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An influence of the indigenous games on mathematics in the modern classroom situation: An in-depth approach

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ABSTRACT

This study assessed the influence of indigenous games on Mathematics in modern days. This included a description of the races of mankind, called ethnography. An ethnographic study was conducted on schools around the Rakwadu Circuit in South Africa. The study, through qualitative means, sought to prove that there is indeed a relationship between Mathematics and traditional games. The findings revealed that studying traditional practices is an integral part of trying to understand the culture of people. This study demonstrates how various traditional games have almost identical characteristics to Mathematics. The study concluded that traditional games are more than just activities played to pass time, but, according to the rural area's inhabitants, the games are a way of life and form an important part of their culture. This study adds to existing literature on the application of indigenous activities to facilitate modern-day learning in South African classrooms.

Keywords: Indigenous games, Mathematics, traditional games, Ethnography, Rakwadu Circuit.

INTRODUCTION

An ethnographic study is a qualitative research methodology which deals with 'describing people.'[1] To determine the relationship between Mathematics and traditional games, it is important to describe them broadly. Traditional games form part of cultural practices, while Mathematics is a science which has been developing and modified over the years. It has always been a challenge to find a link between Mathematics and traditional games. Mathematics has become the cornerstone of modern-day development.[2] Traditional games have been identified as one of the pioneers in the development of Mathematics.[3]

Mathematics is ingrained in the African tradition, and it has always been a part of African culture. Life as a science is one of the many ways of man to gain a grip on reality. Traditional games are more than just activities played to pass the time; but according to the rural area's inhabitants, games are a way of life and form an important part of their culture. Ethnographers should see things from the points of views of their

[1] J. Monaghan and P. Just, *Social and Cultural Anthropology: A Very Short Introduction* (Oxford: University of Oxford Press, 2000).
[2] T. S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970).
[3] H. Eves, *An Introduction to the History of Mathematics*, 6th ed. (Philadelphia: Saunders College Publishing, 1990).

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subjects, rather than imposing their own cultural and political prejudices upon them (Monaghan, and Just, 2000).

The study is conducted in a way that the researcher observes a particular group of people or society and records their behaviour and social relations. It seeks answers to a question, systematically uses a predefined set of procedures to answer the question, collects evidence, produces findings that were not determined in advance and produces findings that are applicable beyond the immediate boundaries of the study.

The research mainly aims at learning different traditional games and understanding the games' concepts. To study the game, the researcher visits the source: the people who regularly engage in the game – in this case, the Rakwadu Circuit, South Africa. This study seeks to instil confidence in the African community and learners.

LITERATURE REVIEW

According to Gay, mathematics deals with the traditional cultures of indigenous peoples, where a wide variety of mathematical ideas are found in them (traditional cultures), for example, number systems, games, shapes, patterns, times and networks.[4] Simply counting one's footsteps while walking is a form of pattern recognition, which is a field in Mathematics. It is used daily by everyone without even noticing it. Mathematics can also be described as a multifunctional scientific field of study which is made up of many parts. It deals mainly with number manipulation and solving problems through proving or disproving theorems. It includes data collection and even letters to conjure a meaningful, deductive conclusion on space.

At first, the games might have started out as a way to pass time or to get rid of boredom, but over the years, the traditional games have emerged as an integral part of South African culture and history.[5] Mathematics is a science related to measurements, calculations, discovering relationships and dealing with problems. It involves critical thinking, researching and problem-solving of space. It has a peculiar language in which symbols occupy a most important position.[6] Mathematics includes the usage of shapes, measurements, numbers and theories.

One of the pioneers in this research was Ubiratan DÁmbrosio, who was a Brazilian historian of Mathematics as well as a Mathematics teacher. DÁmbrosio is well respected in the mathematics society and served on the International Commission on the History of Calculation (ICHM), where he coined the term Ethnomathematics.

Ethnomathematics is a way in which certain cultural groups mathematize (count, measure, relate, classify and infer).[7] It is related to Ethnomathematics, which can be loosely described as a field which studies how different cultural groups use it in their daily lives and how this use of it affects them. Traditional games are basically games which are played by a secluded group of people who share the same culture or tradition. They are passed on from one generation to another through oral culture. The games form part of a community's customs and traditions. Culture is defined as a set of values and beliefs which are deeply rooted in a group's history and traditions.[8] To practise any science, a scientist should be able to enter the world of everyday life. In the same way, it is a prerequisite for any human being to conduct their way of living in a meaningful way.

People who reflect on how they can possibly make use of scientific findings are not practising science at all, but they are occupied with post-scientific reflection. When they apply their scientific insights to what they do, they are improving their daily educational activities. If people are scientifically well-trained and are people of integrity, their scientific knowledge will surely enable them to account for all the activities that

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[4] L. R. Gay, "Indigenous Knowledge Systems and Ethnomathematics," *Proceedings of the Third Ethnomathematics Conference* (New Zealand: University of Auckland, February 2020).
[5] H. R. Bernard, *Research Methods in Anthropology* (London: Sage Publications, 2022).
[6] K. Sudhir and D. N. Ratnalikar, *Teaching of Mathematics* (New Delhi: Anmol Publication, 2003).
[7] U. D'Ambrosio, *Socio-Cultural Bases for Mathematical Education* (Australia: Adelaide University Press, 1984).469.
[8] B. Stebbing, *Learning through Play: A Manual for Early Childhood Educators* (Harare: UNICEF , 1999).317.

come their way. According to Woods, education is a universal objective, and to apply the rules of education, people have, first of all, to indicate their area of study and demarcate the phenomenon they intend to study.[9] It must be borne in mind that all the human sciences have the human phenomenon as their point of departure.

Identifying the gap between Mathematics and Indigenous Games

According to Nkopodi and Mosimege, there seems to be a gap between the application of Mathematical skills in the classroom and applying the same Mathematical skills in the playground or during participation in traditional games.[10] Learners may fail to see the link between Mathematics and indigenous games because of the way their lessons in the classroom are structured. Mathematics can be seen as being rigid and containing too many laws, while traditional games, even though they contain an aspect of Mathematics, are seen as fun and following their rules makes the games even more exciting.

When considering applying traditional games to help learners understand Mathematics, people need to consider the background and environment of the learners. Gerdes speaks about the need to choose a suitable game when trying to apply mathematical concepts.[11] According to him, Mathematical thinking and methods differ from one culture to another. Hornby also adds by saying that all cultures are different, and they all have different ways of understanding things, and this is seen by the ways in which their traditional games are structured and played.[12] This was thought to present a problem in applying traditional games in the classroom, because not all children are exposed to the same traditional games while growing up. It was initially thought that children of different cultures would struggle in grasping certain traditional games, while others would have an advantage because they had grown up playing that game.

However, Gerdes later revealed that due to the simplicity of most traditional games, people of different cultures could learn the games and even master them. Because traditional games are fun to learn and serve as a form of social bonding, learners enjoy learning the games.[13] Once the game has been learned and understood, this could open a way for Mathematics to be taught using the game. Educators who are tasked with teaching learners' Mathematics are encouraged to be open-minded and allow their learners to explore traditional games and apply the Mathematical principles learnt in those games to complement the Mathematical principles which they are taught at school.

METHODOLOGY

Research Design

The design of this research was an Ethnographic design. Ethnography involves intensive studying and observation of people to understand the needs of communities. Ethnography has become an important tool in providing efficient service to communities, in that all communities are different and have different needs. So, it is the job of the ethnographer to be subjective and provide what is best for a particular community. Ethnographic findings are used commercially to design products or to offer services which are specific to a certain group of people. It is, therefore, important to closely pay attention to every aspect of a population's practices, behaviours and culture. Ethnographic design is also socially orientated and relies on the interaction of people and studying their daily practices or routines.

Population and Study Sample

The research was conducted in selected schools such as Modubatse High School, Kgapane High School and William Kgatla Primary School, in Mopani District around the Rakwadu Circuit. Learners, teachers and participants (youth and adults) were consulted. The researcher used interpretation to reach their inner knowledge and ideas. With the help of the teachers, the research was based on selected learners who were

[9] P. G. Woods, *Education and Its Disciplines* (London: University of London Press, 2021).
[10] Nkopodi and Mosimege, "Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics."
[11] P. Gerdes, " Exploring the Game of "Julirde'','' *Teaching Children Mathematics* 2 (2001): 321–27.
[12] A. S. Hornby, *Oxford Advanced Learners' Dictionary of Current English* (Oxford: Oxford University Press, 2001).
[13] Gerdes, " Exploring the Game of "Julirde''."

intelligent, the middle ones and those who used to obtain 0%-5% in each task. The quota sampling was selected because the participants include age, place of residence, gender, class, profession, etc. The method needs thorough preparation, which allows the researcher to focus on people who have experience and have the insight knowledge about the research topic. The researcher visited a group of men, boys and women who used to gather every day in playing indigenous games such as *diketo, moruba, morabaraba, kgati, tsheretshere* and *malepa* to get some relevant information. This took three weeks. The researcher visited the people three times per week (one hour every day) in the afternoon.

Data Collection Procedures and Administration of Instruments

Self-report evidence is necessary. The researcher collected all possible sources. He used questionnaires to collect research-related information about the knowledge of the people, what they like or dislike and what they are thinking about. He used different types of interviews, for example, open-ended interviews and focus group interviews. In open-ended interviews, the interview process follows an informal conversation pattern. At the beginning of the interview, interviewers asked general questions related to the research topic, and the questions were dependent on the respondents' answers. The respondents could demonstrate their unique way of looking at the phenomena, and the interview situation was flexible and dynamic.

Focus groups were useful for gathering information from a group of respondents at one time. A common approach in focus interviews was to invite a group of experts to discuss the research topic. The aim was to get the experts to provide different perspectives on the discussion. If the focus group interview session was organized correctly, the atmosphere could encourage participants to speak and interact spontaneously; some participants might dominate the conversation, or others might feel uncomfortable in being open in a group situation.

The major data collections which the researcher used were interviews, observations, documents and artefacts which provided information on the character of the experience being explored. People were asked questions and based on their responses, the researcher gained full detailed information about the subject.

The researcher watched the games to supplement and clarify data derived from participants' responses. Observational data was very important and helpful concerning the enquiries of persons who were only able to express their thoughts with difficulty.

Ethical Considerations

All the necessary ethical considerations were undertaken. The respondents were assured of anonymity, and permission was sought from the appropriate quarters.

PRESENTATION OF FINDINGS AND DISCUSSION

This study is of the assumption that teaching Mathematics through indigenous games will help learners to participate actively and help them to improve and achieve more marks in this subject. Ethnomathematics is the study of people of a certain culture living in the same environment and sharing the same tradition. Tatira et. al. posit that mathematics encourages learners to be familiar with Mathematics as a subject at school and in real life. [14] The subsequent sections discuss the various indigenous games and their impact on learning mathematics.

Diketo

This game can be played by only two players. Generally, only teenage girls play this game, which is indigenous to African people. It can be played either with marbles or pebbles, as it is indicated below. A player throws a stone referred to as "mokino" straight into the air and after that tries to take out as many stones as possible either from the circle as indicated or a small shallow hole before she can catch it again

[14] Benjamin, Tatira, Lillias Hamufari Natsai Mutambara, and Conilius J. Chagwiza, "The Balobedu Cultural Activities and Plays Pertinent to Primary School Mathematics Learning," *International Education Studies* 5, no. 1 (2012): 78–85.

with the same hand. Then she can put the stones back into the circle one stone at a time until all the stones are back in the circle. The player can only move a stone while the "mokino" is in the air before catching it again with the same hand. The player should then all the stones again and put them back in the circle, now two at a time, later three at a time and so on. If the player fails to catch the "mokino", she has made a mistake and there, and it will be the turn of the next player. The winner of the game is the player who manages to do ten rounds, or the rounds that they have agreed upon, of taking the pebbles out and systematically placing them first.

Figure 1: Diketo game

Morabaraba

This traditional board game is played mostly in South Africa and Botswana, with a little variation played in Lesotho. Other names that this game is called are *mmela* or *mmidi*. This is played either by boys or men. The game is played by two players, each after the other, each with twelve cows when it gets started. Each player places their cow on an empty circle of the board until they are both out of them in their hands. After placing them in their empty circles, they begin to move them around on the board. Any player who puts three cows in a line can eat the opponent's cow, that is, moving it away from the board.

Some say that the aim is to create a 'mill', which implies having a row of three cows on any one line on the board. If that player forms a 'mill', he must remove or shoot one of the opponent's cows. The shot cow is then removed from the board and cannot be placed again. In that way, the game comes to an end when one of the players is left with only two cows.

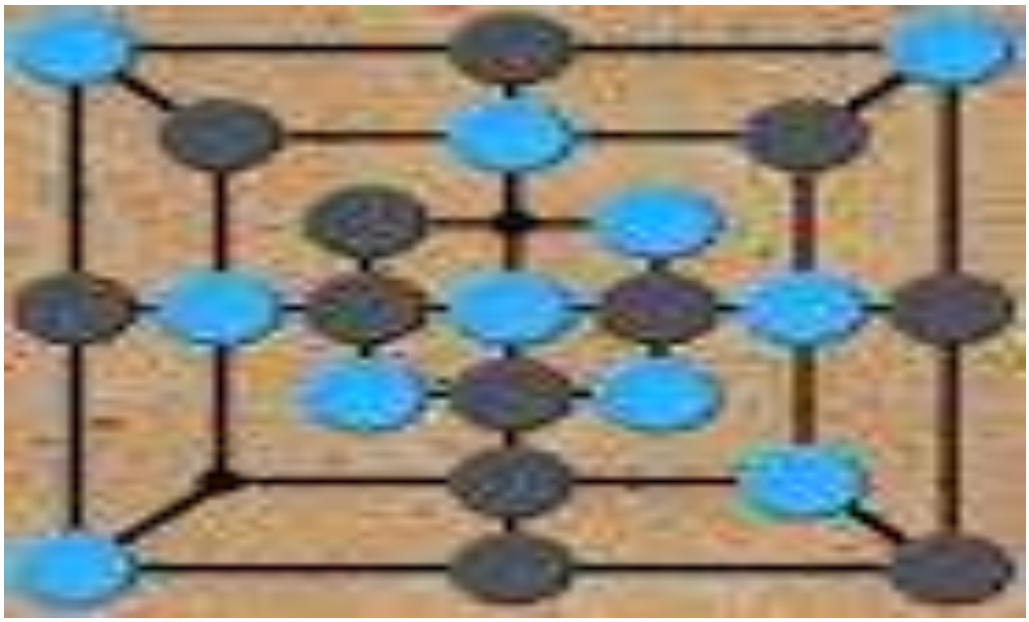

Figure 2: Morabaraba

Moruba

This game is a very old mathematical strategy board which is played with pebbles, stones or marbles. The holes can be dug in the ground. This is played by men in the shade of a tree, mostly in the late afternoon when people have relaxed. Men who popularly play it are the Northern Sotho-speaking people from Limpopo Province and Mpumalanga in South Africa.

The common boards are four rows of twelve boles. Equally distributed in pairs of two to four are the stones per hole, whereas the crawl remains empty. The purpose of this game is to take more stones (which are referred to as "cows" your crawl) until the other player has lost all the stones. It is important to know that it resembles livestock. Every player (team) has their side of the play area. On the other hand, a player can take the contents of one of their holes and spread them, one by one, counterclockwise into consecutive holes on their own side. When the last stone enters an empty hole, and the adjacent outer hole of the opponent contains the stones, these enemy stones are taken to the player's crawl. Each time a player passes their crawl, one stone is banked. If perhaps the last stone ends up inside a crawl, the player is given another chance to play. If in another case the last stone falls into an empty hole of an inner row, and the opponent of oneself contains stones, these stones of oneself are captured. Similarly, those which are in the same file as the outer row are also captured. All the captured stones should be removed from the board of one's crawl. This game is electronically available and allows people to play against anybody worldwide.

Figure 3: Moruba

Dibeke

This is a running ball game that consists of two teams of six girls and six boys each. It may consist of two teams of the same gender but with different clothes in each team. While the attacking team attempts to take the ball away from the defenders, the defenders also attempt to get the ball away from them, making use of their hands. The attackers score when they take the ball the whole length of the field. In any case, if the defender tags the attacker with the ball, that player gets out of the game. When all the defenders get out of it, the defenders get a chance to try to score.

Figure 4: Dibeke

Kgati

This is a South African indigenous game played by energetic teenage girls. It is a rope-skipping game for three people. In this case, two girls swing the skipping rope while the third one jumps in various ways, usually while singing or chanting. It becomes clear that if the jumper gets tangled in the rope, she switches places with one of the rope-swingers. While it plays Mathematical functions in it, it reinforces African values of teamwork, communication, strategic and problem-solving skills, resulting in positive character development from a young age.

Figure 5: Kgati

Theretshere

It is a game for teenage girls and is mostly played in rural areas rather than urban areas. It started from time immemorial, and other girls are still playing it even today. Quite a few people **believe** (gonona) that young girls do not play this game anymore. That is why some people do not even know about it.

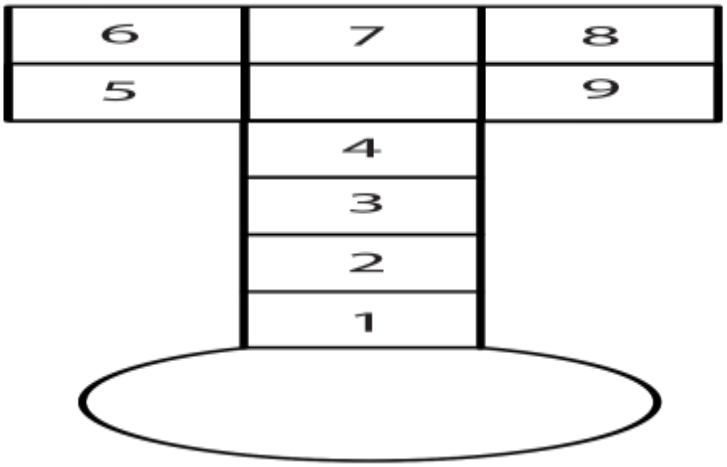

Figure 6: Theretshere

Malepa

This is a string figure construction game which is used to indicate Mathematical figures like rectangles, triangles and quadrangles played by teenage girls. According to Mosimege, this is an indigenous game which does not need expensive resources to be produced.[15] Nkopodi and Mosimege posit that *malepa* can advance and create connections between classroom activities and real-life contexts.[16] It is of great importance to note that this game prominently features at the Indigenous Game Festivals that are annually held in September to celebrate Heritage Month.

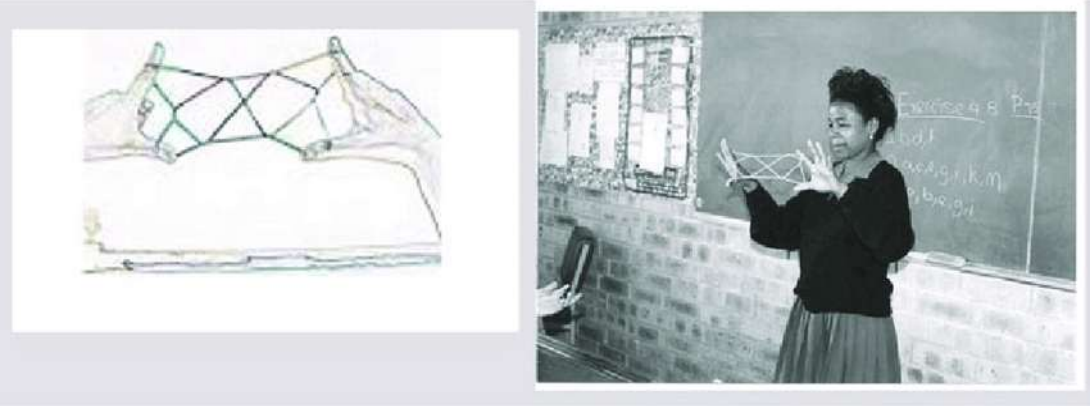

Figure 7: Malepa

DISCUSSION

South African teachers, without the employment of these indigenous games, still heavily rely on Eurocentric methods for the teaching of Mathematics. The policy of Mathematics as a subject should include these games during the teaching of the lessons. From the data gathered, it is evident that teachers need to get training in alternative cultural practices for the development of Mathematics. These practices promote cultural heritage. This is discussed further.

Improving Cultural Heritage through Mathematics

Culture is a way of living which a group of people adopt. Culture encompasses the traditions, beliefs, and customs of a certain group of people. Warren talks about the Indigenous Knowledge System as a systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments and an intimate understanding of their environment in each culture.[17] Culture emphasises beliefs and values which are often deeply rooted in a group's history and traditions. It is the custom of people, including language and religion.[18] Culture plays a pivotal role in the teaching and learning of mathematics. Culture consists of a complex of shared understandings which serves as a medium through which individual human minds interact in communication with one another.[19] The definition highlights the communicative function of culture that is particularly relevant in teaching and learning.

Culture is generated from the understandings acquired by people through experience and observation about how to interact with the physical environment and knowledge. This means that culture can be able to

[15] M. D. Mosimege, "Exploration of the Games of Malepa and Morabaraba in South African Secondary School Mathematics Education" (University of the Western Cape, RSA, 2019).

[16] Nkopodi Nkopodi and Mogege Mosimege, "Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics," *South African Journal of Education* 29, no. 3 (2009).

[17] M. D. Warren, *Indigenous Knowledge in Education Proceedings of a Regional Workshop on Integration of Indigenous Knowledge into Nigerian Education Curriculum* (Ibadan: University of Ibadan, 1996).

[18] Stebbing, *Learning through Play: A Manual for Early Childhood Educators*.

[19] A.J. Bishop, *Mathematical Enculturation: A Cultural Perspective on Mathematics Education* (Dordrecht, The Netherlands: Kluwer Academic, 1988).

shape learners' habits in Mathematics. Anghilen asserts that school Mathematics, by contrast, is often carried out for its own sake, unrelated to any real context.[20] In addition, D'Ambroso defines the cultural groups as national tribal societies, labour groups and children of a certain age bracket.[21] Culture is viewed as an all-encompassing umbrella construct that involves all activities of humans in their communicative and social enterprises.[22]

Traditional games are games or plays which are played by people who belong to the same culture and share the same tradition. The games include the use of natural objects such as stones, trees and the environment. An integral part of the traditional games is the use of Mathematics through games. Kirkby states that games can help learners to develop mathematical skills.[23]

When playing games, participants must follow the rules of the game. In the same vein, in studying Mathematics, various rules must be followed in solving mathematical problems. The activities are problem-solving solving where one must arrive at a solution according to proven rules. It is usually associated with recreation, competition, sportsmanship, winning, losing, enjoyment, and others. Games also encompass a variety of activities like children's street play, puzzles, board games, dice games, card games, word games, golf, team sports and international competitions.[24] Nkopodi and Mosimege emphasise that games have a clearly defined context-generally both in time and space.[25] Games have been used in the teaching and learning of mathematics for many years, for example problem problem-solving strategies, to develop the ability with mental mathematics, decision making and logical reasoning.

To approach the learners in a simple way of teaching, the teacher must know and understand the learners' culture and their environment, interrelate them with the daily aspects of indigenous games in the classroom, the environment controls the way in which the game can be played in a certain culture, and culture differs from one area to another.

Improving Mathematical Results in South Africa

The Department of Education has been working tirelessly at trying to improve the nation's Mathematics results. The annual pass rate for Mathematics in 2011 was a disappointing 46%.[26] With such poor results, there was a need to explore an alternative method of teaching Mathematics at schools. This is where the application of traditional games at schools will help stakeholders make an informed decision on whether using traditional games could be of benefit to school learners.

Starting in 1994, a new programme was initiated and was aimed at incorporating common cultural knowledge and modern-day scholastic practices. This programme was referred to as the IKS. The Department of Education was handed the task of including IKS into the national curriculum of almost every subject of the Department of Education.[27] It was necessary to initiate such a programme mainly because the academic results of school learners were disappointing. As the country was becoming more and more industrialised, there was also a need to keep a balance between maintaining the country's traditions and adopting a Western lifestyle at the same time.

The findings indicate that a lot of the learners struggled to obtain good marks in Mathematics, as it is regarded as a heavy subject at school. This is a serious problem among learners, teachers, and the community as Mathematics forms the base of social development. The research shows that many people are facing the

[20] J. Anghilen, *Children's Mathematics Thinking in the Primary Years* (London: Cassell, 1995).
[21] U. D'Ambroso, *The Teaching and Learning of Mathematics* (Australia: Adelaide University Press, 1985).
[22] Norma Presmeg, "The Role of Culture in Teaching and Learning Mathematics," *Second Handbook of Research on Mathematics Teaching and Learning* 1 (2007): 435–58.
[23] D. Kirkby, *Games in the Teaching of Mathematics* (Cambridge: Cambridge University Press, 1992).
[24] M. Ascher, *Ethnomathematics: A Multicultural View* (California: Brooks/Cole Publishing Company, 1991).
[25] N. Nkopodi and M. D. Mosimege, " Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics," *South African Journal of Education* 29 (2009): 377–92.
[26] F. Parker, "No Idea of the Quality of Matric Passes," 2011, http://mg.co.za/article/2011-01-06-no-idea-of-the-quality-matric-passes; Department of Education (DoE), *Education for All Country Report: South Africa* (Pretoria: Government Printers, 2011).58.
[27] Nkopodi and Mosimege, "Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics."

same problem; even past researchers of the same topic unanimously agree that Mathematics remains a challenge for learners.

A Traditional Solution to a Modern-Day Problem

Bishop identified six fundamental activities which are identifiable in various cultures; these are counting, locating, measuring, designing, playing and explaining.[28] In Mathematics, counting is the core and foundation of understanding; this is also used in indigenous games because most of the games involve counting and measuring. Narayanan contends that in this rapidly developing world, it is imperative to have a firm grip on Mathematics as it is the basis of many industrial and corporate careers, which makes having Mathematical knowledge and ability a highly sought-after skill.[29]

Warren defines IKS as a systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments and an intimate understanding of their environment in a given culture.[30] Warren emphasizes the convenience and the simplicity of attaining indigenous knowledge. The knowledge is free of charge, and all that is required is that institutions offer such a rich education provided by indigenous knowledge, free of charge. A form of indigenous knowledge which can be acquired is learning and mastering traditional games.[31] As mentioned by Warren, traditional games have a dual application; one aspect of the games is to complement cultural practices, and the other is to empower people by allowing them freedom of expression through the games that they play.[32]

The works of D'Ambrosio were highly centred on exploring and applying ethnomathematics. D'Ambrosio provided extensive research of cultural elements such as language, codes, symbols, values and, more importantly, traditional games, and he applied these games to modern science and Mathematical practices. In his book, D'Ambrosio described ethnomathematics as a field which studies how different cultural groups use Mathematics in their daily lives and how this use of Mathematics affects them. The findings of D'Ambrosio provided a link between indigenous knowledge and modern science. His research provided a fresh perspective on the application of traditional games. Through his findings, D'Ambrosio brought forth a way in which Mathematics could be used to better understand individual cultures and tribes.[33] By applying his research, people notice that they can apply his research in a different way, by using traditional games and certain cultural practices to understand Mathematics better.

Achor et. al. blamed the over-dependence of foreign approaches to teaching Mathematics as the cause for the disappointingly low pass rate in Nigeria**.**[34] The Western approach of teaching Mathematics has not been clearly effective, as seen by the decrease in enrolment and the low number of students who promoted the subject. Achor challenged that ethnomathematics should be given a chance and should be applied in schools throughout Nigeria.[35]

A researcher here agrees with Achor and is of the view that people should be brave enough to change a curriculum which is not working and try a different approach for the sake of the learners. Using ethnomathematics or applying traditional games in helping students cope with Mathematics can allow learners to express themselves.

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[28] Bishop, *Mathematical Enculturation: A Cultural Perspective on Mathematics Education*.

[29] A. Narayanan, "Ethnomathematics of Basotho," *African Journal of Research in MST Education (Special Issue* 15, no. 3 (2022): 56–57.

[30] Warren, *Indigenous Knowledge in Education Proceedings of a Regional Workshop on Integration of Indigenous Knowledge into Nigerian Education Curriculum*.

[31] Warren, *Indigenous Knowledge in Education Proceedings of a Regional Workshop on Integration of Indigenous Knowledge into Nigerian Education Curriculum*.

[32] Warren, *Indigenous Knowledge in Education Proceedings of a Regional Workshop on Integration of Indigenous Knowledge into Nigerian Education Curriculum*.

[33] D'Ambrosio, *Socio-Cultural Bases for Mathematical Education*.

[34] Emmanuel Edoja Achor, Benjamin Imoko, and Emmanuel Uloko, "Effect of Ethnomathematics Teaching Approach on Senior Secondary Students' Achievement and Retention in Locus," *Educational Research and Review* 4, no. 8 (2009): 385–90.

[35] Achor, Imoko, and Uloko, "Effect of Ethnomathematics Teaching Approach on Senior Secondary Students' Achievement and Retention in Locus."

The Western approach of teaching Mathematics leaves the children confused, mainly because of the terminology that is used during Mathematics problems. When teaching Mathematics from a textbook, the educator must refer to Western objects or scenarios which are used in Mathematics sums. As most learners are not familiar with the objects or scenarios which are used, they have difficulties understanding the questions and find it more difficult to answer questions.

Mathematics can also be seen as a language.[36] This language is not easily understood by learners because it is foreign to them. Replacing certain words in the language with familiar objects and words could help learners understand this language. The challenge is to be open-minded and willing to try a different approach to learning and teaching Mathematics.

Applying traditional games during Mathematics lessons could help learners perform better. The familiarity that the learners have with the games could help build up their confidence and allow them to take on Mathematics problems. The learners will greatly appreciate being taught about scenarios/games which they are familiar with, and this will help them apply what they already know and would make learning Mathematics not only exciting but also informative. Classroom participation could also be increased, as the learners will feel more comfortable in class. D'Ambrosio also focused on the educators by challenging them to be willing to evolve their teaching methods and be brave enough to try out a new form or approach to teaching Mathematics.[37] When an educator is passionate about a subject, students can easily sense it. Traditional games could bring in a fresh and exciting approach to solving sums and teaching learners' basic Mathematical concepts.

RECOMMENDATIONS

Indigenous games and mathematics must be seen as being equal because Mathematics is no longer going to be strictly a classroom activity.[38] To bridge the gap, Mathematics needs to be taught both outside and inside the classroom. Learners will need to be motivated to explore traditional games with understanding and pay keen attention to the Mathematical aspects of the games. Teachers must also be trained on how to inculcate indigenous games in teaching Mathematics.

CONCLUSION

This study has assessed the influence of indigenous games on Mathematics in modern days. The findings reveal that games can help learners to develop mathematical skills because in almost all indigenous games, Mathematical concepts play an important role, for example: counting, addition and subtraction, which are used in *diketo* and *moruba*. The important thing for the educators is to find a way they integrate those games and mathematics. The environment can affect the lives of people. Through experiences, groups of people living in the same community and sharing the same culture understand and do things in the same way. People of the same community may enjoy playing *moruba* or *morabaraba,* but when it comes to Mathematics, they find it a difficult subject because their knowledge is dominated by the traditional aspects, and not focused on the mathematical aspects. This is because of a lack of background knowledge and understanding of Mathematical concepts. The usage of indigenous games in the classroom can help teachers assess the Mathematical background of their learners. The study contends that Mathematics teachers must explore ethnomathematics in their teaching and learning to develop Mathematical skills. Mathematics teaching and learning should give learners opportunities to explore and investigate their ideas and can be developed from the known to the unknown. Stakeholders must look at the cultural elements such as language, codes, symbols, values and attitudes which naturally imply Science and Mathematics practices.

[36] I. Chikodzi and S. Nyota, *Interplay of Culture and Mathematics: The Rural Shona Classroom* (Zimbabwe: Great Zimbabwe University, 2023).
[37] D'Ambrosio, *Socio-Cultural Bases for Mathematical Education*.
[38] Chikodzi and Nyota, *Interplay of Culture and Mathematics: The Rural Shona Classroom*.

BIBLIOGRAPHY

Achor, Emmanuel Edoja, Benjamin Imoko, and Emmanuel Uloko. "Effect of Ethnomathematics Teaching Approach on Senior Secondary Students' Achievement and Retention in Locus." *Educational Research and Review* 4, no. 8 (2009): 385–90.

Anghilen, J. *Children's Mathematics Thinking in the Primary Years*. London: Cassell, 1995.

Ascher, M. *Ethnomathematics: A Multicultural View*. California: Brooks/Cole Publishing Company, 1991.

Bernard, H. R. *Research Methods in Anthropology*. London: Sage Publications, 2022.

Bishop, A.J. *Mathematical Enculturation: A Cultural Perspective on Mathematics Education*. Dordrecht, The Netherlands: Kluwer Academic, 1988.

Chikodzi, I., and S. Nyota. *Interplay of Culture and Mathematics: The Rural Shona Classroom*. Zimbabwe: Great Zimbabwe University, 2023.

D'Ambrosio, U. *Socio-Cultural Bases for Mathematical Education*. Australia: Adelaide University Press, 1984.

D'Ambroso, U. *The Teaching and Learning of Mathematics*. Australia: Adelaide University Press, 1985.

Department of Education (DoE). *Education for All Country Report: South Africa*. Pretoria: Government Printers, 2011.

Eves, H. *An Introduction to the History of Mathematics*. 6th ed. Philadelphia: Saunders College Publishing, 1990.

Gay, L. R. "Indigenous Knowledge Systems and Ethnomathematics." *Proceedings of the Third Ethnomathematics Conference*. New Zealand: University of Auckland, February 2020.

Gerdes, P. " Exploring the Game of "Julirde''." *Teaching Children Mathematics* 2 (2001): 321–27.

Hornby, A. S. *Oxford Advanced Learners' Dictionary of Current English*. Oxford: Oxford University Press, 2001.

Kirkby, D. *Games in the Teaching of Mathematics*. Cambridge: Cambridge University Press, 1992.

Kuhn, T. S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1970.

Monaghan, J., and P. Just. *Social and Cultural Anthropology: A Very Short Introduction*. Oxford: University of Oxford Press, 2000.

Mosimege, M. D. "Exploration of the Games of Malepa and Morabaraba in South African Secondary School Mathematics Education." University of the Western Cape, RSA, 2019.

Narayanan, A. "Ethnomathematics of Basotho." *African Journal of Research in MST Education (Special Issue* 15, no. 3 (2022): 56–57.

Nkopodi, N., and M. D. Mosimege. " Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics." *South African Journal of Education* 29 (2009): 377–92.

Nkopodi, Nkopodi, and Mogege Mosimege. "Incorporating the Indigenous Game of Morabaraba in the Learning of Mathematics." *South African Journal of Education* 29, no. 3 (2009).

Parker, F. "No Idea of the Quality of Matric Passes," 2011. http://mg.co.za/article/2011-01-06-no-idea-of-the-quality-matric-passes.

Presmeg, Norma. "The Role of Culture in Teaching and Learning Mathematics." *Second Handbook of Research on Mathematics Teaching and Learning* 1 (2007): 435–58.

Stebbing, B. *Learning through Play: A Manual for Early Childhood Educators*. Harare: UNICEF , 1999.

Sudhir, K., and D. N. Ratnalikar. *Teaching of Mathematics*. New Delhi: Anmol Publication, 2003.

Tatira, Benjamin, Lillias Hamufari Natsai Mutambara, and Conilius J. Chagwiza. "The Balobedu Cultural Activities and Plays Pertinent to Primary School Mathematics Learning." *International Education Studies* 5, no. 1 (2012): 78–85.

Warren, M. D. *Indigenous Knowledge in Education Proceedings of a Regional Workshop on Integration of Indigenous Knowledge into Nigerian Education Curriculum*. Ibadan: University of Ibadan, 1996.

Woods, P. G. *Education and Its Disciplines*. London: University of London Press, 2021.

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