9	My pupils usually choose an alternative that seems to be the best when answering questions	83 (32.7%)	76 (29.9%)	91 (35.8)	4 (1.6%)	2.063	0.864
10	My pupils usually compare different perspectives to bring out differences when learning	62 (24.4%)	97 (38.2%)	86 (33.9%)	9 (3.5%)	2.165	0.836
11	My pupils usually value differences when working in teams	107 (42.1%)	67 (26.4%)	67 (26.4%)	13 (5.1%)	1.945	0.943
12	My pupils frequently consider the results of the decisions they made to review it	42 (16.5%)	90 (35.4%)	97 (38.2%)	25 (9.8%)	2.413	0.879
Creating							
13	My pupils usually generate multiple ideas to improvise solutions to authentic problems when learning (divergent thinking)	65 (25.6%)	83 (32.7%)	75 (29.5%)	31 (12.2%)	2.284	0.981
14	My pupils usually combine multiple ideas to select one good idea when learning (convergent thinking)	70 (27.6%)	79 (31.1%)	85 (33.5%)	20 (7.9%)	2.217	0.939
15	My pupils usually collaborate appropriately with others to complete a given learning task (collaborative thinking)	130 (51.2%)	78 (30.7%)	42 (16.5%)	4 (1.6%)	1.685	0.802

Continued

16	My pupils usually persist in the face of a difficulty encountered in a given learning task	41 (16.1%)	112 (44.1%)	82 (32.3%)	19 (7.5%)	2.311	0.830
17	My pupils regularly practice to improve their performance in a given learning task to remain disciplined when learning	110 (43.3%)	83 (32.7%)	58 (22.8%)	3 (2.8%)	1.819	0.824
18	My pupils usually construct questions with the assistance of the teacher in the teaching-learning process	125 (49.2%)	64 (25.2%)	58 (22.8%)	7 (2.8%)	1.791	0.889
Multiple response set (MRS)		1588 (34.7%)	1423 (31.1%)	1301 (28.4%)	260 (5.8%)	2.049	0.875

Table 3 presents findings on teachers' appraisal of pupils' HOTS. All the eighteen items scored a negative mean, precisely, eleven items (2, 5, 6, 7, 8, 9, 10, 12, 13, 14, 16) scored a low negative mean of 2, while seven items (1, 3, 4, 11, 15, 17, 18) scored a very low negative mean of 1. The global mean of the eighteen items is 2.049, which is below the 2.5 decision point. This indicates that pupils' HOTS in analyzing, evaluating, and creating are negatively affected following their exposure to IR in school.

Overall, the quantitative findings from teachers' appraisal of pupils' HOTS corroborate the qualitative findings from FGD and interviews. Based on the emerging common themes, head teachers and inspectors' appreciation of pupils' views on IR revealed that IR are not being taught in school but at home; IR are unnoticeable in the curriculum, making pupils not familiar with them, which negatively affects the enhancement of their critical and creative thinking. Thus, IR negatively affects the development of pupils' HOTS.

Verification of research hypothesis

Ho: Indigenous riddles have no significant effect on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon.

Ha: Indigenous riddles have a significant effect on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon.

The regression model summary and coefficients for IR and the development of pupils' HOTS are presented in **Table 4** and **Table 5** respectively.

The regression model summary in **Table 4** shows that the R-Square for the overall model is 0.450 with an adjusted R-Square of 0.425. This implies that only 45% of the variations in the development of pupils' HOTS can be accounted for by IR. The Wald test for IR produces a statistic of 0.002 with 1 df, yielding a p-value of 0.969.

The regression coefficients in **Table 5** indicate that when IR is at zero, the development of pupils' HOTS is at 1.079. When IR increases by one unit, the development of pupils' HOTS decreases by 0.020. The significance of this decrease is indicated by a p-value of 0.969 ($p > 0.05$). The 95% confidence interval for IR's effect on the development of pupils' HOTS extends from -0.548 to 0.526 .

Statistically, findings showed that IR have no significant positive effect on the development of pupils' HOTS. The ordinary logistic regression analysis for IR

Table 4. Regression model summary for indigenous riddles and the development of pupils' HOTS.

Model	R	R-square	Adjusted R-square	Std. Error of the estimate	Wald	df	Sig.
1	-0.011	0.450	0.425	0.274	0.002	1	0.969

Table 5. Regression coefficients for indigenous riddles and the development of pupils' HOTS.

Model	Unstandardized coefficients		Standardized coefficients			95.0% confidence interval for B		Collinearity statistics		
	B	Std. error	Beta	T	Sig.	Lower bound	Upper bound	Tolerance	VIF	
1	Constant	1.079	0.132		8.198	0.000	0.820	1.339		
	Indigenous riddles	0.020	0.052	0.029	0.392	0.969	-0.548	0.526	0.413	2.423

shows a coefficient of -0.011 , and a p-value of 0.969 . The significant negative effect implies that pupils are less likely to develop HOTS following their constant exposure to IR in school. Given these statistics, the null hypothesis (H_0) which states that IR have no significant effect on the development of pupils' HOTS was retained, while the alternate hypothesis (H_a) which states that IR have a significant effect on the development of pupils' HOTS was rejected.

5. Discussion

Research findings indicated that IR have no significant positive effect on the enhancement of pupils' HOTS. This notable negative effect suggests that pupils are less likely to develop HOTS after being exposed to IR in educational settings. This contrasts with the views of Banda and Morgan [29] who, in their research on folklore as an instrument of education among the Chewa people of Zambia, view riddles as tools that can engage young minds in higher levels of thinking.

Concerning pupils' perceptions of IR, many of them express a preference for these riddles due to their playful nature. However, some pupils also express reservations, pointing out that critical thinking skills, particularly the ability to interpret, are necessary but challenging to solve such riddles. This contrast underscores the importance of striking a balance in pedagogical methods. Pupils' responses suggest that the learning of riddles primarily occurs through informal family interactions at home rather than within the formal school setting. It is noted that IR draw inspiration from various content areas such as household items, nature, animals, and human experiences, highlighting the pedagogical significance of these riddles. The predominant mode of intergenerational transmission of riddles outside the school setting implies that these riddles hold value as a family tradition, yet they may not receive significant emphasis within the school curriculum or from teachers. This observation is in line with Gachanja and Kebaya [31] in their examination of the pedagogical dimensions of Abagusii riddles, which aimed to debunk the misconception that riddles are solely for children. Their study showcases the

richness of riddles not just in style and meaning but also in terms of pedagogy, indicating that these aspects can be effectively integrated into formal educational contexts to enhance the teaching and learning process.

Regarding head teachers' perspectives on IR, they recognize the educational advantages of indigenous riddles, yet many note their limited presence within the curriculum, often relying on individual teachers' cultural familiarity and discretion for implementation. Some also mention the importance of external resource persons for teaching riddles. Urban upbringing is cited as a factor leading to pupils' unfamiliarity with traditional riddles, potentially posing obstacles to meaningful learning experiences. While head teachers appreciate the cognitive and socio-emotional benefits of riddles, such as enhancing reasoning, speculation, critical thinking, imagination, entertainment, and fostering a sense of camaraderie, concerns are raised about the lack of structured guidance and expertise that may hinder these benefits for some pupils. To enhance the incorporation of IR into education, head teachers suggest dedicated curriculum focus and collaborative efforts with cultural experts or resource persons within schools for cultural learning continuity. Given riddles' perceived worth but variable exposure, further discussion on tailored solutions is warranted.

Concerning inspectors' perspectives on IR, they acknowledge the diverse educational opportunities offered by IR but highlight their general absence from formal curricula, often depending on individual teacher initiatives for integration. This indicates a need for more systematic prioritization and guidance in educational planning. Inspectors attribute the lack of exposure to IR to societal changes like urbanization and shifts in cultural transmission patterns due to parental neglect. In addition to language and analytical skill development, inspectors emphasize the broader pedagogical advantages of IR, including fostering a collaborative spirit, nurturing reflective thinking, and instilling moral discipline. However, there are concerns that current delivery methods may not sufficiently cater to pupils from diverse backgrounds or fully exploit the potential benefits of riddle-based learning. As such, IR's pedagogic worth is recognized but responses highlight a need to re-examine practices with an inclusion lens. To enhance equitable impact, inspectors suggest exploring more robust curricular frameworks and community-based experiential learning initiatives.

Quantitative findings revealed that teachers frequently foster pupils' critical thinking skills through the use of IR. This finding aligns with those of Friday and Oghenerioborue [30] in their assertion that engaging in the oral tradition of IR prompts individuals, both young and adult, to employ high levels of imagination and critical thinking while attempting to solve the challenges posed by these riddles. The research also unveiled that teachers commonly cultivate pupils' cultural knowledge using IR. This finding corresponds with research findings that revealed that IR serve as a gateway for children to explore both tangible and intangible aspects of cultures, including tools, traditions, languages, arts, history, and social structures within African communities [32] [76]. Furthermore, it was discovered that

teachers regularly nurture pupils' competitive spirit through the utilization of IR. This discovery supports research carried out by Kaivola-bregenhøj [77], which describes IR as structured, competitive, perplexing, and clever, each revealing its values and expressive customs in diverse and distinctive manners. Findings equally indicate that teachers occasionally employ IR to infuse enjoyment into pupils' learning experiences. This aligns with Shaham's [78] perspective on IR as instructional strategies, where Chamizer riddles are viewed as fostering a unique learning process that incorporates teamwork, focus, challenge, competitiveness, escalating interest, enjoyment, self-motivation, and an adventurous spirit and curiosity. It was found that teachers frequently enhance pupils' interpretative skills through the use of IR. This finding is supported by Mokaya and Kebaya [79], who highlight that IR encompass a range of competency-based skills, including creative and critical thinking, cognitive abilities, numeracy, collaboration, and environmental awareness. They suggest IR should be leveraged as instructional aids in children's education. Additionally, the research uncovered that teachers commonly boost pupils' speculative thinking abilities using IR. This finding resonates with a study by Gwaravanda and Masaka [28], which emphasizes that indigenous riddles refine reasoning skills, and agility of wit, and foster rapid mental adaptability in children as they navigate through various possibilities and probabilities in their quest for correct responses to the presented riddles.

6. Conclusions

The lone objective of this study was to investigate the effect of IR on the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon. The findings revealed that IR have no significant positive effect on the development of pupils' HOTS. This implied that the more pupils are exposed to IR in school, the lesser they develop HOTS. Therefore, it can be concluded that IR negatively affects the development of pupils' HOTS in public primary schools in the North-West Region of Cameroon. This study proposes a scale that has been tested to measure HOTS as presented in **Table 6**.

Table 6. Proposed scale for measuring HOTS.

Development of higher-order thinking skills	Always	Often	Sometimes	Never
Analyzing				
Problem-solving				
Objective reexamination of opinions				
Team spirit				
Oral communication				
Written communication				
Facial expressions				

Continued**Evaluating**

Learning assessment
 Revising information
 Choosing among alternatives
 Comparing perspectives
 Valuing differences in teamwork
 Reviewing decisions made

Creating

Divergent thinking
 Convergent thinking
 Collaborative thinking
 Persistence in the face of difficulty
 Being disciplined
 Question construction

The proposed scale in **Table 6** has three indicators of HOTS: analyzing, evaluating, and creating. To measure the level of attainment of these thinking skills, the following response options have been attached: always, often, sometimes, and never. The effective implementation of this scale will assist teachers in measuring the extent of pupils' HOTS development in primary schools in Cameroon.

7. Recommendations for Policy

The findings indicated that IR have no significant positive effect on the development of pupils' HOTS. This implied that the more teachers expose pupils to IR in school, the lesser they develop HOTS. Based on the findings, the following recommendations were made: 1) there is a need for curriculum prioritization of IR and community partnerships with cultural (local) experts or resource persons to facilitate cultural learning continuity in schools; 2) the relevant educational authorities should organize seminars and workshops where teachers are taught the importance and methods of application of IR; 3) there is a need to deload or decongest the primary school curriculum by reducing the number of subjects; and 4) the government should redouble efforts towards ending the ongoing socio-political crisis to create an enabling teaching-learning environment void of disorder or chaos.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Delor, J. (1996) Learning: The Treasure Within: Report to UNESCO of the International

- Commission on Education for the 21st Century. UNESCO Publishing.
- [2] Lukong, T.E. (2015) Indigenous Socialization Strategies and Emotion Regulation Adjustment among NSO Early Adolescents. PhD Thesis, University of Buea.
 - [3] Nofrion, N. and Wijayanto, B. (2018) Learning Activities in Higher Order Thinking Skill (HOTS) Oriented Learning Context. *Geosfera Indonesia*, **3**, 122-130. <https://doi.org/10.19184/geosi.v3i2.8126>
 - [4] Mothia, J., Noumi, E. and Nditafon, G. (2015) Developing Thinking Skills among Third Grade (Class 4) Pupils in Some Elementary Practising Schools in Edéa, Cameroon Using Lessons on the Human Skeleton. *Open Access Library Journal*, **2**, e2171. <https://doi.org/10.4236/oalib.1102071>
 - [5] Alemnge, F.L. (2019) Curriculum Reform in Cameroon: An Analysis of the New Primary School Curriculum. *International Journal of Trend in Scientific Research and Development*, **3**, 902-913.
 - [6] MINEDUC (2018) Cameroon Primary School Curriculum: English Subsystem. MINEDUC.
 - [7] Endeley, M.N. and Talong, E.N. (2023) The Effects of the Cooperative Learning Method on the Development of Higher Order Thinking Skills (HOTS) in Practical Geography in High School Students in Fako Division of the South West Region of Cameroon. *The International Journal of Advanced Multidisciplinary Research and Studies*, **3**, 418-426.
 - [8] Madonsela, S. (2020) Riddles, Meanings and Cognitive Development of the African Child in the Siswati Tradition. *African Journal of Rhetoric*, **12**, 44-64.
 - [9] Alemnge, F.L. and Andongaba, B.A. (2021) The Impact of Teaching Methods and Materials on the Teaching of Citizenship Education in Cameroon: A Study of Case Schools in Buea Municipality. *Open Access Library Journal*, **8**, e6993. <https://doi.org/10.4236/oalib.1106993>
 - [10] Tambo, I.L. (2003) Principles and Methods of Teaching: Applications in Cameroon Schools. ANUCAM Publishers.
 - [11] Louis Mbibeh, L. (2013) Implementing Inclusive Education in Cameroon: Evidence from the Cameroon Baptist Convention Health Board. *International Journal of Education*, **5**, 52-68. <https://doi.org/10.5296/ije.v5i1.3279>
 - [12] Mekolle, P.M. (2024) Towards Good Governance in the Management of Educational Institutions in Cameroon: Importance, Challenges and Opportunities. *American Journal of Leadership and Governance*, **9**, 23-47. <https://doi.org/10.47672/ajlg.2459>
 - [13] UNESCO (2000) Dakar Framework for Action, Education for All: Meeting our Collective Commitments. UNESCO.
 - [14] Daudet, Y. and Eisemann, P.M. (2005) Commentary on the Convention against Discrimination in Education. UNESCO.
 - [15] UNESCO (1994) The Salamanca Statement and Framework for Action on Special Needs Education adopted by the World Conference on Special Needs Education: Access and Quality (Salamanca, Spain 7-10 June 1994). UNESCO.
 - [16] UNESCO (2016) Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4. UNESCO.
 - [17] Ngwa, S.E. and Mekolle, P.M. (2020) Public Policy on Education in Contemporary Cameroon: Perspectives, Issues and Future Directions. *European Journal of Education Studies*, **7**, 187-204. <https://doi.org/10.46827/ejes.v7i8.3203>
 - [18] Mbua, F.N. (2003) Educational Administration: Theory and Practice. The Management

- of Organisations and Individuals. Design House.
- [19] Fonkeng, G.E. (1998) *The History of Education in Cameroon: 1844-2010*. Moda Publishers.
- [20] Republic of Cameroon (1998) Law No. 98/004 of 14th April to Lay Down Guidelines for Education in Cameroon. Presidency of the Republic.
- [21] Ndille, R. (2016) English and French as Official Languages in Cameroon: The Intentionality of Colonial Representations and the Failure of a Cameroon-Centric Identity; 1884 and after. *European Journal of English Language Studies*, **11**, 17-34.
- [22] Loveline, Y. (2020) Back to Basics: Integrating African Indigenous Education into the Formal Educational System in Cameroon Schools. *Merit Research Journal of Education and Review*, **8**, 133-141. <https://doi.org/10.5281/zenodo.3911318>
- [23] Naamwintome, B.A. and Millar, D. (2015) Indigenous Knowledge and the African Way Forward: Challenges and Opportunities. *Open Access Library Journal*, **2**, e1295. <https://doi.org/10.4236/oalib.1101295>
- [24] MINEPAT (2020) NDS30-National Development Strategy (for Structural Transformation and Inclusive Development). Ministry of Economy, Planning and Regional Development.
- [25] Haji, S.A. and Atemnkeng, A.N. (2024) The Implementation of Teaching Methods of the Social Studies Curriculum and Teachers' Effectiveness in Mfoundi Division. *The International Journal of Research and Innovation in Social Science*, **8**, 1503-5313. <https://doi.org/10.47772/IJRISS>
- [26] Mbah, E.T. (2024) Teaching Methods and the Implementation of Multicultural Education in Cameroon's Primary Schools, Perceptions of Some Educational Stakeholders in Fako Division of the South West Region of Cameroon. *Journal of Innovation in Education and Social Research*, **2**, 240-257.
- [27] Kuwornu-Adjaottor, J.E.T., Appiah, G. and Nartey, M. (2019) Semantically Ambiguous: An Overview of Some Akan and Dangmbe Riddles. *Journal of Arts and Humanities*, **8**, 60-72. <https://doi.org/10.18533/journal.v8i10.1731>
- [28] Gwaravanda, E.T. and Masaka, D. (2008) Shona Reasoning Skills in Zimbabwe: The Importance of Riddles. *Journal of Pan African Studies*, **2**, 193-208.
- [29] Banda, D. and Morgan, W.J. (2013) Folklore as an Instrument of Education among the Chewa People of Zambia. *International Review of Education*, **59**, 197-216. <https://doi.org/10.1007/s11159-013-9353-5>
- [30] Friday, A. and Oghenerioborue, U.P. (2023) Cultural Riddles and Performance in Modern African Societies. *Randwick International of Social Science Journal*, **4**, 118-131. <https://doi.org/10.47175/rissj.v4i1.633>
- [31] Gachanja, W.M. and Kebaya, C. (2013) Pedagogical Aspects of Riddles: A Critical Examination of Abagusii Riddles. *International Journal of Humanities and Social Science*, **3**, 293-298.
- [32] Esere, M.O., Omotosho, J.A. and Idowu, A.I. (2011) Useful Dimensions of Education in Nigerian Family Traditions. In: Nsamenang, A.B. and Tchombe, T.M.S., Eds., *Handbook of African Educational Theories and Practices: A Generative Teacher Education Curriculum*, Human Development Resource Centre (HDRC), 257-270.
- [33] Olatunji, O.O. (1984) *Features of Yoruba Oral Poetry*. University Press Limited.
- [34] Nyota, S. and Mapara, J. (2008) Shona Traditional Children's Games and Play: Songs as Indigenous Ways of Knowing. *Journal of Pan African Studies*, **2**, 189-202.
- [35] Forehand, M. (2010) Bloom's Taxonomy. In: Orey, M., Ed., *Emerging Perspectives*

- on Learning, Teaching, and Technology*, Jacobs Foundation, Zurich, 41-47.
- [36] Endeley, M.N. and Ibi, B.B. (2020) The Competency Based Approach and Biology Students' Higher Order Thinking Skills in Secondary Technical Schools in the Buea Sub Division of the South West Region of Cameroon. *International Journal for Innovation Education and Research*, **8**, 426-439. <https://doi.org/10.31686/ijer.vol8.iss11.2734>
- [37] Moore, B. and Stanley, T. (2010) Critical Thinking and Formative Assessments: Increasing the Rigor in Your Classroom. Eye On Education.
- [38] Singh, C.K.S, Singh, T.S.M., Ja'afar, H., Tek, O.E., Kaur, H., Mostafa, N.A. and Yanus, M.M. (2020) Teaching Strategies to Develop Higher Order Thinking Skills in English Literature. *International Journal of Innovation, Creativity and Change*, **11**, 211-231.
- [39] Yen, T.S. and Halili, S.H. (2015) Effective Teaching of Higher-Order Thinking (HOT) in Education. *Online Journal of Distance Education and E-Learning*, **3**, 41-47.
- [40] Oubbaih, A., Jalil, Z.A., Hamza, M., Chaouir, S. and Bellemkhannate, S. (2024) Students' Perception of Portfolio in Casablanca Dentistry Faculty. *Open Access Library Journal*, **11**, e12547. <https://doi.org/10.4236/oalib.1112547>
- [41] Loseby, D. (2019) Critical Thinking Skills. Chartered Institute of Procurement & Supply (CIPS).
- [42] Facione, P.A. (1990) Critical Thinking: A Statement of Expert Consensus for the Purpose of Educational Assessment and Instructions. Report No. TMO14423.
- [43] WEF (2023) Defining education 4.0: A Taxonomy for the Future of Learning. World Economic Forum.
- [44] OECD (2023) PISA 2022 Results: Creative Minds, Creative Schools, III. OECD Publishing.
- [45] Cole, M.J. (2023) Evaluative Thinking. *Evaluation Journal of Australasia*, **23**, 70-90. <https://doi.org/10.1177/1035719X231163932>
- [46] Earl, L. and Timperley, H. (2015) Evaluative Thinking for Successful Educational Innovation. OECD Publishing.
- [47] Petersen, R. (2021) How Do Grade 3 Teachers Infuse Pedagogies of Higher Order Thinking Skills in their Teaching? Master Dissertation, Cape Peninsula University of Technology (CPUT).
- [48] Shiksha, K. (2020) 21st Century Skills: A Handbook. Central Board of Secondary Education Delhi.
- [49] Fiore, S.M., Graesser, A., Greiff, S., Griffin, P., Gong, B., Kyllonen, P., Massey, C., O'Neil, H., Pellegrino, J., Rothman, R., Soulé, H. and Davier, A. (2017) Collaborative Problem Solving: Considerations for the National Assessment of Educational Progress.
- [50] Enjei, J.T. (2024) The Integrated Project-Based Approach to Learning and the Acquisition of Lifelong Learning Skills in Pupils of Government Bilingual Nursery and Primary Schools in Mbouda Sub-Division. *Journal of Education and Training*, **11**, 28-37.
- [51] Sutama, W., Anisa, N. and Astuti, W. (2021) Improving Higher-Order Thinking Skills through the Implementation of Open-Ended Play for Children Aged 5-6 Years. *Advances in Social Science, Education and Humanities Research*, **601**, 97-104.
- [52] Thornhill-Miller, B., Camarda, A., Mercier, M., Burkhardt, J.-M., Morisseau, T., Bourgeois-Bougrine, S., Vinchon, F., El Hayek, S., Augereau-Landais, M., Mourey, F., Feybesse, C., Sundquist, D. and Lubart, T. (2023) Creativity, Critical Thinking, Communication, and Collaboration: Assessment, Certification, and Promotion of

- 21st Century Skills for the Future of Work and Education. *Journal of Intelligence*, **14**, 873-892.
- [53] Adeoye, M.A. and Jimoh, H.A. (2023) Problem-Solving Skills Among 21st-Century Learners Toward Creativity and Innovation Ideas. *Thinking Skills and Creativity Journal*, **6**, 52-58. <https://doi.org/10.23887/tscj.v6i1.62708>
- [54] Alexander, K. and Vermette, P. (2019) Implementing Social and Emotional Learning Standards by Intertwining the Habits of Mind with the CASEL Competencies. *Excelsior: Leadership in Teaching and Learning*, **12**, 1-16. <https://doi.org/10.14305/jn.19440413.2019.12.1.03>
- [55] Piaget, J. (1947). *The Psychology of Intelligence*. Taylor & Francis. <https://doi.org/10.4324/9780203278895>
- [56] Börnert-Ringleb, M. and Wilbert, J. (2018) The Association of Strategy Use and Concrete-Operational Thinking in Primary School. *Frontiers in Education*, **3**, Article No. 38. <https://doi.org/10.3389/educ.2018.00038>
- [57] Argenti, N. (2010) Things That Don't Come by the Road: Folktales, Fosterage, and Memories of Slavery in the Cameroon Grassfields. *Comparative Studies in Society and History*, **52**, 224-254. <https://doi.org/10.1017/s0010417510000034>
- [58] Delphine, F.C. (2021) Sustainable Indigenous Education and Its Impact on Pupils' Development of Competencies. M.Ed. Dissertation, University of Buea.
- [59] Jehovah, C.L.O (2021) Indigenous Instructional Strategies and the Curriculum of Secondary General Education in Cameroon. *International Journal of Trend in Scientific Research and Development*, **5**, 256-270.
- [60] Verkerliy, J. (2021) Relevance of Indigenous Knowledge Systems to the Curriculum of Secondary General Education in Cameroon. M.Ed. Dissertation, The University of Bamenda.
- [61] Collins, A., Brown, J.S. and Newman, S.E. (2018) Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics. In: Resnick, L.B., Ed., *Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser*, Routledge, 453-494. <https://doi.org/10.4324/9781315044408-14>
- [62] Collins, A. (2005) Cognitive Apprenticeship. In: Sawyer, R.K., Ed., *The Cambridge Handbook of the Learning Sciences*, Cambridge University Press, 47-60. <https://doi.org/10.1017/cbo9780511816833.005>
- [63] Austin, A.E. (2009) Cognitive Apprenticeship Theory and Its Implications for Doctoral Education: A Case Example from a Doctoral Program in Higher and Adult Education. *International Journal for Academic Development*, **14**, 173-183. <https://doi.org/10.1080/13601440903106494>
- [64] Stalmeijer, R.E., Dolmans, D.H., Snellen-Balendong, H.A.M. and Santen-Hoeufft, V.S. (2013) The Maastricht Clinical Teaching Questionnaire (MCTQ) as a Valid and Reliable Instrument for the Evaluation of Clinical Teachers Clinical Teaching Based on the Principles of Cognitive Apprenticeship: Views of Experienced Clinical Teachers. *Academic Medicine*, **88**, 1732-1738.
- [65] Driscoll, M.P. (1999) *Psychology of Learning for Instruction*. 3rd Edition, Allyn and Bacon.
- [66] Collins, A., Brown, J.S. and Holum, A. (1999) Cognitive Apprenticeship: Making Thinking Visible. *American Educator*, **15**, 38-46.
- [67] Brown, J.S.A. and Stefaniak, J.E. (2016) The Design of a Cognitive Apprenticeship to Facilitate Storytime Programming for Librarians. *Contemporary Educational Technology*, **7**, 331-351.

- [68] Busi, E.N. Shey, P.F. and Bongwong, B. (2019) Cognitive Apprenticeship and the Development of Productive Learning Skills among Emerging Adults Engaged in Mechanic Work in the Informal Sector in Buea Municipality. *International Journal of Trend in Scientific Research and Development*, **3**, 2013-2048. <https://doi.org/10.31142ijtsrd27913>
- [69] Tieme, K. and Jehovah, C.L.O. (2022) Application of Appropriate Learning Strategies and Development of Competencies in Students of the University of Bamenda. *International Journal of Trend in Scientific Research and Development*, **6**, 1391-1400.
- [70] Len, K.E. and Tieme, K. (2022) Self-Directed Learning (SDL) and Development of Competencies among Students of the University of Bamenda. *American Journal of Education and Practice*, **6**, 44-59. <https://doi.org/10.47672/ajep.1161>
- [71] Creswell, J.W. (2014) *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th Edition, SAGE Publications.
- [72] Tante, A.C. (2024) Students' Oral Communication in EFL in an Officially Bilingual Context. *International Journal of Educational Research*, **7**, 28-47.
- [73] Ngeh, R.J., Besong, J.B., Fonyuy, S.P. and Bih, T.P. (2022) New Pedagogic Approaches and Administrative Processes in Public Primary Schools of the English-Speaking Subsystem of Education in the Anglophone Cameroon. *The International Journal of Advanced Multidisciplinary Research and Studies*, **2**, 1125-1134.
- [74] Krejcie, R.V. and Morgan, D.W. (1970) Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, **30**, 607-610. <https://doi.org/10.1177/001316447003000308>
- [75] Kroll, T. and Neri, M. (2009) Designs for Mixed Methods Research. In Andrew, S. and Halcomb, E.J., Eds., *Mixed Methods Research for Nursing and the Health Sciences*, Wiley-Blackwell, 31-49. <https://doi.org/10.1002/9781444316490.ch3>
- [76] Ngalim, V.B. and Stanislaus, F. (2020) Using Oral Traditions in Provoking Pupils to Wonder and Grow in Moral and Intellectual Values. In: Schinkel, A., Ed., *Wonder, Education, and Human Flourishing: Theoretical, Empirical, and Practical Perspectives*, VU University Press, 237-255.
- [77] Kaivola-Bregenhøj, A. (2018) The Riddle: Form and Performance. *Humanities*, **7**, Article No. 49. <https://doi.org/10.3390/h7020049>
- [78] Shaham, H. (2013) The Riddle as a Learning and Educational Tool. *Creative Education*, **4**, 388-395. <https://doi.org/10.4236/ce.2013.46055>
- [79] Mokaya, G.K. and Kebaya, C. (2022) Integrating Riddles as Instructional Resource in the Competency-Based Curriculum for Early Years Education in Kenya. *Research Journal in Advanced Humanities*, **3**, 7-18. <https://doi.org/10.58256/rjah.v3i1.760>