Challenges Faced by Junior Primary Teachers in Developing Learners' Computation Skills in Mathematics: A Study of Selected Schools in Outapi Circuit, Omusati Region, Namibia

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ABSTRACT

This research aimed to identify the difficulties encountered by Junior Primary Teachers in assisting Junior Primary learners in the Omusati region of Namibia in enhancing their computational skills in Mathematics. Computational skills refer to the ability to perform basic arithmetic operations, addition, subtraction, multiplication, and division, swiftly and accurately using mental calculations, paper and pencil, or tools like calculators. The study employed a quantitative research method with a descriptive research design. The data were gathered through online questionnaires created with Google Forms, which were then analysed using descriptive statistics and linear regression tests via SPSS version 28 software. The population size of the study was all the junior primary teachers in Outapi circuit. The sample size of the study was 70 respondents selected through simple random sampling. The research was underpinned by Vygotsky's social constructivist theory, which emphasizes a teaching methodology that fosters active engagement of learners in their educational processes. Findings revealed that language barriers, along with cultural and socioeconomic factors, pose significant challenges for Junior Primary Teachers in facilitating the development of computational skills in their learners. It is recommended that teachers incorporate hands-on activities as a teaching strategy, allowing learners to utilize manipulatives, which could enhance their ability to develop and acquire computation skills. These findings have significant implications for the teaching and learning process, particularly for JPTs who are tasked with ensuring learners acquire these essential skills.

Keywords: Challenges, Developing, Computation and Mathematics.

INTRODUCTION

The variety and application of arithmetic operations to compute solutions to mathematical puzzles is known as computational skills (Powell & Hebert, 2016). A study conducted by Siegler 1998 as cited by Mabbott and Bisanz (2018) computational skills are usually measured by the speed and precision with which basic arithmetic problems are answered in addition to the method employed for solving them. Furthermore, computing abilities like correctness and latency of solutions rely mainly on how rapidly the answer is obtained or solved through a slower procedure (such as counting), which in turn determines computational skills like accuracy and latency of solutions (Powell & Hebert, 2016). Learners' might attempt several retrieval trials before they are comfortable providing their solution on a Mathematical problem and answers are poorly related. Efficient retrieval is predicated on a history of successful use of backup mechanisms. The most effective method of retrieval is from long-term memory, because mastering multiplication requires the shift from employing ineffective backup plans to focusing mostly on retrieval (Siegler, 1988, as cited by Mabbott and Bisanz, 2018).

In Namibia, the Ministry of Education, Arts & Culture [MoEAC] (2024) has identified computation as one of the mathematical competencies in the Namibian Junior Primary Curriculum (NJPC) that is most valuable. This is because, with the help of this skills, learners would be able to compute and provide accurate responses without the need for counting. Consequently, the MoEAC mandated that JPTs teach learners how to compute

in the maths classroom, apply arithmetic operations, and solve provided mathematical number sentences. Learners who possess strong computational skills are usually more knowledgeable about mathematics than merely discrete facts, logics, and methods. These learners grasp the importance of computational talents and how to apply them in various circumstances (Michaud, 2019).

According to a study by Kazemi and Stipek (2019), learning computational abilities in mathematics also aids in retention because procedures and facts are simpler to use and recall them when acquired through comprehension and logical reasoning and can be recreated if lost. In this case, learners show difficulties using different computational abilities to calculate basic math facts, unfluctuating while they might be proficient in other areas of mathematics (Pimm, 2017). JPTs believe this part of teaching computational skills to be problematic.

As participants in the global education system, Namibian learners are also anticipated to have a degree of mathematical calculation proficiency. JPLs are expected to attain the following basic competencies by the end of JPP:

They would comprehend fundamental concepts to master addition and numerical notation; they would comprehend fundamental concepts to master subtraction and numerical notation; they would comprehend fundamental concepts to master multiplication and numerical notation; they would comprehend fundamental concepts to master division and numerical notation; and they would solve multi-step problems using various techniques, strategies, concepts, and processes (MoEAC, 2024, p. 16).

Therefore, it was against this back ground that this study explored the challenges JPTs encounter when developing computational skills among JPLs at the selected schools in Outapi circuit, Namibia and recommendations thereafter.

LITERATURE

There is limited literature on the challenges that JPTs face when developing computational skills among JPLs. Researchers do not focus on the Junior Primary Phase (JPP) of the Namibian Education System (NES), focussing much on the secondary phase instead. According to Österman and Bråting (2019), computational skills in mathematics are essential for the achievement of learners in learning. This might refer to either operational or logical comprehension. While there has been some debate about the importance of concentrating computational abilities in light of the growing number of calculators and other computing devices (Jones, 2015), it is widely accepted that computational skills are critical for learners' mathematical concept development (Putri et al., 2022).

Challenges Junior Primary Teachers encounter when developing computational skills in mathematics

Research studies conducted, such as that of Abas and David (2019) indicated that JPTs encounter numerous challenges when it comes to supporting learners in acquiring computational skills in mathematics (Abas & David, 2019). Hence, these are some specific challenges that JPTs faced when supporting learners in developing computational abilities in mathematics, including language barriers, cultural and socioeconomic constraints, and a lack of technological integration just to name a few.

Lack of technological incorporation during computation lessons

Another problem that JPTs face when developing computational abilities among mathematics learners was the lack of technological incorporation. According to Rich et al. (2019), many schools, particularly those in less developed or under-resourced communities, lack adequate access to computers, tablets, and dependable internet connections. Furthermore, Rich et al. (2019) recognised that lack of access substantially limits teachers' ability to use technology into their teaching techniques while teaching arithmetic and computational abilities. On the contrary, Nordby et al.'s (2022) study acknowledged that while some schools have access to technology, it might be old or incompatible with the most recent software or educational resources. This made it difficult for JPTs to properly teach computational skills with outdated technologies (Nordby et al., 2022).

Similarly, even while schools have access to technology, JPTs did not receive the proper training on how to successfully integrate technology into their teaching practices (Karki, 2021). Furthermore, without appropriate training, teachers might fail to incorporate computational skills into their courses or be unaware of the most effective tools and methods available (Ismail, 2014). According to a study conducted by Ballenas (2023), some teachers were hesitant to incorporate technology into their teaching methods for a variety of reasons, including a lack of confidence in their own technological skills, concerns about the potential distractions that technology could present, or simply a preference for traditional teaching methods.

Varied learning styles among learners in a classroom

Another challenge that JPTs confront when developing computational skills among mathematics learners was the variety of their learning styles. Kotzer and Elran (2012) discovered that learners have different learning styles, such as feeling, seeing, tactile, and kinaesthetic, and what works for one person may not work for another. According to Michael's (2013) research, some learners might benefit from visual representations of computational skills, while others may prefer hands-on exercises or vocal explanations. In addition, Iwata et al. (2020) stated that addressing multiple learning styles frequently entails including a variety of instructional methodologies into lesson designs.

Furthermore, a study conducted by Budiyanto et al. (2020) discovered that managing a classroom with diverse learning preferences necessitates efficient classroom management practices. Individualised instruction must be balanced with the maintenance of a coherent learning environment to ensure that all learners, regardless of learning type, feel encouraged and engaged (Budiyanto et al., 2020). Furthermore, Chang and Yen (2023) argued that satisfying the needs of different learners necessitates continual professional development for teachers, which expose teachers to various breakthroughs on effective methodologies, resources and solutions to use when teaching computation.

Shortage of teaching and learning materials during computation

JPTs have considerable obstacles while developing computational abilities in mathematics learners due to a shortage of teaching and learning resources. According to Soboleva et al. (2021), many schools lacked adequate resources such as computers, software licences, reliable internet connections, manipulative, and other visual teaching resources, limiting teachers' ability to provide hands-on computational experiences for their learners.

According to Van Borkulo et al. (2021), hands-on exercises and manipulative help learners understand various mathematical topics, particularly computational skills. However, if teachers have limited access to these materials, it is difficult to present learners with specific examples and experiences that increase their comprehension (Van Borkulo et al., 2021).

Instructional strategies teachers could employ to support learners in acquiring computational skills in Mathematics

Teachers could use a variety of instructional strategies to help learners develop computational skills in mathematics. Budiyanto et al. (2020), Miller et al. (2011), Rehmat et al. (2020), Ma et al. (2020), Sinay and Nahornick (2016), and Hsu et al. (2018) outlined various instructional strategies that teachers can incorporate during the teaching and learning process to assist learners in acquiring computational skills.

Hands-on activities strategy

One of the most effective instructional strategies that JPTs can employ to help learners build computational skills is making use of the hands on activities. According to Michael's (2013) research, using hands-on activities is an effective method. This technique involves engaging learners in hands-on, interactive activities that include manipulating physical things or using tangible materials to investigate computational ideas. Budiyanto et al. (2020) defined hands-on activities as learning experiences in which students actively manipulate physical objects, conduct experiments, or accomplish tasks with their hands and senses.

Ma et al. (2021) noted that this method might be applied when participating in hands-on coding activities or programming robots to solve mathematical issues and tasks. Learners can create code to handle virtual items or control physical robots, using computational thinking skills to solve mathematical problems (Ma et al., 2021). Solving numerical puzzles, challenges, or games that demand physical manipulation and problem-solving. Sudoku puzzles, tangrams, and logic games allow learners to practise computational abilities in a pleasant and interactive setting (Sinay & Nahornick, 2016).

Algorithmic thinking strategy

According to Mezak and Papak (2018), algorithmic thinking approach "refers to the ability to conceptualise, analyse, and solve problems in a systematic and logical manner using algorithms" (p. 760). Algorithmic thinking includes breaking down difficult issues into clear and exact processes that can be executed by the learners (Sarı et al., 2023). According to Mezak and Papak (2018), teachers should offer algorithmic thinking skills such as decomposition, pattern recognition, abstraction, and algorithm design, all of which are crucial to computational solving skills.

Furthermore, algorithm thinking as an approach for helping learners acquire computational skills in Mathematics entails developing step-by-step procedures or algorithms to solve a problem efficiently and effectively (Bower et al., 2017). Algorithm design is the process of determining and specifying the sequence of operations or actions required to produce a given outcome (Rehmat et al., 2020). Algorithm analysis is the process of determining an algorithm's time complexity (how long it takes to execute) and space complexity (how much memory it uses) in order to determine its applicability for a specific task (Mohaghegh & McCauley, 2016).

Learner Centred Education (LCE) approach

Learner-Centred Education (LCE) can be a very effective method of teaching computational skills in mathematics. According to Driscoll and Wood (2023), during LCE, teachers should engage students in hands-on, active learning situations in which they actively participate in the learning process. Computational abilities could include problem solving, coding exercises, or investigating real-world applications of mathematical principles via interactive simulations or projects (Driscoll & Wood, 2023). In addition, the teacher encourages learners to take ownership of their learning by giving chances for self-directed study. This could include giving resources like online courses, coding platforms, or books so that learners can investigate topics at their own pace (Gadanidis et al., 2017).

Furthermore, Thompson (2013) maintained that during LCE the teacher foster a collaborative learning environment where students can work together to solve problems, share ideas, and learn from each other's experiences. This could involve group activities, peer tutoring, or collaborative coding projects. Provide timely and constructive feedback to students on their computational skills development. Mtika and Gates (2018) advocated that LCE encourage learners to reflect on their learning process, identify areas for improvement, and set goals for future learning.

Mitigating strategies that JPTs may employ to support learners in developing computational skills in Mathematics

Teachers can employ several mitigating strategies to support learners in developing computational skills in mathematics. These strategies aim to address challenges and barriers that teachers may face when developing computational skills among the learners. Here are some effective mitigating strategies.

Making use of the ten-frames

The ten-frame is an activity to promote learners' number understanding and the basic math facts the learners need to develop so they can progress to more difficult mathematical computations (Michael, 2013). Budiyanto et al. (2020) stated that the power of ten-frame tiles states that the ten-frame model helps "develop basic numbers to-quantity understandings where the learners benefit most from models which provide a countable,

visually distinct model for each number." (p.640). In addition, ten-frame tiles are a visual display where learners can "connect each number name and the quantity it represents." (Budiyanto et al., 2020, p. 651).

To add on, a study conducted by Johnson et al. (2016) alluded that learners can participate in number talks where the learners discuss the numbers they see without counting them directly. The learners use their prior knowledge of number sense to determine the number displayed on the tile (Johnson et al., 2016). The "ten-frame tiles offer special needs learners a rich, visual tool for developing understanding of numbers, place value, and mathematical computation." (Karki, 2021, p. 158).

Process of planning instructional modifications and accommodations

According to Ketelhut et al. (2020), the "teachers are being called on to adapt their instructional methods to meet the special needs of a wide range of students" including learners with physical and health disabilities in their classrooms" (p. 177). The teacher's instruction needs to be modified to provide the learners with the basic mathematical understanding, so they can progress to more challenging mathematical concepts (Ketelhut et al., 2020). The learners would benefit through strategies and differentiation which are tailored to meet their specific needs.

Additionally, learners would progress in their mathematical skills if they learn strategies to think critically about their thinking process while completing the mathematical tasks. Michael (2013) supported that planning mathematical instruction for different learners in a classroom is a crucial process in the learners' learning. Mathematical instruction needs purposeful planning which focuses on both strengths and weaknesses of the students and to identify the potential barriers in the lesson's mathematics content and tasks (Michael, 2013).

Integrating real-world contexts during teaching of computation in Mathematics

Another mitigating way to help learners develop computational skills is by integrating real world contexts. Angula (2015) stated that integrating real-world contexts into mathematics instruction is a powerful strategy for developing computational skills by providing learners with authentic and meaningful opportunities to apply mathematical concepts and computational problem-solving strategies. Ausiku and Matthee (2022) in their study noted that teachers need to select real-world contexts and scenarios that are relevant and engaging for learners, and that require the application of computational skills.

Aydeniz (2018) acknowledged that teachers need to choose contexts that resonate with learners' interests, experiences, and everyday lives. Ballenas (2023) emphasised that the teachers should make sure that the real-world contexts using to teach/come up with activities are aligned to the curriculum standards and learning objectives for mathematics education as stipulated in the syllabus. Identify specific computational skills, concepts, and mathematical principles that can be addressed within each real-world context, and design learning activities that target these objectives (Ballenas, 2023).

METHODOLOGY

The study was conducted within the framework of quantitative research method, as the researcher sought to explore the challenges JPTs encounter when developing computational skills among JPLs in Mathematics. The researcher selected a descriptive research design which entails collecting data using methods like surveys, analysing that data using descriptive statistics to summarise and interpret the findings, and the researcher in this study adopted a descriptive research method, displaying results in tables and graphs for ease of interpretation (Bhat, 2019).

Population and Sample size and Sample procedure

The population size of the study was all the JPTs from which the sample size of 70 JPTs were were selected via simple random sampling which allude that involving a one-stage selection procedure where each object or respondent had an equal and independent probability of being chosen or included in the research (Bhardwaj, 2018). The sample size was calculated using Sekaran and Bougie (2016) formula: $n=\frac{N}{1+N(\alpha)^2}$.

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Data collection method

According to Maree (2016), the strategy used by the researcher to approach addressing the research objectives is known as the data gathering method. In this study, data were collected through closed ended questionnaires. There were four sections to the questionnaire: parts A through D. Thus, the socio demographical variables (gender, age, religion, educational background, years of teaching experience, and current junior primary grade taught) comprise the first items in Part A. Section B was centred on the challenges that JPTs encounter in helping learners build computational abilities. The questions consisted of five Likert scale ratings: 1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree, and 5 for strongly disagree. Additionally, Part C concentrated on the teaching techniques that JPTs could employ to help learners with 05 Likert scale questions that have ratings of 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. Additionally, Part D concentrated on the mitigating strategies that JPTs could employ to help learners build computational abilities using five Likert scale questions rated from 1 = Strongly agree, 2 = Agree, 3= Neutral, 4= Disagree and 5= Strongly disagree. Data were collected based on the respondents' own free times because it was administered online.

Ethical consideration

This study adhered to all ethical guidelines for the protection of participants, informed consent, confidentiality, and permission to conduct the investigation. Undertaking a research study is an intricate process that necessitates several stages. Getting approval from the ARU research and innovation department's ethical committee was one of these steps. Additionally, the researcher received a letter of permission from the OED as well as from schools in Outapi Circuit Schools in Namibia. In order to protect confidentiality, anonymity, and privacy, the researcher ensured that any sensitive files, including collected data, were encrypted before being shared online, that these files were properly stored using strong passwords, and that data were only shared with the researcher's research supervisor. Additionally, respondents were made aware of their freedom to leave the study at any moment and without consequences. The confidentiality of the responders' identity were maintained. To preserve the respondents' identities, the researcher did not use their names. A letter of informed consent was thought to be the cornerstone of research. All study respondents received sufficient information about the research so they knew why they were being included in the study and what was expected of them. Respondents received concise explanations of the significance and goal of the research. They had complete autonomy to decide whether or not to participate in the research, and they were not subjected to any form of compulsion. Before participating in the study, the participants signed a written informed consent form that they received along with an ARU permission letter and permission from OED.

Data analysis

According to Brink et al. (2018) data analysis refers to the application of several methods for grouping, arranging, modifying, summarising, and providing a meaningful description of data in order to show it. Binary logistic regression analysis was used to examine the close ended- survey questionnaire data because this study used a quantitative research strategy with a descriptive research design, version 28 of the SPSS. Studies with a descriptive design explained phenomena or 49 looked at how variables related to one another, cause and effect correlations are not attempted to be determined (Polit et al., 2018). Tables and graphs were used to display the summarised descriptive data.

Validity and Reliability

The validity of a research study, according to Ahmed and Ishtiaq (2021), is determined by how well the findings among study participants accurately reflect findings among similar individuals outside the study. The researcher used a variety of validity techniques throughout the investigation. The content validity of the items was attained by a critical evaluation of the instrument that was scrutinised and analysed by specialists (supervisors) in the field of the study, as well as a review of the literature that was consulted for the research. Prior to data collection, the researcher carried out a pilot study to pre-test the instrument for clarity and whether relevant data would be generated. This helped to assure validity in this study.

Reliability, according to Sürücü and Maslakçi (2020), is the extent to which study findings hold up across time and among various samples, methodologies, and assessors. A pilot study (inter-rater reliability) was conducted in this study to ascertain the precision and consistency of the research instrument in order to guarantee reliability (Heale & Twycross, 2016). The research instrument was examined by the supervisor and a statistician. This indicated that if the same test is run repeatedly in the same conditions and settings, the research tool would produce results that are comparable.

Cronbach's Alpha test

A four-part questionnaire was sent to 70 respondents. The demographic information of respondents' sub. The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics consisted of 8 items (α=0.523), Challenges that junior primary teachers encounter in helping learners build computational skills sub. The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics consisted of 11 items (α=0.781), the instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics sub. The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics consisted of 10 items (α=0.823) and the mitigating strategies that junior primary teachers may employ to support learners in developing computational skills in mathematics sub. The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics consisted of 6 items (α=0527,). This presents an acceptable reliability analysis.

RESULTS AND DISCUSSION

The study presents the results and discussion of the exploration of the challenges that JPTs encounter when developing computational skills among JPLs in Mathematics at selected schools in Outapi circuit, Omusati region. A detailed analysis was further explained, elucidating data in different ways in order to answer the research objectives.

Socio-demographic characteristics of respondents

According to table 1, the respondents were required to indicate their genders, females were 74, 3% (n=52); and males were 25, 7% (n=18). The age groups of the respondents were asked, where respondents between 20 to 24 years were 7, 1% (n=5); those between 25 to 30 years were 65, 7% (n=46); those between 31 to 35 years were 20% (n=5); those between 36 to 40 years were 2, 9% (n=2); and those above 40 years were 4, 3% (n=3). In terms of religion, 97, 1% were Christian (n=68); and 2, 9% were Muslim (n=2). Their marital status was asked, those who are single were 88, 6% (n=62); those who are married were 8, 6% (n=6); and those who are divorced was 1, 4% (n=1).

Moreover, 94, 3% of the respondents were Vambo (n=66); 1, 4% were Herero (n=1); 1, 4% are Damara/Nama (n=1); and 2, 9% have another ethnicity (n=2). respondents were asked to specify their educational level, 21,4% have a diploma (n=15); 74,3% have a degree (n=52); and 4,3% have a Masters (n=3).When asked about their years of teaching experience, 58,6% indicated that they were teaching for 0 to 5 years (n=41); 35,7% indicated 6 to 10 years (n=25); 2,9% indicated 11 to 15 years (n=2); and 2,9% indicated 16 years and more (n=2). And about which grade each participant is teaching: 31, 4% are teaching Grade 1 (n=22); 30% are teaching Grade 2 (n=21); and 38, 6% are teaching Grade 3 (n=27) out of (n=70).

Table 1: Socio-demographic characteristics of respondents

Variable		**N**	**%**
Gender	Male	18	25,7%
	Female	52	74,3%
	Total	**70**	**100,0%**
Age	20-24 Years Old	5	7,1%
	25-30 Years Old	46	65,7%
	31- 35 Years Old	14	20,0%

	36-40 Years Old	2	2,9%
	41 and Above Years Old	3	4,3%
	Total	**70**	**100,0%**
Religion	Christian	68	97,1%
	Muslim	2	2,9%
	Others	0	0,0%
	Total	70	100,0%
Marital status	Single	62	88,6%
	Married	6	8,6%
	Divorced	1	1,4%
	Windowed	1	1,4%
	Total	**70**	**100,0%**
Ethnic Group	Vambo	66	94,3%
	Himba	0	0,0%
	Herero	1	1,4%
	Damara/Nama	1	1,4%
	Others	2	2,9%
	Total	**70**	**100,0%**
Educational Qualification	Certificate	0	0,0%
	Diploma	15	21,4%
	Degree (Hon)	52	74,3%
	Masters	3	4,3%
	PhD	0	0,0%
	Others	0	0,0%
	Total	**70**	**100,0%**
Years teaching experience	0-5 Years	41	58,6%
	6-10 Years	25	35,7%
	11-15 Years	2	2,9%
	16 and above Years	2	2,9%
	Total	**70**	**100,0%**
Junior Primary Grade that you are currently teaching	Grade 1	22	31,4%
	Grade 2	21	30,0%
	Grade 3	27	38,6%
	Total	**70**	**100,0%**

Challenges JPTs face when developing computational skills

As shown in table 2, respondents were provided with a table highlighting categories involving the challenges that junior primary teachers encounter in helping learners build computational skills. They were asked a series of questions, and were to choose the answer on the Linkert scale. They answered as follows: on the hands-on activities strategy, on average, majority of respondents strongly agreed with mean (1.87) and SD (0.947); on the Problem-Based Learning (PBL) strategy, on average, majority of respondents agree with mean (1.97) and SD (0.701); on the Project-Based Learning (PBL) strategy, on average, majority of respondents said it's before donning the sterile gloves and gowns with mean (2.21) and SD (0.797).

Table 2: challenges that junior primary teachers encounter in helping learners build computational skills

Variable	**Mean**	**Std. Deviation**
Language barriers can pose a significant challenge to teachers	1.76	0.908
Cultural and socio-economic factors can also impact learners' ability to develop computational skills	2.24	1.042
Lack of technological Integration in the Mathematic lessons	1.91	0.847
Diverse learning styles among learners	1.84	0.754

Limited teaching and learning materials	1.56	0.828
Time Constraints	1.99	0.86
Math anxiety	1.94	0.849
Assessment Challenges	2.39	0.982
Curriculum alignment	2.24	0.788
Lack of Continuous Professional Development (CPD) opportunities	1.84	0.828
Shortage of learners' engagement during computation lesson presentation	2.3	0.998

The study's findings revealed that language barriers are one of the problems that JPTs confront when building computational skills in learners. The average score of 1.76 indicated that language barriers are regarded as a substantial obstacle by JPTs. This is consistent with recent research, which shows that language skill has a significant impact on learners' capacity to understand mathematical concepts (Paf & Dincer, 2021). When learners struggle with the language of teaching, it can impair their understanding of mathematical terms, causing issues with computational abilities and problem solving (Lee et al., 2020). This is especially important in multicultural schools, where learners may have various linguistic origins.

The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics

As shown in table 3, on the hands-on activities strategy, on average, majority of respondents strongly agreed with mean (1.87) and SD (0.947); on the Problem-Based Learning (PBL) strategy, on average, majority of respondents agree with mean (1.97) and SD (0.701); on the Project-Based Learning (PBL) strategy, on average, majority of respondents said it's before donning the sterile gloves and gowns with mean (2.21) and SD (0.797); on the algorithmic thinking strategy, on average, majority of participants agree with mean (2.27) and SD (0.9); on the Learner Centered Education (LCE) approach, majority of respondents strongly agreed with mean(1.6) and SD (0.806).

Table 3: The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics

Variable	**Mean**	**Std. Deviation**
Hands-on activities strategy	1.87	0.947
Problem-Based Learning (PBL) strategy	1.97	0.701
Project-Based Learning (PBL) strategy	2.21	0.797
Algorithmic thinking strategy	2.27	0.9
Learner Centered Education (LCE) approach	1.6	0.806
Game-Based Learning (GBL) strategy	1.7	0.805
Demonstration teaching strategy	1.7	0.645
Integration teaching strategy	1.67	0.896
Group work, pairs, individual or whole class	1.71	0.887
Brainstorming teaching strategy	2.01	1.056

According to the findings of this study, one instructional method that JPTs could employ while teaching computation abilities in Mathematics is the utilization of hands-on activities. The average score of 1.87 suggests a strong preference for hands-on activities as a primary tactic. A study found that hands-on learning actively engages learners and improves their grasp of mathematical ideas (Budiyanto et al., 2020). Thus, manipulating physical items allows kids to better grasp abstract concepts, making this technique especially successful in early education (Rehmat et al., 2020).

Mitigating strategies that junior primary teachers may employ to support learners in developing computational skills in mathematics

As shown in table 4, on the technology integration to improve mathematical Computation skills among learners, on average, majority of respondents strongly agreed with mean(1.8) and SD (0.861); when making

use of the ten-frames, on average, majority of respondents strongly agreed with mean (1.81) and SD (0.856); on the process of planning instructional modifications and accommodations, on average, majority of respondents strongly agreed with mean(1.86) and SD (0.921); when implementing scaffolding techniques to aid development of computational skills among learners, on average, majority of respondents strongly agreed with mean (1.73) and SD (0.797); when integrating real-world contexts during teaching of computation in Mathematics, on average, majority of respondents strongly agree with mean (1.56) and SD (0.845); and when creating a flexible learning environment to help learners develop computational skills, on average, majority of participants strongly disagree with mean (3.86) and SD (1.437).

Table 4: The mitigating strategies that junior primary teachers may employ to support learners in developing computational skills in mathematics

Variable	Mean	Std. Deviation
Technology integration to improve mathematical Computation skills among learners	1.8	0.861
Making use of the ten-frames	1.81	0.856
Process of planning instructional modifications and accommodations	1.86	0.921
Implementing scaffolding techniques to aid development of computational skills among learners	1.73	0.797
Integrating real-world contexts during teaching of computation in Mathematics	1.56	0.845
Creating a flexible learning environment to help learners develop computational skills	3.86	1.437

One of the mitigating methods that JPTs may employ was the incorporation of technology to help JPLs improve computational abilities. The mean score of 1.80 suggests that respondents strongly agree on the integration of technology to improve mathematical computing skills. According to research, technology can considerably help learners learn by providing interactive and adaptive learning environments. The effective use of educational software, applications, and online resources could help personalize learning experiences and increase learner engagement (Nordby et al., 2020). However, the problem is often ensuring that both teachers and learners are competent in using these tools efficiently, as well as the availability of these technical resources. Schools where this study was done lacked technology tools, making it difficult for JPTs to use technology; nonetheless, it was one of the most successful mitigation strategies for helping learners gain computing abilities.

Correlations between main variables

Table 5: Correlations between main variables

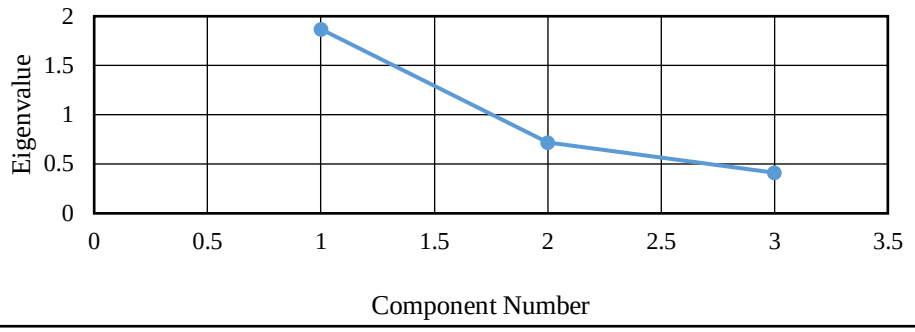
		Section B	Section C	Section D
Section B	Pearson Correlation	1	0.407	0.306
	Sig. (2-tailed)		<0.001	0.01
	N	70	70	70
Section C	Pearson Correlation	0.407	1	0.574
	Sig. (2-tailed)	0		0
	N	**70**	**70**	**70**
Section D	Pearson Correlation	0.306	0.574	1
	Sig. (2-tailed)	0.01	0	
	N	**70**	**70**	**70**

Relationship between challenges that JPTs encounter in helping learners build computational skills and The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics: Cross tabulation of Challenges that junior primary teachers encounter in helping learners build computational skills and The instructional strategies teachers can employ to support learners in acquiring computational skills in mathematics shows that the Pearson's R is 0.407, which indicates a correlation; thus, the more the challenges that junior primary teachers encounter in helping learners build computational skills, the more the instructional strategies teachers can employ to support learners in acquiring computational skills

in mathematics. The corresponding p-value is <0.001 which is significant, and therefore the correlation was not just a function of a random sampling error.

Scree plot

Figure 1: Scree Plot



In figure 1, it can be seen that the curve starts to flatten between factors 2 and 3. Note also that factors 3 and 4 have eigenvalues of less than 1 so only one factor has been retained.

CONCLUSION

Computation is regarded as one of the high ranking skills in the JP mathematics syllabus which significantly contributes to the development and enhancement of higher order thinking and logical reasoning skills among learners and promote computing abilities among the learners. Therefore, the study concludes that as language barriers and lack of active engagement among learners are hindrance to good acquiring of computation skills, and in turn hampers learners' ability to compute, teachers should place more emphasis on active engagement and usage of language that learners would comprehend. In addition, in order for the JPTs to meet their target lesson objectives, teachers should foster diverse learning strategy in order to include all learners in the teaching and learning process. These findings have significant implications for the teaching and learning process, particularly for JPTs who are tasked with ensuring learners acquire these essential skills.

RECOMMENDATIONS

It is recommended that teachers should make use of hand-on activities as a teaching strategy in order for the learners to make use of manipulatives as this would aid learners to develop and acquire computation skills. Furthermore, teachers should make use of GBL in order to expose learners to various skills that are needed in order for the learners to acquire computation skills.

It is also recommended that teachers should integrate technology when teaching computation, we are in 21st century were technology had taken over, for effective teaching and learning and maximum acquisition of computation skills among learners, technology is very ideal for that. Lastly, teachers should make use of various teaching and learning materials when teaching computation. Teaching materials are very vital as they help learners to focus, pay attention and promote classroom management.

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