IJORER : International Journal of Recent Educational Research
Homepage : https://journal.ia-education.com/index.php/ijorer
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p-ISSN : 2721-852X ; e-ISSN : 2721-7965
IJORER, Vol. 7, No. 3, May 2026
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Academic Talent Management of High-Achieving Students in Competition-Based Nonformal Education: Integrating Higher Order Thinking Skills and Deep Learning (A Case Study of Olimnus)

Yusnaldi[1*]
[1]Universitas Pertahanan RI, Jakarta, Indonesia

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DOI: https://doi.org/10.46245/ijorer.v7i3.1360

Sections Info

Article history:
Submitted: January 19, 2026
Final Revised: April 20, 2026
Accepted: May 06, 2026
Published: May 30, 2026

Keywords:
Academic Talent Management;
Nonformal Education;
Educational Competition;
Higher-Order Thinking Skills;
Deep Learning

ABSTRACT

Objective: Incidental, outcome-oriented coaching practices have often shaped the development of high-achieving students without fully supporting sustainable academic talent management. This study aims to analyze academic talent management in nonformal education by integrating educational competitions, higher-order thinking skills (HOTS), and deep learning. **Method:** This research employed a qualitative case study design conducted at Olimnus, a provider of competition-based nonformal education. Data collection involved document analysis, observations, and in-depth interviews with administrators and high-achieving students. They were systematically analyzed using a thematic analysis approach to identify key patterns and themes. **Result:** The findings indicate that educational competitions at Olimnus serve not as event-based activities, but as management tools for academic talent development, including planning, identification, development, evaluation, and sustainability. The integration of HOTS in assessment design and academic coaching serves as a core mechanism for developing students' analytical, evaluative, and reflective thinking skills. Well-planned, HOTS-based talent management practices foster deep learning, as reflected in shifts in students' learning orientations toward conceptual understanding, critical reflection, and independent learning. **Novelty:** This study offers a novel contribution by proposing an integrative model of academic talent management in nonformal education that connects educational competitions, HOTS, and deep learning within a sustainable managerial cycle. This contribution extends the understanding of academic talent management beyond formal education settings and offers practical implications for designing systematic, sustainable, competition-based talent development strategies.

INTRODUCTION

Improving the quality of education has become a strategic priority at both the national and global levels, particularly in respond to the demands of the twenty-first century, which emphasize critical thinking, complex problem-solving, creativity, and lifelong learning (Fanny, 2019). Contemporary educational paradigms have shifted from an exclusive focus on learning outcomes to emphasis on fostering meaningful and sustainable learning processesoften refered to as deep learning. This approach views learners as active subjects participants who not only acquire factual knowledge but also develop deeper conceptual understanding, reflect on their learning experiences, and apply what they have learned to a wide range of real-world contexts (Fullan et al., 2017). This shift highlights that academic achievement shouldbe assessed not merely by test scores or rangkings, , but by the quality of learning experiences that cultivate highger-order thinking skills and intellectual autonomy.

The development of high-quality human resources in Indonesia has become a national priority, including efforts to support high-achieving students. However, the development of high-achieving students is still often understood in narrow terms as the primarily as the attainment of awards or medals, such as awards or medals, in academic

p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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competitions. This outcome-oriented perspective risks neglecting the quality of learning processes and the development of higher-order thinking skills (HOTS), which are essential for sustainable academic achievement and long-term learning capacity (Brookhart, 2010). This situation underscores the need for an educational management approach that places equal emphasis on performance outcomes but also on the management of learning processes that foster deep conceptual understanding.

In practice, the coaching and development of high-achieving students in various educational institutions, including nonformal education settings, are still largely incidental and event-driven. Support activities are often intensified only in the period leading up to specific competitions, with little integration into a systematic and sustainable academic talent management framework. As a result, these efforts tend to focus on short-term performance goals and overlooks continuous learning processes that foster deep learning. By contrast, the concept of talent management in human resource management emphasizes the importance of strategic, systematic processes for identifying, developing, evaluating, and retaining talent over time (Collings & Mellahi, 2009). Educational institutions have not yet widely adopted this concept as a comprehensive strategy for managing and developing high-achieving students..

Existing research on high-achieving students has focused primarily on formal education settings, such as elite schools, acceleration programs, or specialized tracks for gifted students, with particular attention to psychological, motivational, and individual aspects of academic achievement (Subotnik et al., 2011). In contrast, relatively few studies have examined academic talent management in nonformal education settings. Researchers and practitioners more often treat academic competitions as tools for selection and performance measurement than as instruments for the long-term development of academic talent. When educators design and manage competitions effectively, however, these activities can help identify talent, strengthen higher-order thinking skills (HOTS) through assessments that require analysis and evaluation, and promote deep learning through meaningful and reflective learning experiences (Tasrif, 2022).

Recent studies emphasize that schools should develop high-achieving students not only through learning approaches that emphasize the development process and foster critical and reflective thinking. Research shows that students who consistently engage in higher-order thinking skills (HOTS)-based learning demonstrate greater adaptability and long-term academic resilience (Saido et al., 2015). Similarly, integrating higher-order thinking skills (HOTS) into classroom instruction can significantly enhance students' ability to solve complex and unfamiliar problems (Heong et al., 2011). Furthermore, studies have found that learning models such as problem-based learning are effective in improving students' higher-order thinking skills and reduce the tendency toward superficial learning (Arviani et al., 2023). These findings suggest that educational institutions must strengthen learning processes that prioritize HOTS to support sustained academic excellence (Saibin et al., 2024).

Recent literature also underscores the importance of implementing structured and sustainable talent management systems in educational settings, particularly in nonformal education. Effective educational management plays an important role in developing students' interests and talents through systematic programs (Nasution et al., 2026). In addition, competition-based and project-based learning approaches, when designed in a structured manner, can enhance students' motivation and academic performance (Saibin

p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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et al., 2024). Taken together, these studies indicate that a systematic and integrated approach is essential for optimizing the development of high-achieving students. Broader perspectives on educational systems likewise emphasize the importance of resilience and continuity in learning to support students' long-term development (Dülks et al., 2023).

These findings point to the need for research on how competition-based nonformal education can systematically manage academic talent among high-achieving students while integrating the development of higher-order thinking skills (HOTS) and deep learning approaches. Accordingly, this study analyzes the management of academic talent among high-achieving students through a case study of Olimnus, a competition-based nonformal education platform. Based on this case, the study proposes an academic talent management model that integrates educational competitions, HOTS, and deep learning. The study also examines how competition-based nonformal education can implement academic talent management effectively for high-achieving students. It is expected to contribute to educational management scholarship by adapting academic talent management concepts to nonformal education settings and to offer a practical, replicable model for supporting the sustained and meaningful development of high-achieving students.

RESEARCH METHOD

This study uses a qualitative descriptive case study design examine academic talent management for high-achieving students in competition-based nonformal education in depth. A qualitative approach is appropriate because it allows the researcher to explore the processes, dynamics, and management practices that operate in real-world settings, particularly those that integrate educational competitions, higher-order thinking skills (HOTS), and deep learning into academic talent management (Sukardi, 2018).

This research adopts a case study approach because it focuses on a single, clearly defined context: Olimnus, a provider of competition-based nonformal education. The study selected Olimnus because the platform organizes academic competitions on an ongoing basis and supports the continuous development of high-achieving students across multiple educational levels. This design allows the researcher to develop an in-depth, contextual understanding of how academic talent management operates in practice.

This study selected participants through purposive sampling based on their relevance to the research focus. The participants included program managers and competition organizers who are directly involved in planning and implementing academic talent management, as well as high-achieving students who participate in competitions as beneficiaries of the management system. In addition, the study used competition-related documents, including implementation guidelines, assessment blueprints, and evaluation reports, as supplementary data sources to strengthen the findings.

This study collected data through document analysis, semi-structured interviews, and observations. through document analysis, semi-structured interviews, and observations. Document analysis enabled the researcher to examinepolicies, procedures, and mechanisms of academic talent management used to manage academic talent in the organization of competitions. Semi-structured interviews provided insights into informants' perspectives, experiences, and perceptions regarding the processes of talent

p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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identification, development, evaluation, and sustainability. Observations offered direct evidence of how competitions and mentoring activities were implemented, particularly in the integration of higher-order thinking skills (HOTS) and deep learning into instructional activities and assessment practices..

Data analysis proceeded concurrently with data collection and followed three stages: data reduction, data display, and conclusion drawing (Ridder, 2014). The researcher analyzed data from multiple sources to identify patterns, themes, and relationships relevant to academic talent management. This iterative process continued until the study developed a comprehensive understanding of academic talent management practices in competition-based nonformal education..

To enhance trustworthiness in a systematic and replicable manner, this study followed a series of structured procedures. First, the researcher collected data in three stages: document analysis, semi-structured interviews, and observations—using predefined protocols and instruments. Interviews followed semi-structured interview guides, were audio-recorded with participants' consent, and were transcribed verbatim immediately after each session to preserve accuracy. Second, the researcher conducted source triangulation by comparing information from program managers, high-achieving students, and official competition documents. Method triangulation involved cross-checking findings from interviews, observations, and document analysis throughout the data collection process. Third, the researcher conducted member checking by returning interview transcripts and preliminary interpretations to selected participants for verification and clarification. Fourth, the researcher maintained an audit trail that documented all research procedures, coding schemes, and analytical decisions, thereby supporting the study's dependability and enabling external review. Finally, the researcher strengthened confirmability by keeping reflective field notes to identify potential biases and by grounding all interpretations in the empirical data.

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In this study, the researcher served as the primary instrument for both data collection and analysis and acted as a nonparticipant observer. Rather than intervening in academic talent management activities, the researcher focused on understanding and interpreting the phenomenon in its natural setting. Throughout the study, the researcher maintained reflexivity by documenting personal assumptions, potential biases, and analytical decisions in reflective field notes..

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The study adhered to established research ethics principles. Before data collection began, all participants provided informed consent after receiving an explanation of the study's purpose, procedures, and the voluntary nature of their participation. The researcher protected participants' confidentiality and anonymity by using pseudonyms and storing all research data securely. In addition, the study was designed to avoid harm to participants, and all information was used solely for academic purposes.

RESULTS AND DISCUSSION

Results

Talent Management in Education Management

Table 1 presents a checklist of findings on academic talent management from an educational management perspective, indicating the fulfillment of the functions of planning, organizing, implementing, controlling, and sustaining the management of academic talent among high-achieving students in competition-based nonformal education. These findings presented in the table serve as the basis for an analytical discussion to interpret how academic talent management practices at Olimnus align with the principles of educational management.

Table 1. Checklist of Findings on Academic Talent Management from an Educational Management Perspective

Educational Management Function	Academic Talent Management Indicators	Present	Absent	Data Source
Planning	Competition implementation guidelines	✓	-	Documents
	Periodic competition calendar	✓	-	Documents
	HOTS-based assessment blueprint	✓	-	Documents
	Long-term talent development objectives	✓	-	Interviews
Organizing	Competition management structure	✓	-	Documents
	Division of roles among the organizing team	✓	-	Documents
	Participant management workflow	✓	-	Observation
Actuating (Implementation)	Continuous competition implementation	✓	-	Observation
	HOTS-based academic coaching	✓	-	Documents
	Reflective learning and evaluation activities	✓	-	Interviews
Controlling & Evaluation	Cross-competition participant performance records	✓	-	Documents
	Mentor feedback	✓	-	Interviews
	Internal program evaluation	✓	-	Documents
Sustainability	Repeated student participation	✓	-	Participant data
	Access to advanced coaching programs	✓	-	Documents
	Talent pool management	✓	-	Interviews

Educational Competition as Managerial Instruments

The research findings from Olimnus indicate that educational competitions are not positioned as incidental activities, but rather as integral components of a planned academic talent management system. Competitions are organized periodically with clear implementation guidelines and structured competition schedules, allowing competitions to function as planning instruments within educational management. This structured approach demonstrates that competitions are systematically embedded within the

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overall framework of student development. As a result, competitions at Olimnus do not merely serve as supplementary activities, but are integrated into the planning and implementation of high-achieving student development programs.

Integration of HOTS in Academic Talent Development

Table 2 presents the cognitive levels reflected in Olimnus competition questions, based on the revised Bloom's Taxonomy, to analyze the integration of higher-order thinking skills (HOTS) in academic talent development. The presentation of this composition aims to empirically demonstrate that competition assessments extend beyond content mastery but are primarily designed to measure and develop students' higher-order thinking skills.

Table 2. Cognitive Level Composition of Olympiad Questions at Olimnus

Cognitive Level	Percentage Range of Questions	Question Characteristics
C1–C2 (Remembering and Understanding)	15–20%	Measures understanding of basic concepts and terminology
C3 (Applying)	20–25%	Application of concepts to specific contexts or situations
C4 (Analyzing)	25–30%	Analysis of relationships among concepts and logical reasoning
C5 (Evaluating)	15–20%	Evaluation of arguments, solution accuracy, and decision-making
C6 (Creating)	10–15%	Construction of new solutions or problem-solving strategies

Source: by Researcher, 2025

Deep Learning as an Outcome of Academic Talent Management

Another key finding shows that academic talent management in competition-based nonformal education at Olimnus contributes to the development of deep learning among high-achieving students. Deep learning emerges not merely from participation in competition, but from structured, sustained, and higher-order thinking-oriented talent management practices. This impact is reflected in a shift in students' learning orientations, from a primary focus on score attainment toward conceptual understanding and reflection on the learning process.

Integrative Model of Academic Talent Management in Nonformal Education

Figure 1 presents an integrative model of academic talent management in competition-based nonformal education, developed through a synthesis of the study's empirical findings and and relevant theoretical perspectives. The model illustrates the relationships among educational competitions, higher-order thinking skills (HOTS), and deep learning within a sustainable managerial process. Educational competitions function as instruments for identifying and evaluating academic talent, reflecting the principles of performance-based talent identification discribed by Collings & Mellahi (2009). HOTS is positioned as the core mechanism for developing higher-order cognitive abilities, aligning with Brookhart's (2010) conceptualization of higher-order thinking. Deep learning, meanwhile, functions both as an outcome and as an indicator of the effectiveness of academic talent management, aligning with the learning paradigm proposed by Fullan et al. (2017), which emphasizes meaningful and transferable learning processes.

The model operationalizes these components through key educational management functions, including planning, coaching, monitoring, and sustainability, which correspond to the core managerial processes outlined by Bush (2020). By integrating these

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p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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theoretical foundations, the model not only reflects the empirical findings from the Olimnus case, but also extends existing scholarship by contextualizing academic talent management within competition-based nonformal education settings.

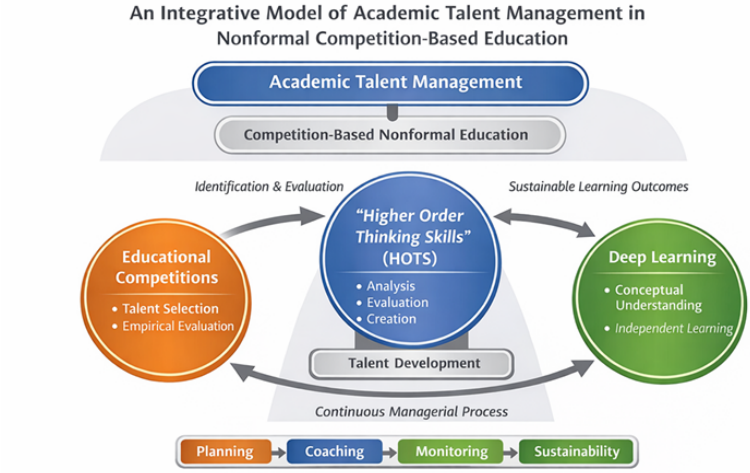

Figure 1. Integrative Model of Academic Talent Management in Competition-Based Nonformal Education

Discussion

Talent Management in Educational Management

Table 1 shows that academic talent management in competition-based nonformal education has been implemented systematically in accordance with the principles of educational management. The fulfillment of indicators within the planning function suggests that academic talent management is deliberately designed through the development of implementation guidelines, competition calendars, and HOTS-based assessment blueprints, ensuring that the development of high-achieving students is not incidental (Bush, 2020). This finding is also consistent with the strategic talent management framework proposed by Collings and Mellahi (2009), which emphasizes systematic processes for talent identification, development, and alignment with organizational objectives.

Within the organizing function, the presence of a management structure and clearly defined roles indicates that academic talent development is carried out through a coordinated organizational system. This enables the talent management process to operate consistently and not depend on particular individuals, aligning with the principles of organizing in educational and strategic management (Robbins et al., 2014). Meanwhile, within the implementation function, the continuous organization of competitions and HOTS-based coaching underscores that academic talent is not merely selected but actively developed through learning experiences that emphasize higher-order thinking processes (Suyatno et al., 2023).

The controlling and evaluation functions are reflected in the use of participant performance records and mentor feedback to monitor students' development. This approach indicates (Collings & Mellahi, 2009). Overall, these findings confirm that the academic talent management practices implemented at Olimnus align with educational management principles that emphasize quality improvement and the sustained development of learners (Fullan et al., 2017).

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Educational Competition as Managerial Instruments

In the practice of academic talent identification, findings from Olimnus show that competition results are used to map students' potential and patterns of thinking rather than merely to determine rankings. These findings support the argument proposed by Subotnik et al. (2011) that the development of high-achieving students requires a continuous, performance-based talent identification system instead of a one-time selection process. By using competition data as the basis for talent mapping, Olimnus demonstrates an academic talent management approach that aligns with performance-based talent identification principles.

Another significant finding is the use of higher-order thinking skills (HOTS)-based questions as a defining characteristic of competitions at Olimnus. The assessment blueprints and question characteristics indicate skills, and the competitions aim to gauge students' skills. The measure learning outcomes and function competitions are designed to measure students' abilities in analysis, evaluation, and problem-solving. These findings are consistent with previous studies emphasizing the role of HOTS-based assessments in capturing higher-level cognitive processes (Brookhart, 2010). Brookhart further argues that HOTS-based assessments not only measure learning outcomes but also function as instructional tools that promote conceptual understanding and the development of higher-order thinking skills (Zohar & Dori, 2003). In this context, HOTS-based competitions perform a dual role as instruments for both identifying and developing academic talent.

From the perspective of control and evaluation, findings from Olimnus indicate that participant performance records across competitions and mentor feedback are used to monitor students' development and adjust coaching strategies. This practice aligns with evidence-based management principles in education, which emphasize that managerial decisions should be grounded in empirical data and continuous evaluation (Robbins et al., 2014). Moreover, this approach supports Zeithaml et al.'s (1988) regarding the importance of ongoing evaluation in maintaining the consistency of service quality, including in nonformal education settings.

Building on these findings, future research is encouraged to explore further the applicability and scalability of competition-based academic talent management models across diverse educational contexts, including formal educational institutions and various nonformal learning environments. Comparative studies involving multiple platforms or institutions may provide deeper insights into the effectiveness and adaptability of such models in fostering high-achieving students. In addition, future studies could examine the long-term impact of integrating competitions, HOTS, and deep learning on students' academic performance, critical thinking development, and career trajectories. From a methodological perspective, further research is recommended to employ mixed-method approaches that combine qualitative insights with quantitative measurements to strengthen the validity of findings. Longitudinal designs may also be used to assess the sustainability of talent development over time, while experimental or quasi-experimental methods can be used to test the effectiveness of specific competition-based interventions in enhancing higher-order thinking skills and deep learning outcomes.

The sustainability dimension also emerged as an important finding at Olimnus, where high-achieving students are placed within a continuously developed talent pool through their participation in subsequent competitions. This finding aligns with the

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strategic talent management concept proposed by Collings & Mellahi (2009), which emphasizes that talent management should maintain a long-term orientation and remain integrated with organizational strategy. In the context of nonformal education, this practice demonstrates that competitions can function as sustainable mechanisms for academic talent management rather than merely producing short-term achievements.

Integration of HOTS in Academic Talent Development

Based on the cognitive level composition presented in Table 2, Olimnus competition questions are dominated by higher cognitive levels (C4–C6), accounting for more than half of the total questions. The predominance of analysis-, evaluation-, and creation-based questions indicates that the competition assessments are designed to measure the quality of students' thinking processes rather than merely their mastery of basic concepts. These findings reinforce Brookhart's (2010) perspective, which emphasizes that HOTS-based assessments play a crucial role in revealing complex thinking abilities and serve as a foundation for academic talent development (Ratnawati & Narimo, 2022). The relatively high proportion of questions at the C4 and C5 levels indicates that students are consistently required to analyze relationships among concepts, evaluate arguments, and determine the most appropriate solutions. In the context of academic talent development, sustained exposure to such questions fosters critical and reflective thinking skills, which are key characteristics of high-achieving students. This finding is consistent with King et al. (1988), who argue that effective HOTS development occurs when learners are routinely engaged in challenging higher-order thinking tasks.

The presence of C6-level questions, although in a smaller proportion, indicates opportunities for students to develop creative abilities and more complex problem-solving skills. From an academic talent management perspective, C6-level questions serve as indicators of talent differentiation, as they distinguish students with advanced thinking abilities from those who remain focused on procedural application. This finding supports the perspective of Subotnik et al. (2011), who argue that the development of high-achieving students requires increasingly complex cognitive challenges as their abilities progress.

Meanwhile, the proportion of questions at lower to middle cognitive levels (C1–C3) is maintained within certain limits to ensure a balance between mastery of basic concepts and higher-order thinking skills. This approach indicates that the integration of HOTS in Olimnus competitions is implemented in a measured manner without neglecting students' conceptual foundations. Within the context of meaningful learning, this balance is essential to enable students to build a strong conceptual understanding as a basis for deep learning (Fullan et al., 2017).

Deep Learning as an Outcome of Academic Talent Management

> *"Now, I do not immediately look for the answer, but instead try to understand the problem first. If my answer is incorrect, I try to find out why it is wrong so that the mistake does not recur."*

These findings demonstrate characteristics of deep learning, including active engagement, reflection, and meaning-making in learning experiences, as described by Biggs et al. (2022), who argue that deep learning involves efforts to understand meaning and relationships among concepts. In the context of Olimnus, deep learning is fostered through repeated exposure to competitions that assess higher-order thinking skills

p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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(HOTS). Competition organizers deliberately design the questions to encourage students to engage in consistent analytical and reflective thinking.

> *"We do not merely aim to create difficult questions but questions that force students to think. Through this approach, it becomes evident who truly understands the concepts."*

Such cognitive challenges encourage students to develop deeper thinking strategies, ensuring that learning does not remain at a procedural level. This is consistent with the perspective of Fullan et al. (2017), who emphasize that deep learning emerges when learners are actively engaged in higher-order thinking processes and sustained reflection. In addition, evaluation and feedback mechanisms within academic talent management further reinforce the development of deep learning. Interview findings indicate that students receive feedback not only on learning outcomes but also on the thinking processes they employ.

> *"After the competition, we usually discuss where the thinking errors occurred, not merely whether the answers were right or wrong."*

This approach is consistent with the findings of Hattie & Timperley (2007), who emphasize that feedback focused on learning processes and strategies plays a crucial role in fostering deep learning. In the context of academic talent management, such feedback helps students reflect on their thinking processes and independently refine their learning strategies.

From an educational management perspective, the emergence of deep learning among high-achieving students indicates that systematically managed educational competitions can function as meaningful learning environments. Deep learning serves as an indicator of the quality of academic talent management, as it reflects the system's effectiveness in developing students' critical thinking, learning autonomy, and academic perseverance. Consequently, academic talent management at Olimnus produces competitive achievements and builds a foundation for long-term learning. Overall, this discussion confirms that deep learning represents a tangible outcome of integrated and sustainable academic talent management. Interview findings further reinforce the evidence that integrating educational competitions, HOTS, and reflective evaluation effectively enables students to achieve a deeper conceptual understanding.

Integrative Model of Academic Talent Management in Nonformal Education

Figure 1 represents an integrative model of academic talent management in competition-based nonformal education, developed through a synthesis of the study's empirical findings. The model emphasizes that academic talent management should not be understood as a partial or event-based activity but rather as a managerial system that connects educational competitions, higher-order thinking skills (HOTS), and deep learning within a sustainable cycle. Positioning academic talent management as the overarching framework indicates that the functions of educational management guide all activities related to developing high-achieving students.

At the initial stage of the model, educational competitions are positioned as managerial instruments that function for talent selection and empirical evaluation. The research findings show that competitions are used not merely to determine rankings, but also as sources of performance data for identifying and mapping academic talent. This is consistent with the perspective of Subotnik et al. (2011), who emphasize that the

p-ISSN : 2721-852X ; e-ISSN : 2721-7965
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development of high-achieving students requires a continuous, performance-based identification system rather than a one-time selection process. Accordingly, competitions in this model serve as the entry point for academic talent management.

HOTS is placed at the core of the model as the central mechanism for academic talent development. The integration of HOTS enables talent managers to shift the focus from outcome-oriented achievement toward the quality of students' thinking processes. Empirical findings indicate that HOTS-based assessments are used to identify students' abilities in analysis, evaluation, and creation, allowing competitions to function as process-oriented diagnostic assessments. The positioning of HOTS as a link between competitions and deep learning aligns with Brookhart (2010), who asserts that HOTS-based assessments play a crucial role in revealing learners' thinking processes and supporting meaningful learning.

The deep learning component in this model is positioned both as an outcome and as an indicator of the effectiveness of academic talent management. Interview and observation findings reveal that students experience a shift in their learning orientation, from merely pursuing high competition scores to developing conceptual understanding and reflecting on their learning processes. This reflects the characteristics of deep learning described by Biggs et al. (2022), namely, learning that emphasizes meaning-making, conceptual connections, and critical reflection. Within this model, deep learning emerges from sustained learning processes enabled by integrating competitions and HOTS into an academic talent management system.

The bidirectional arrows in Figure 1 connecting HOTS and deep learning illustrate the reciprocal relationship between higher-order thinking processes and sustained learning outcomes. The deep learning that develops later enhances students' readiness to engage in subsequent competitions, thereby creating an adaptive cycle of academic talent development. This cyclical pattern is consistent with the view of Fullan et al. (2017), who argue that deep learning develops through repeated learning experiences, reflection, and the application of knowledge across diverse contexts.

At the bottom of the model, the managerial functions of planning, coaching, monitoring, and sustainability emphasize that all academic talent management processes are operationalized through the principles of educational management. These functions ensure that academic talent development does not stop at a single competition cycle but continues through long-term talent pool management. This approach aligns with the concept of strategic talent management, which emphasizes the necessity of sustainable talent development integrated with organizational strategy (Collings & Mellahi, 2009).

CONCLUSION

Competition-based nonformal education should be reconceptualized not as incidental or event-driven activities but as a strategic and systematic framework in which educational competitions function as core managerial instruments within academic talent management. The findings from the Olimnus case demonstrate that integrating competitions, higher-order thinking skills (HOTS), and deep learning forms a coherent system that supports not only the identification and evaluation of academic talent but also its continuous and sustainable development. Importantly, this study confirms that sustainable academic achievement is fundamentally rooted in the quality of learning processes rather than in competitive outcomes alone. In this framework, HOTS serves as a key mechanism for developing analytical and evaluative thinking. At the same time,

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deep learning represents both the ultimate goal and a central indicator of effective talent management. Therefore, repositioning educational competitions within a structured managerial system is essential for transforming competition-based nonformal education into a meaningful, sustainable, and impact-oriented model of academic talent development.

This study has several limitations. First, it focuses on a single case, namely the Olimnus platform, which may limit the generalizability of the findings. Second, the reliance on qualitative data provides in-depth insights but does not capture measurable changes in students' performance over time. Additionally, a specific institutional context shapes the findings, which may not be fully replicable in other settings. These limitations indicate that the results should be interpreted contextually. Despite these limitations, this study offers important contributions. Theoretically, it extends the discourse on academic talent management by positioning educational competitions as part of a structured, continuous developmental system rather than merely as evaluative tools. In practice, it provides educators and nonformal education providers with insights for designing competition-based programs that emphasize sustained learning processes, including the integration of HOTS-based assessment, continuous performance tracking, and aligned mentoring systems. More broadly, this study highlights the strategic role of nonformal education as a flexible space for implementing systematic and sustainable talent development.

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Yusnaldi
Universitas Pertahanan RI,
Jl. Kawasan IPSC Sentul, Jl. Anyar, Sukahati, Kabupaten Bogor, Jawa Barat 16810, Indonesia
Email: yusnaldi@idu.ac.id