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THE USE OF MORABARABA (BOARD GAME) AS A PEDAGOGICAL TOOL FOR TEACHING INDIVIDUAL MARKET AND THE FIRM IN A PERFECT MARKET IN THABO-MOFUTSANYANE EDUCATION DISTRICT, FREE STATE, SOUTH AFRICA

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ABSTRACT

This article examines the pedagogical use of Morabaraba, an indigenous board game, as a teaching tool for the topic individual market and the firm in a perfectly competitive market in Grade 11 Economics classrooms in the Thabo-Mofutsanyane Education District, Free State, South Africa. Grounded in Social Constructivist, adopting an interpretivist paradigm, the study followed a qualitative approach within an embedded single-case study design involving three rural secondary schools. Data were generated through qualitative document analysis of CAPS documents, Annual Teaching Plans, lesson plans, assessment tasks, learner activities, and Morabaraba-based instructional materials. Qualitative content analysis examined how the board's structural configuration was mapped onto economic graphs representing market demand, supply, equilibrium, and firm-level revenue relationships. Findings revealed that teachers used the Morabaraba board as a visual scaffold to simulate demand and supply interaction, determine equilibrium price and quantity, and derive the firm's perfectly elastic demand curve. Learners actively mapped board pathways to graphs, enabling visualisation of shortages, surpluses, and price-taking behaviour. The board also supported conceptual links between total, average, and marginal revenue. The study concludes that Morabaraba is a culturally embedded, low-cost pedagogical innovation that enhances graphical literacy and conceptual understanding in Economics.

KEYWORDS

Morabaraba, Indigenous Games, Economics Education, Perfect Competition, Market Equilibrium, Social Constructivist Theory.

CITATION

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Introduction

The teaching of Economics in secondary schools often involves abstract concepts that require learners to interpret graphs, mathematical relationships, and theoretical models that are far removed from their everyday lived experiences. Concepts such as market demand and supply, equilibrium price and quantity, and firm behaviour in perfect competition require learners to visualise relationships between variables and interpret graphical representations accurately (Mankiw, 2021; Browning & Zupan, 2020). However, empirical studies continue to show that many learners struggle to understand these graphical and theoretical constructs, particularly when instruction relies heavily on textbook explanations and symbolic representations (Ngulube & Ogbonnaya, 2023; Bursal & Polat, 2020). These challenges necessitate the exploration of innovative, contextually relevant pedagogical strategies that can bridge the gap between abstract economic theory and learners' socio-cultural realities.

Within the South African curriculum context, the Curriculum and Assessment Policy Statement (CAPS) encourages the integration of Indigenous Knowledge Systems (IKS) to make learning meaningful and

culturally responsive (DBE, 2011; Msimanga, 2020). Indigenous games, as cultural artefacts embedded in community life, offer interactive and experiential learning opportunities that align with socially mediated approaches to knowledge construction (Tangkur et al., 2022; Umar et al., 2023). Among these games, Morabaraba has attracted scholarly attention due to its structured spatial design, rule-governed interaction, and strategic gameplay, all of which foster logical reasoning, pattern recognition, and problem-solving skills (Moloi, 2015; Mosimege, 2020). Studies further demonstrate that traditional games with geometric configurations can support the teaching of mathematical and graphical concepts by providing concrete visual analogies (Bhuda & Marumo, 2020; Tachie & Galawe, 2021).

Anchored in Social Constructivist Theory, learning is understood as a socially mediated process that occurs through interaction, dialogue, and engagement with culturally meaningful tools (Vygotsky & Cole, 2018). When Morabaraba is used pedagogically, it functions as a mediating artefact that enables learners to collaboratively construct meaning around economic relationships such as demand, supply, and equilibrium (Ahmadvand & Khoshchreh, 2023). Through guided interaction, scaffolding, and peer collaboration, learners move from concrete gameplay experiences to abstract economic reasoning, thereby strengthening conceptual understanding (Ahmadi & Motaghi, 2021; Alghamdy, 2024). It is within this pedagogical and theoretical context that the present study explores the use of Morabaraba as a teaching tool for modelling the individual market and the firm in a perfectly competitive market.

Background of the study

Globally, Economics education has increasingly embraced simulation-based and game-oriented pedagogies to enhance learners' understanding of market processes and firm behaviour. Simulation activities enable learners to observe how individual decisions aggregate into broader market outcomes, thereby improving comprehension of competitive equilibrium and interdependence (Farboodi et al., 2023; Lannace et al., 2024). Within this pedagogical shift, board games and structured play have been recognised as powerful instructional tools capable of modelling economic systems through rule-based interaction and iterative decision-making (Manzi et al., 2021; Olszak & Kowalska, 2023).

In African educational contexts, indigenous games have been repositioned from informal recreation to formal pedagogical resources that embody cultural knowledge, cooperation, and cognitive development (Mosimege, 2020; Ali & Tangkur, 2023). Morabaraba, in particular, has been widely studied for its geometric structure consisting of concentric rectangles, intersecting lines, and strategic pathways, features that mirror graphical representations used in academic disciplines (Moloi, 2015). Research indicates that engagement with such spatially organised traditional games enhances learners' logical reasoning, pattern recognition, and geometric interpretation skills, all of which are foundational for graph comprehension (Bhuda & Marumo, 2020; Moyo & Chinamasa, 2022).

In Economics education, graphical literacy is essential for understanding market demand and supply curves, equilibrium determination, and firm-level revenue relationships (Mankiw, 2021; Garcia, 2023). Yet persistent learner difficulties in plotting graphs, interpreting slopes, and understanding equilibrium intersections remain widely documented (Arsaythamby & Julinamary, 2015; Ngulube & Ogbonnaya, 2023). These challenges are more pronounced in rural schooling contexts where access to technological teaching aids and simulation software is limited, compelling teachers to rely on low-cost, locally available pedagogical resources (Ogbonnaya, 2022).

The Thabo-Mofutsanyane Education District in the Free State Province represents such a context. Schools in this rural district serve communities where indigenous games like Morabaraba are culturally familiar and widely played. This familiarity presents an opportunity to integrate culturally grounded pedagogies into formal Economics instruction. By mapping the spatial configuration of the Morabaraba board onto economic graphs, teachers can model demand and supply interactions, equilibrium points, and firm price-taking behaviour in ways that are visually concrete and socially meaningful (Ogbonnaya, 2023; Ngulube & Ogbonnaya, 2023). Despite this potential, limited empirical research has examined how Morabaraba can be systematically used to teach the individual market and firm equilibrium within the CAPS curriculum framework.

Research problem

The teaching of “individual market and the firm in a perfectly competitive market” remains conceptually challenging for many Grade 11 Economics learners. The topic requires learners to understand the interaction between market demand and supply, equilibrium price determination, and the derivation of the firm’s perfectly elastic demand curve where Price = Marginal Revenue = Average Revenue (Mankiw, 2021; Matthe et al., 2023). Mastery of these concepts depends heavily on learners’ ability to interpret and construct graphs, yet research consistently shows widespread difficulties in graphical reasoning, symbol interpretation, and equilibrium analysis (Bursal & Polat, 2020; Ngulube & Ogbonnaya, 2023).

While CAPS advocates learner-centred and contextually relevant pedagogies, classroom practice often remains textbook-driven, abstract, and disconnected from learners’ lived experiences (Msimanga, 2020). Consequently, learners may memorise graphical shapes without understanding the economic relationships they represent. This creates a pedagogical gap between curriculum intentions and classroom realities, particularly in rural schools where innovative teaching resources are scarce (Ogbonnaya, 2022).

Although indigenous games such as Morabaraba possess spatial, strategic, and interactive properties that can model economic relationships, their integration into formal Economics teaching remains under-researched and inconsistently implemented. Existing studies have largely focused on the cultural, mathematical, or cognitive value of indigenous games (Bhuda & Marumo, 2020; Mosimege, 2020), with limited attention to their application in modelling firm behaviour and perfect market structures. As a result, there is insufficient empirical evidence demonstrating how Morabaraba can function as a pedagogical bridge between market-level equilibrium and firm-level analysis within the Economics curriculum.

This gap underscores the need to investigate how Morabaraba can be pedagogically utilised to teach the individual market and the firm in perfect competition, particularly within rural South African classrooms where culturally grounded learning tools may enhance conceptual accessibility and learner engagement.

Research question

- How can Morabaraba be used as a pedagogical tool to teach the individual market and the firm in a perfectly competitive market in the Thabo-Mofutsanyane Education District, Free State, South Africa?

Literature review

The description of Morabaraba as an indigenous game

Morabaraba is a game of skill that is predominantly played by only two participants at a time on a diagram etched in the ground or carved on a flat stone, known as *letlapa*. The animal herds and other people who worked outdoors frequently played this game while the animals were grazing (Moloi, 2015). Due to their ability to learn through imitation, the boys quickly acquired mastery of this game and incorporated it into their existing collection. This board consists of three concentric rectangles, with the smallest on the inside and the largest on the outside (Mosimege, 2020). A cross divide them jointly into four equal sections. The two outer ones are also connected at the corners by diagonal lines. A location is the intersection of two lines, while the connections between these locations are referred to as *ditsela* (roads). Research by Bhuda and Marumo (2020) and Moyo and Chinamasa (2022) showed that such spatially organised traditional games develop learners’ geometric and logical reasoning, supporting their use in education.

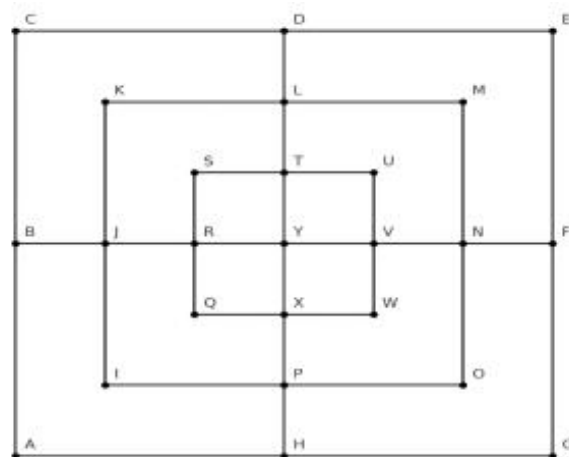


Fig. 1. The rules involved in playing Morabaraba (board game)

During a game of *Morabaraba*, as depicted in Figure 1, the objective for players is to create a sequence of three pieces or objects (often stones) in a straight line across three adjacent positions on the diagram. The arrangement referred to as *melamu* is a battle stick that grants the player who achieves it first the ability to capture one of their opponent's pieces, known as *dikgomo* or cattle (Moloi, 2015). This capture is intended to hinder the opponent's plans and progress in the same direction. Each player possesses twelve pieces of cattle and proceeds to place them one by one in alternate turns until all of them are placed. During gameplay, the player strategically targets a formation known as a 'three-cattle' to claim one of their opponent's pieces as a victory. Once all the cattle have been settled, the player who placed their cattle first will have the opportunity to play first (Moyo & Chinamasa, 2022). The game involves rule-based interaction that fosters logical planning and turn-taking, key aspects of cognitive and strategic development (Ali & Tangkur, 2023).

Individual market and the firm in a perfect market

To derive the market demand and supply curves, the *Morabaraba* board can be conceptually aligned with standard economic graphs, providing a visual analogy of the forces described by Mankiw (2021) and Fjell (2021) in classical equilibrium theory. The vertical line C–B–A represents the price axis, while the horizontal line A–H–G represents the quantity-demanded axis (Browning & Zupan, 2020; Ogbonnaya & Ngulube, 2024). The demand curve is symbolised by the diagonal C–K–S–Y–W–O–G, and the supply curve by A–I–Q–Y–U–M–E. These two curves intersect at point Y, denoting the market equilibrium (Burinskas & Tvaronaviciene, 2022). Here, point B represents the equilibrium price, and point H indicates the equilibrium quantity, consistent with modern equilibrium models discussed by Malyskin (2016) and Garcia (2023). The region above equilibrium, K–S–Y–U–M–L, illustrates a surplus where supply exceeds demand, while the lower region, I–Q–Y–W–O–P, represents a shortage where demand surpasses available supply (Besanko & Braeutigam, 2020).

To derive the individual firm's demand curve under perfect competition, the same coordinate logic applies. The C–B–A axis represents price, and the A–H–G axis represents quantity. The firm's demand curve is traced along B–J–R–Y–V–N–F, a horizontal line where price = Marginal Revenue (MR) = Average Revenue (AR) = Demand (D) [Ogbonnaya, 2023; Mankin, 2023]. This horizontal alignment reflects the firm's price-taking behaviour, the defining feature of perfect competition, since each firm sells its output at the prevailing market price (Matthe et al., 2023; Olszak & Kowalska, 2023).

The *Morabaraba* board structure, when replicated across multiple learner groups, vividly models the relationship between the individual firm and the aggregate market. Each group of learners represents a single firm producing homogeneous goods under identical conditions. None of the groups can alter the market price, collectively simulating the condition of perfect competition (Akamurira & Zikusoka, 2024). Empirical research supports this approach: simulation-based and game-oriented pedagogies enhance understanding of competitive equilibrium and market interdependence (Lannace et al., 2024; Farboodi et al., 2023). When all groups play simultaneously under similar parameters, their aggregate decisions reflect how multiple firms' outputs shape overall market equilibrium (Burinskas & Tvaronaviciene, 2022).

Point Y, the intersection of the main diagonals, becomes the central analytical reference. It represents the equilibrium where market and firm conditions converge (Burinskas & Tvaronaviciene, 2022). The vertical axis C–A can be used to represent Total Revenue (TR): each token placed from top to bottom signifies an additional unit sold at a constant price, mirroring revenue accumulation in a perfectly competitive market (Mankiw, 2021; Ngulube & Ogbonnaya, 2023). The horizontal line I–Q–X–W–O symbolises AR, where each unit sold earns identical revenue, showing constancy across output levels (Mankin, 2023).

Finally, the diagonal from A through J–S–T–U–V to G depicts Marginal Revenue (MR). As learners advance tokens along this line, each move adds an equal amount of value, demonstrating that MR remains constant when price is fixed (Malyskin, 2016; Arnett et al., 2021). Through this embodied, iterative process, learners internalise the relationships among TR, AR, and MR, seeing how these revenue measures align under perfect competition. The central intersection point Y thus symbolises equilibrium at both market and firm levels, where all forces of price, output, and revenue balance. The replication of identical boards across groups illustrates how each firm, though individually small, contributes collectively to market stability (Ogbonnaya, 2024).

Empirical findings affirm that integrating IG like *Morabaraba* enhances comprehension of abstract economic principles through spatial, cultural, and interactive engagement (Manzi et al., 2021; Olszak & Kowalska, 2023). Tachie and Galawe (2021) found that traditional games support understanding of mathematical and geometric patterns. Similarly, Bhuda and Marumo (2020) and Mosimege (2020)

demonstrated that *Morabaraba* incorporates geometric concepts such as squares, rectangles, and symmetry, directly relevant to plotting and interpreting economic graphs. Moloi (2015) observed that changes in the gradient from positive to zero or negative can be used to explain turning points in functions, reinforcing the graphical logic underlying TR and MR curves.

Despite these pedagogical advantages, several studies highlight persistent challenges in learners' graph comprehension in economics. Ngulube and Ogbonnaya (2023) and Bursal and Polat (2020) found that learners often struggle with plotting, reading, and interpreting graphs, as well as translating between different graph types. Arsaythamby and Julinamary (2015) further revealed that both teachers and learners face difficulties understanding symbols, scales, and relationships between economic variables. These findings emphasise the importance of structured graphical training, an argument echoed by Ogbonnaya (2022) and Garcia (2023). Mankiw (2021) stresses that the mastery of graphs is foundational for linking theoretical models to quantitative data, calculations, and equations in economics.

Therefore, the *Morabaraba* board becomes more than a cultural artefact; it is a pedagogical instrument for conceptualising the dynamics of the market and firm, equilibrium, and revenue relationships. Through embodied play and reflection, learners not only see elasticity, equilibrium, and revenue, but they experience them, moving from abstract theory to active, socially constructed understanding (Ahmadvand & Khoshchreh, 2023; Umar et al., 2023).

Theoretical framework

A theoretical framework provides the conceptual lens that guides how a study is understood, analysed, and interpreted by linking the research problem to established theory (Adom, Hussein, & Agyem, 2018). It strengthens scholarly coherence by clarifying key concepts and showing how empirical evidence will be interpreted within a recognised body of knowledge (Lederman & Lederman, 2015). Guided by this rationale, the article is anchored in Social Constructivist Theory (SCT), which explains learning as a socially mediated process in which knowledge is constructed through interaction, language, and culturally meaningful tools (Vygotsky & Cole, 2018). SCT is appropriate for this study because *Morabaraba* is not used as play in isolation, but as a shared, rule-governed cultural activity through which learners collaboratively construct economic meaning. In this sense, the game functions as a mediating artefact that helps learners translate abstract graphical concepts, market demand and supply, equilibrium price and quantity, and firm behaviour in perfect competition into visible and discussable representations within a familiar cultural form (Msimanga, 2020; Tangkur et al., 2022).

Vygotsky's key ideas underpinning SCT include social interaction, the More Knowledgeable Other (MKO), the Zone of Proximal Development (ZPD), and scaffolding (Vygotsky & Cole, 2018). Social interaction is central because conceptual understanding emerges through dialogue, joint reasoning, and shared activity rather than individual memorisation (Atreya, Datta, & Salins, 2023; Rahmat et al., 2022). In *Morabaraba*-based lessons, learners negotiate interpretations of board pathways, intersections, and outcomes, and then connect these interpretations to market-level equilibrium and firm-level price-taking behaviour. The teacher, and at times a competent peer, serves as the MKO by guiding learners' attention to the economic meaning embedded in the game's structure and by modelling how to move from concrete gameplay to formal economic language (Mohammed & Kinyo, 2020; Xi & Lantolf, 2021). This guidance operates within the ZPD, the space where learners can successfully perform higher-level reasoning with support before independently applying the concept (Mwinsa, 2024; Vygotsky & Cole, 2018). Scaffolding then explains the structured support provided through prompts, diagrams, and guided mapping activities, which is gradually reduced as learners gain competence in linking market equilibrium to the firm's perfectly elastic demand and the condition $AR = MR = \text{Price}$ (Ahmadi & Motaghi, 2021; Alghamdy, 2024).

Method

Research paradigm

A research paradigm refers to a shared set of assumptions about how knowledge is generated, what counts as evidence, and how a phenomenon should be investigated (Muzari, Shava & Shonhiwa, 2022). It frames how researchers understand reality, select methods, and interpret findings (Merriam & Grenier, 2019; Merriam, 2002). Paradigm choice is therefore consequential because it shapes the alignment between the research questions, design, and the procedures used to secure credible and trustworthy outcomes (Rahman, 2023; Kumatongo & Muzata, 2021). In this article, an interpretivist paradigm was adopted because the study sought to understand how the pedagogical use of Morabaraba is represented, constructed, and justified within curriculum and instructional texts in the teaching of “individual market and the firm in perfect competition” in the Thabo-Mofutsanyane Education District. Interpretivism recognises that educational realities are socially constructed and that meaning is produced through context, language, and the interpretive practices of those who design and enact teaching (Cohen et al., 2011; Merriam, 2019). Within this orientation, documents were treated not as neutral records but as meaning-bearing artefacts that reveal how teachers translate curriculum expectations into instructional decisions, particularly when using culturally embedded tools such as Morabaraba. The interpretivist stance also required reflexivity, acknowledging that interpretation is influenced by the researcher’s assumptions and disciplinary positioning (Merriam, 2016; Hennink & Kaiser, 2022).

Research approach

The study followed a qualitative approach because it prioritised depth of understanding and contextual meaning rather than measurement and statistical generalisation (Merriam, 2019; Korstjens & Moser, 2022). Qualitative inquiry is appropriate when the focus is on how educational practices are represented and rationalised in context, and when the phenomenon cannot be adequately captured through numerical indicators alone (Shava & Nkengbeza, 2019; Hennink & Kaiser, 2022). In this article, the qualitative approach enabled the researcher to develop a nuanced account of how Morabaraba is positioned as a pedagogical tool for modelling market demand, market equilibrium, and firm behaviour in perfect competition, as evidenced in formal and informal teaching texts. The approach further supported iterative reading, interpretation, and pattern identification within documents, consistent with qualitative traditions of meaning-making and contextual analysis (Merriam & Grenier, 2019).

Research design

A qualitative interpretive case study design was used to examine the pedagogical use of Morabaraba within its real-life schooling context in the Thabo-Mofutsanyane Education District (Stake, 2005; Yin, 2018). Case study design is suited to investigating a phenomenon in depth within its natural setting, and it supports the use of multiple sources of evidence to build a detailed, contextual account of practice (Yin, 2017; Merriam, 2009). The case in this article comprised three rural secondary schools in Circuit 10, Free State, where Economics is taught in the FET phase and where Morabaraba has been incorporated into instructional planning for market-structure content. An embedded single-case design was adopted, in which the district-based case was examined through sub-units of analysis, namely school-level and teacher-level documentary records (Yin, 2017; Yin, 2018). This design strengthened analytic depth by allowing the researcher to compare how Morabaraba was framed and used across documents from different teachers and schools, while still retaining the contextual integrity of the district case.

Research context

The study was conducted in three high schools located in the Thabo-Mofutsanyane Education District, Circuit 10, Free State Province, South Africa. The schools are rural and serve communities in Qwa-Qwa, offering Economics within the Business, Commerce and Management (BCM) stream across Grades 8–12. The district context is significant because rural schooling conditions shape both resource availability and teacher innovation, making culturally grounded pedagogies such as Morabaraba particularly relevant as low-cost, community-known learning resources.

Sampling and unit of analysis

Sampling was non-probabilistic and purposive, aligned with the interpretive aim of selecting information-rich sources that illuminate the phenomenon under study (Hennink & Kaiser, 2022; Obilor, 2023). Purposive sampling enabled the deliberate selection of documentary materials that explicitly addressed the teaching of “individual market and the firm in perfect competition” and/or referenced Morabaraba as an instructional strategy, representation, or classroom activity (Ahmad & Wilkins, 2024; Mwinsa, 2024). The unit of analysis was the documentary evidence produced and used for Economics teaching and curriculum implementation in the selected schools, while the embedded sub-units included school-specific and teacher-specific documents that reflected planning, policy alignment, and classroom enactment intentions (Yin, 2017). Where documents were associated with particular teachers, the broader teacher profile within the three schools consisted of six Economics teachers (three males and three females) with varied teaching experience and qualifications, providing diversity in instructional planning traditions and curriculum interpretation across the case.

Data collection method

Data collection relied exclusively on document analysis, operationalised through qualitative content analysis. Document analysis involves the systematic examination of written and textual artefacts to extract meaning, identify patterns, and generate evidence relevant to a research problem (Merriam & Grenier, 2019; Merriam & Tisdell, 2016). In this article, document analysis was selected because the research question required close attention to how Morabaraba is formally positioned in instructional planning and how Economics curriculum expectations are translated into pedagogical representations of market demand and firm behaviour. Documents were treated as both products of practice and instruments that shape practice, making them appropriate for interpretive inquiry.

The document corpus comprised public and school-based instructional materials, including the Grade 11 Economics Curriculum and Assessment Policy Statement (CAPS), Annual Teaching Plans (ATPs), departmental planning files, teacher-prepared lesson plans, assessment tasks, learner activities, and any available reflective or planning notes accompanying Morabaraba-based lessons. These documents were collected through school-based access procedures and were catalogued using a document register capturing document type, date, source, grade/topic focus, and explicit references to Morabaraba, demand and supply, market equilibrium, perfect competition, and firm-level analysis. The selection logic prioritised documents that addressed the target content area (perfect market: individual market and the firm) and that contained pedagogical representations, diagrams, mapping descriptions, activities, or assessment prompts indicating Morabaraba integration.

Data analysis

Data analysis in qualitative research involves systematically organising, examining, and interpreting data to generate meaning and answer the research questions (Merriam, 2009; Ahmed, 2024). It is not a once-off activity but an iterative and reflexive process that begins during data familiarisation and continues through coding, categorisation, and interpretation (Braun & Clarke, 2024a). In this study, qualitative content analysis was employed as the primary data analysis method because it enabled the researcher to interpret both textual and visual materials related to the pedagogical use of Morabaraba in teaching the individual market and the firm in perfect competition. Content analysis is particularly suitable for analysing documents and artefacts because it allows researchers to identify patterns, symbolic meanings, and conceptual linkages embedded in instructional materials (Merriam & Tisdell, 2016; Braun & Clarke, 2023).

Qualitative content analysis in this study focused on two interrelated bodies of content. The first comprised the Morabaraba board game itself, analysed as a cultural-visual artefact with geometric, spatial, and symbolic properties. The second consisted of Economics curriculum content addressing the individual market and the firm, as reflected in CAPS documents, Annual Teaching Plans, lesson plans, and assessment materials. Analysing these two content domains concurrently enabled the researcher to examine how teachers pedagogically linked the spatial configuration of the Morabaraba board to abstract economic concepts such as demand, supply, equilibrium, and firm-level price-taking behaviour (DBE, 2011; Ogbonnaya, 2022).

Data analysis procedure

The analysis began with a data familiarisation phase. All collected documents were read repeatedly to gain a holistic understanding of how Morabaraba was represented in relation to market-structure content. Familiarisation is a critical first step because it enables immersion in the data and supports the identification of preliminary analytic directions (Braun & Clarke, 2024a; Kiger & Varpio, 2020). During this phase, the researcher noted recurring references to board pathways, intersections, gameplay sequences, and equilibrium representations linked to perfect competition.

Following familiarisation, open coding was conducted. Coding involved labelling segments of textual and visual data that represented meaningful units relevant to the research focus (Braun & Clarke, 2023). The Morabaraba board was coded for structural features such as the outer square, inner square, diagonals, central intersections, and horizontal pathways. These spatial elements were treated as symbolic representations used in teaching. Concurrently, the Economics content was coded for conceptual elements including demand and supply interaction, equilibrium price and quantity, elimination of shortages and surpluses, price-taking behaviour, perfectly elastic demand, and the equality of average revenue and marginal revenue (Bursal & Polat, 2020; Browning & Zupan, 2020).

The next phase involved categorical content analysis, where related codes were grouped into broader analytic categories (Merriam & Grenier, 2019). Categories that emerged included Morabaraba as a representation of market demand and supply interaction, Morabaraba as a visual model of equilibrium determination, Morabaraba as a bridge between market outcomes and firm behaviour, and Morabaraba as a scaffold for understanding $AR = MR = \text{Price}$ under perfect competition. This stage enabled the researcher to move beyond description toward interpretation of pedagogical meaning.

Subsequently, relational content analysis was conducted to examine how the two bodies of content, the board structure and the Economics concepts—were linked within instructional planning. The researcher analysed mapping statements, diagrams, lesson explanations, and activity descriptions where teachers explicitly connected board segments to economic curves or intersections to equilibrium points. Relational analysis is essential in qualitative content analysis because it reveals how meaning is constructed across different representational systems (Braun & Clarke, 2024a). Through this process, it became evident that teachers used the Morabaraba board as a mediating pedagogical tool that enabled conceptual transfer from market-level equilibrium to firm-level price determination.

Interpretive analysis then followed, guided by Social Constructivist Theory. From this perspective, the board functioned as a scaffold that mediated learners' understanding through culturally familiar representations and guided interaction (Vygotsky & Cole, 2018; Auer & Papies, 2020). The interpretive phase therefore examined not only what was represented in documents but how those representations supported meaning-making, conceptual visualisation, and the simplification of abstract economic graphs.

To enhance analytic rigour, the study applied systematic documentation of coding decisions, category development, and interpretive memos, creating an audit trail consistent with qualitative research standards (Merriam, 2009; Hennink & Kaiser, 2022). Triangulation across document types further strengthened credibility by allowing comparison between curriculum prescriptions and teacher-generated pedagogical adaptations (Cohen et al., 2011).

Findings

Morabaraba in simulating individual market demand and firm

In the *Morabaraba* board facilitated lesson by SAT1, learners had to work with structural patterns in *Morabaraba* to investigate individual demand and supply, market equilibrium and the firm in perfectly competitive markets. The *Morabaraba* board acted as a visual scaffold and symbolic bridge between abstract economic graphs and culturally embedded children's play. The structure on the board was superimposed in a mapping fashion over several basic economic ideas – each section of the board depicting an element used for market analysis.

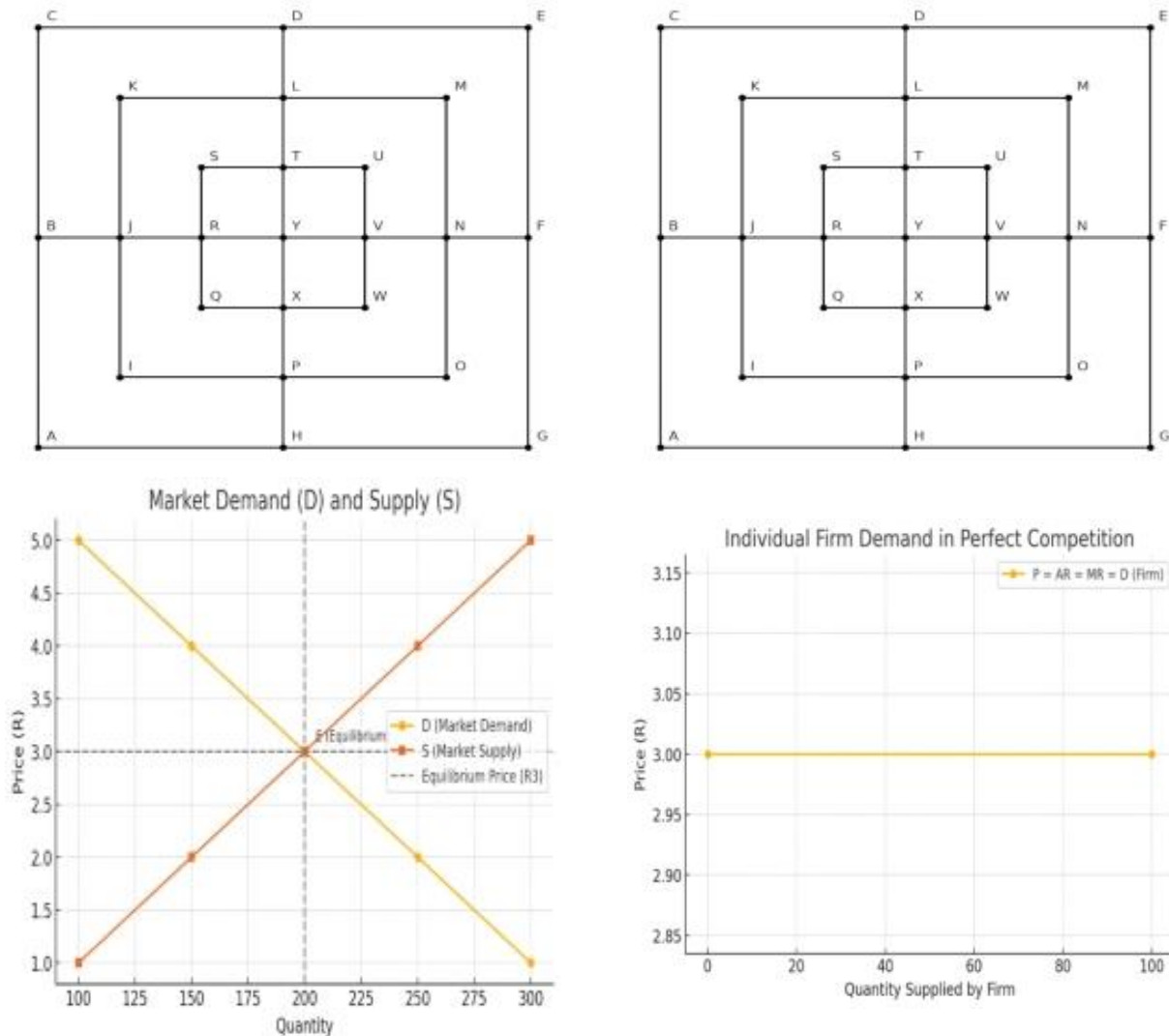


Fig. 2. *Morabaraba* and individual market demand and firm

Learners start with the outer square of the board (A–D–G), which represents the market demand curve. They are guided to notice that the curve slopes downward. This means that when the price is high, fewer goods are demanded, and when the price is low, more goods are demanded. At point A, the price is R10 and only 10 units are demanded. When learners move to point D, the price drops to R5 and demand increases to 30 units. Finally, at point G, the price falls further to R2, and demand increases to 50 units. Through this activity, learners see that the outer edge of the board shows how consumers react to price changes. This gives them a clear visual example of the law of demand** and how price affects buying decisions. The **inner diagonal (O–Y) is then introduced to represent the market supply curve. Learners also see that at point O, producers are only willing to supply 10 units at a low price of R2. When the price increases to R5 (point P), suppliers are willing to supply 30 units, and at R10 (point Y), they supply 50 units. This visual movement shows the positive relationship

between price and quantity supplied and helps learners understand why higher prices encourage more production.

Learners then focus on point D, where the demand and supply curves meet. This point represents market equilibrium. At this point, the price is R5 and the quantity is 30 units, meaning there is no shortage or surplus in the market. The teacher asks learners to compare this situation to playing *Morabaraba*. Just as players can reach a standstill when they block each other's moves, the market also reaches a balance. This comparison helps learners understand that equilibrium is a middle point between what consumers want and what producers want. Learners then apply the equilibrium price of R5 to the firm's perfectly elastic demand curve, shown by the horizontal line H–I on the board. They calculate total revenue at different output levels and compare outputs between firms. Even though the market price stays the same, total revenue changes as output changes. For example, when output is 5 units, total revenue is R25; at 10 units, it is R50; and at 20 units, it is R100. From this, learners understand that in a perfectly competitive market, firms accept the market price** and adjust how much they produce instead of trying to control the price.

By the end of the lesson, learners have a clear idea of how the *Morabaraba* board is used as both a learning and analysis tool. They understand that the outer square (A–D–G) shows market demand, the inner diagonal (O–Y) shows market supply, point D shows market equilibrium ($P = R5$, $Q = 30$), and the horizontal line (H–I) shows the firm's demand curve under perfect competition. This well-structured activity helps learners understand that in perfect competition, prices are set by the market, and firms change their production in response. It also demonstrates the link between market conditions and individual firm decisions. The results show that local games can be powerful teaching tools because they help learners connect abstract economic ideas, such as demand, supply, equilibrium, and firm behaviour, to real and familiar experiences. Using the *Morabaraba* board as a market and firm graphs shows how culturally familiar tools can make complex ideas easier to understand and more meaningful.

The results further indicate that learners are active participants in learning, not passive listeners. By moving and working with the shapes of the supply and demand curves, learners explore how price relates to quantity demanded and supplied, identify equilibrium, and understand that firms are price takers in perfect competition. This finding supports the idea of social constructivist learning, in which knowledge is constructed together through interaction and support. The *Morabaraba* board facilitates learners' connection to what happens across the whole market, informed by decisions made by individual firms, leading to a deeper understanding. Learners observe how market equilibrium affects output and revenue for firms and how changes in price and quantity influence the entire market.

From SCT perspective, learners use the structure of the *Morabaraba* board to link market demand and supply to the equilibrium price, which then becomes the firm's perfectly elastic demand curve under perfect competition. The classroom becomes a social space where learners interact, discuss moves, compare results, and talk about market behaviour using the board. Through this interaction, learners create meaning together and show that learning happens through shared activity. The teacher acts as the MKO, helping learners connect the outer square with market demand and the inner diagonal with supply and firm demand. Through questioning, explanation, and demonstration, the teacher facilitates learners' understanding of price–quantity relationships, calculating total revenue, and grasping equilibrium. Learners gradually learn how the board represents economic graphs through guided support.

The lesson is carefully designed to match the learners' ZPD. Learners move step-by- step from understanding the demand curve on the outer square, to exploring supply along the diagonal, and finally to understanding how firms decide how much to produce at different prices. Each task is slightly challenging but achievable with help. Throughout the lesson, the teacher provides support by linking positions on the board to economic ideas. Learners first focus on the outer square, then the inner diagonal, and finally on equilibrium and the firm's demand curve. With examples and clear explanations, learners connect the game to abstract economic concepts.

Over time, learners can understand and explain market demand, supply, equilibrium, and firm behaviour by themselves. Scaffolding is present during the entire activity, as the teacher incrementally helps learners link board positions with economic ideas. First, learners examine and make sense of the outside square, then the inner diagonal, and at last the point of equilibrium, as well as a provider's demand curve. The trainer provides examples and analogies to connect what is concrete from game play to the abstract in reasoning. Learners eventually internalise these connections and are able to independently infer market demand, supply and firm behaviour. Despite the potential of using IG, several challenges were presented during implementation, which are expounded in Theme 3.

Discussion of findings

The findings revealed that Morabaraba was used effectively by teachers to demonstrate the relationship between market demand and firm behaviour in perfect competition. The geometric structure of the Morabaraba board mirrors economic equilibrium and firm-level responsiveness. Learners visualised the downward-sloping market demand along the outer square (A–D–G) and the upward-sloping supply along the inner diagonal (O–Y), which met at point D, interpreted as the market equilibrium where price and quantity are determined. This equilibrium price was then transferred to the firm level through the horizontal line (H–I), illustrating a constant price and perfectly elastic demand under price-taking behaviour. The findings further showed that learners used these board coordinates to identify equilibrium, comprehend the elimination of shortages and surpluses, and establish firm-level equality where $AR = MR = \text{Price}$, thereby concretising the theoretical links between market and firm dynamics discussed in the literature.

These findings align with the empirical and theoretical insights presented by Ogbonnaya (2022), Mosimege (2020), and Ngulube and Ogbonnaya (2023), who explain how the intersections of Morabaraba board lines reflect the balance between market equilibrium and firm decision-making. Similarly, research by Arsaythamby and Julinamary (2015) and Manzi et al. (2021) demonstrated that visual-spatial simulations enhance learners' comprehension of equilibrium by making abstract intersections between demand and supply curves physically observable. The results of this study extend these arguments by showing how teachers guided learners to quantify equilibrium price (R5) and quantity (30 units) using the board's structural cues, thus linking macroeconomic (market) reasoning with microeconomic (firm) behaviour. This interactive mapping aligns with Auer and Papiés (2020) within Vygotsky's Social Constructivist Theory, which asserts that conceptual understanding develops through guided interaction and contextual mediation. Hence, the Morabaraba board served not merely as a teaching aid but as a scaffolded learning environment that linked cultural logic, spatial reasoning, and market theory in an integrated pedagogical process.

Furthermore, the findings extend existing literature by demonstrating how indigenous games like Morabaraba can bridge macro- and micro-level reasoning in economics. While prior studies, such as Burinskas and Tvaronaviciene (2022) and Garcia (2023), primarily explored games for general modelling of supply and demand, the current study shows that Morabaraba enabled learners to transfer equilibrium outcomes to firm-level analysis, achieving a more holistic comprehension of market dynamics. This systematic mapping of board segments to price and quantity values reflects a structured, analytic approach that goes beyond engagement and motivation, which earlier studies (Bursal & Polat, 2020; Browning & Zupan, 2020) emphasised. The finding also resonates with Akamurira and Zikusoka (2024) and Fjell (2021), who highlight that interactive exercises deepen learners' understanding of firm behaviour in perfect competition through simulation. By explicitly aligning each geometric path with economic parameters, market equilibrium on the outer square and firm-level elasticity on the horizontal line, the study demonstrates that Morabaraba functions as a comprehensive, culturally embedded pedagogical model that transforms abstract equilibrium theory into an accessible, participatory learning experience.

Conclusions

This article examined the pedagogical use of Morabaraba as an indigenous, culturally grounded teaching tool for the topic individual market and the firm in a perfectly competitive market in Grade 11 Economics classrooms in the Thabo-Mofutsanyane Education District. Guided by Social Constructivist Theory, the study demonstrated that learning is enhanced when abstract economic concepts are mediated through interactive, culturally meaningful artefacts. The findings show that the geometric structure of the Morabaraba board functioned as a visual and symbolic scaffold through which teachers simulated market demand and supply interaction, equilibrium price and quantity determination, and firm-level price-taking behaviour. Through content analysis, the study established that teachers systematically mapped board pathways onto economic graphs, enabling learners to visualise shortages, surpluses, and equilibrium intersections. The board further facilitated the derivation of the firm's perfectly elastic demand curve and the conceptual linkage between Total Revenue, Average Revenue, and Marginal Revenue.

Recommendations

The article recommends that curriculum authorities, particularly the Department of Basic Education, develop CAPS-aligned pedagogical guidelines to formally integrate indigenous games such as Morabaraba into the teaching of market structures. These guidelines should include structured teaching manuals, exemplar lesson plans, and assessment frameworks to support teachers in aligning game structures with economic graphs and theoretical models. In addition, the study recommends strengthening teacher professional development through targeted training in culturally responsive and game-based pedagogies. Workshops and in-service programmes would equip teachers with practical skills to use indigenous games to teach abstract economic concepts such as equilibrium analysis, firm revenue relationships, and price-taking behaviour.

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