Construction of a Marketing System for Leveled Mathematics Readers from a User-Oriented Perspective: A Strategy Optimization Study Based on the 4V Marketing Model

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Abstract: In the context of the continuous deepening of the "Double Reduction" policy and the growing demand for quality education, leveled mathematics readers, as an emerging form of publishing that integrates subject education and reading experience, face challenges such as unclear leveling logic, insufficient functional support, and weak user engagement. This paper introduces the 4V marketing theory and constructs an analytical framework from four dimensions: differentiation, functionality, added value, and resonance. Two representative products, "Climbing Mathematics" and "Spark Mathematics," are selected for a typical case comparison to identify their strengths and weaknesses in content design, service systems, and brand operation, and to extract transferable strategic elements. The study finds that the user-value-oriented strategy based on the 4V model can effectively address the core issues in the market promotion and user relationship building of leveled mathematics readers, providing practical paths and theoretical support for educational publishing institutions to achieve product innovation and brand upgrading in this niche field.

Keywords: 4V marketing theory; Leveled mathematics readers; Educational publishing; Typical case analysis; Marketing strategy

1. Introduction

Since the implementation of the "Double Reduction" policy, China's basic education ecosystem has undergone a profound transformation from an exam-oriented to a quality-oriented approach. The service model in the publishing industry has also evolved from a single content supply to a more integrated and experience-based development. In the context of the gradual maturation of leveled language reading, leveled mathematics readers, as an important extension, have gradually entered both home and school environments. Compared to language

products such as Chinese and English, mathematics books not only bear the function of knowledge transfer but also need to play a role in fostering logical thinking and improving mathematical literacy. This raises higher requirements for content design, expression methods, and supporting services.

Although a diverse product system labeled with terms like "logical thinking" and "fun mathematics" has emerged in the market, problems such as vague leveling criteria, single functional forms, and limited brand recognition still persist. These shortcomings result in high-quality content struggling to efficiently reach target users and failing to create a sustainable usage ecosystem, which in turn hinders publishing institutions from upgrading toward service-oriented and brand-oriented models. Traditional marketing approaches have proven ineffective in addressing the diversified and personalized needs of users.

To break through this predicament, this paper introduces the 4V marketing theory, systematically analyzing the content logic and marketing strategies of leveled mathematics readers from a user-value perspective. By comparing two typical cases, "Climbing Mathematics" and "Spark Mathematics," which follow different publishing logic, the paper identifies common issues and differentiated advantages, extracts replicable successful strategies, and aims to provide a theoretical basis and feasible paths for educational publishing institutions to optimize products and build brands in the leveled reading niche market.

2. Analysis of the current market for leveled mathematics readers

In recent years, driven by the dual forces of the national "Double Reduction" policy and the focus on quality education, the educational publishing industry has accelerated its transition from a "knowledge-transmission" model to a "literacy-oriented" model. Leveled mathematics readers, as a typical category within this transformation, have attracted increasing attention from parents, teachers, and students. Their main value lies in expressing abstract mathematical concepts through storytelling, imagery, and task-driven approaches, balancing both subject knowledge transmission and the stimulation of reading interest, thus establishing an introductory path for mathematics learning [1–3].

However, the overall market is still in its early stages of development. Issues such as structural imbalance, weak service functionality, and lagging brand development persist, restricting the sustained growth of this category and hindering the formation of user engagement and loyalty.

2.1. Lack of scientifically systematic leveling logic in content structure

Currently, most leveled mathematics books on the market are categorized mainly by "age groups" or "preschool/ primary school grades," lacking a refined tiered design based on cognitive development levels and mathematical learning pathways. Most books present content in the form of "fun questions + simple stories," which lacks systematization and a progressive hierarchy. This approach fails to support students' gradual learning goals at different stages and limits both the educational functionality and the usage cycle of the books.

2.2. Limited support for supporting functions and adaptability to usage scenarios

Most leveled mathematics books remain in a single printed book format, lacking integration with digital resources and online platforms. As a result, they fail to meet parents' practical needs for "read-along, tutoring, and feedback" and struggle to provide effective teaching support for educators. While some products offer QR code-linked courses, the content is fragmented and resources are scattered, making it difficult to establish a stable and cohesive

learning service system.

2.3. Uneven user coverage with market focus overly concentrated on younger age groups

Currently, the majority of leveled mathematics books on the market are focused on children aged 3–8, while there is insufficient response to the reading needs of upper primary school students. This structural gap results in a shorter user lifecycle, lower repurchase rates, and hinders the establishment of long-term user relationships and brand loyalty. At the same time, teachers' awareness and acceptance of these books are low, and the products have not effectively entered school teaching environments. As a result, the distribution and usage of these books heavily rely on family decision-making chains.

2.4. Traditional brand operation models, lacking mechanisms for long-term user relationship building

Publishers generally adopt a channel-oriented traditional distribution path, relying mainly on online platform promotions, book rankings, and recommendations for sales. There is a lack of systematic brand image development and emotional communication strategies. The exposure of books on social platforms such as Xiaohongshu and Douyin tends to remain at superficial levels like "unboxing" or "promotional recommendations," making it difficult for users to form deep interactions or a sense of brand belonging.

3. Typical case analysis and problem extraction

3.1. Typical case analysis

In order to identify the advantages and structural dilemmas in the actual publishing and operation process of leveled mathematics readers, this paper selects two typical cases for comparative analysis: the "Climbing Mathematics Reading Series" (Beijing Normal University Press) and the "Spark Mathematics Readers Series" (Spark Education). These two cases represent the "research-based publishing logic" and the "platform-based operation logic" respectively, and exhibit significant differences in content construction, functional expansion, user engagement, and brand operation, making them suitable for verifying the 4V strategy model.

The "Climbing Mathematics" series relies on an authoritative research-based system to construct a complete curriculum content system, emphasizing systematicity and teaching adaptability. The books are suitable for use in both classroom teaching and after-school extensions, with high knowledge coverage and academic rigor. However, its expression style is more rational, lacking interactivity between text and images, and providing weak support for family scenarios, resulting in low user engagement.

In contrast, the "Spark Mathematics" series is user-experience-oriented, building a family reading and interactive learning environment through storytelling, interesting task design, and digital platform support. Its strengths lie in strong user engagement and rich dissemination paths, but it faces challenges such as insufficient depth in the curriculum system, lack of standards, and weak teaching adaptability, which limit the usage cycle for upper-grade users and adoption by teachers.

To more clearly present the key characteristics of both cases under the four dimensions of the 4V theory, **Table 1** has been organized.

Table 1. Comparison of typical cases under the 4V strategy dimensions

4V strategy dimensions	Climbing Mathematics (research-based model)	Spark Mathematics (platform-based model)	Comparison conclusion and problem focus
Differentiation	Layered according to curriculum standards, systematic structure	Contextual storytelling introduction, diverse reading scenarios	Significant differences in content expression style, both lack fine-grained leveling based on cognitive models
Functionality	Rich teacher resources, strong teaching integration	App interaction, gamified challenges, high digital integration	Each function has its advantages, but fails to form a complete loop, user chain is inconsistent
Added value	Focus on mathematics culture and literacy extension	Achievement system, growth check-ins, parent-child tasks	Neither has established long-term usage incentives or a learning outcome visualization loop
Resonance	Professional authority, high trust among teachers	IP-based operation, active parent-child community	Lack of unified brand image and personalized strategy, weak emotional connection with users

3.2. Case problem summary

Through the analysis of typical cases, there are three main issues with the current mathematical leveled readers. First, there is a lack of a scientific content construction mechanism based on children's cognitive development patterns, leading to a lack of systematic structure and gradient in the book content, which fails to effectively promote the gradual improvement of students' abilities. Second, the design of functional services is fragmented, lacking organic integration with digital resources and adaptation to different usage scenarios, which limits the product's extensibility and user experience. Third, the brand communication approach is overly simplistic, neglecting the long-term development of user relationships and emotional interaction, resulting in a vague brand image, low user loyalty, and difficulty in achieving long-term market penetration.

4. Marketing strategy construction based on the 4V theory

In response to the core issues revealed in the typical case analysis, such as chaotic leveling logic, lack of functional support, and weak brand connection, this paper combines the 4V marketing theory to construct a systematic marketing strategy framework for leveled mathematics readers. The framework is developed from four dimensions: "differentiation, functionality, added value, and resonance." The aim is to help educational publishing institutions achieve a holistic leap in content design, service integration, and brand development.

4.1. Constructing a cognitively-driven content layering system

Currently, leveled mathematics readers generally lack scientific grading criteria and cognitive model support, with unclear product differentiation and market homogenization. Therefore, publishers should develop a cognition-driven content layering system based on children's mathematical cognitive development stages. In addition to age-based divisions, the system should incorporate dimensions such as "cognitive difficulty," "problem-solving paths," and "cognitive types" as standards for content grading. Furthermore, integrating the STEAM (Science, Technology, Engineering, Arts, and Mathematics) concept, publishers can develop interdisciplinary fusion books, such as "Geometry in Stories" and "Data in Daily Life," to enhance product recognition and usage value. This

would truly achieve thematic differentiation and diversify expression methods [4–6].

4.2. Creating a paper-digital integrated service loop system

Functionality is not only about the usability of the product, but also determines the depth of interaction and usage cycle between the book and the user. Publishers should create a product ecosystem that integrates physical books, digital resources, and learning services, enabling multi-scenario adaptation and resource collaboration. For example, an app can be developed to provide learning feedback mechanisms, error collection features, and dynamic path recommendations, which can be linked with guidance tasks and QR codes in the physical books to form a complete learning loop: "Reading—Practice—Feedback—Consolidation." For the teacher's side, teaching resources such as courseware templates and classroom interaction packages can be developed. For parents, functions like "reading prompts," "difficulty indicators," and "learning suggestions" should be strengthened to enhance family engagement.

4.3. Focusing on the integration of learning incentive mechanisms and literacy extension content

Currently, leveled mathematics books in the market face issues such as vague additional value design and ineffective incentives. Therefore, a dual-value system combining learning incentives and content depth should be prioritized. The product content should incorporate layered incentive mechanisms, such as "challenge tasks," "stage check-ins," and "badge systems," and use designs like growth record books and achievement-sharing pages to make the learning process visual and achievable. Additionally, the inclusion of "mathematics culture" modules, such as stories of mathematicians, the history of mathematics, and the connection between mathematics and daily life, will enhance the books' literacy depth and spiritual value. This shift encourages users to move from "finishing a book" to "completing a growth experience" [7].

4.4. Building a personalized brand and community operation mechanism

Brand communication should not rely solely on the book content itself, but also on continuous user communication mechanisms. Publishers should strengthen emotional connections and user engagement by building a personalized brand image and a user community ecosystem. On one hand, this can be achieved by creating exclusive IP characters for the book series, forming a unified visual system and value expression, thus enhancing brand recognition and approachability. On the other hand, by operating a reader community platform, interactive activities such as "parent sharing sessions," "teacher-student reading days," and "book challenge competitions" can be organized to increase user stickiness and brand loyalty, transforming the relationship from "product purchase" to "brand following" [8,9].

5. Retrospect and prospect

With the deepening implementation of the "Double Reduction" policy and the ongoing promotion of quality education, leveled mathematics readers, as a bridge between educational needs and family reading, are increasingly showing their unique market value and educational potential. However, the current category still faces many shortcomings in areas such as content logic, functional expansion, and user relationship building, making it difficult to support long-term user engagement and brand establishment. Traditional publishing marketing thinking is no longer sufficient to address the diversified, multi-scenario, and multi-layered value demands of users in the new era.

This paper uses the 4V marketing theory as an analytical framework, combining the two typical cases of "Climbing Mathematics" and "Spark Mathematics" to identify the main issues in differentiation expression, functional integration, added value, and user resonance in leveled mathematics readers. It proposes a four-dimensional strategy model based on user-value orientation. The study shows that the 4V theory is highly adaptable and valuable for guiding the systematic optimization of product design, service layout, and brand operation, providing a path for the transformation of educational books from "content publishing" to "user operation."

However, this study still has some limitations. On one hand, the research primarily relies on typical case analysis, lacking large-scale quantitative data to verify the model's dimensions. On the other hand, the practical effectiveness of the 4V strategy system has yet to be evaluated through long-term tracking in real markets. Future research could further combine empirical research, user behavior data, and publishing institutions' operational practices to systematically validate the implementation effects of different strategy dimensions. Additionally, the research scope could be expanded to include other literacy-related books, such as those in science, logic, and programming, to test the model's cross-category transferability.

Disclosure statement

The authors declare no conflict of interest.

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