

Manajemen Perubahan Berbasis Neurosains: Transformasi Budaya Pesantren dan Pengembangan Model Pembelajaran Bahasa Arab

Neuroscience-Based Change Management: Transforming Islamic Boarding School Culture and Advancing Arabic Learning Models

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Abstrak

Integrasi budaya Islam dan sains dalam pesantren menjadi sangat penting di era kemajuan teknologi saat ini. Seiring dengan berkembangnya potensi siswa secara dinamis, manajemen perubahan yang efektif diperlukan untuk meningkatkan kemampuan dan hasil belajar mereka. Penelitian ini mengkaji peran manajemen perubahan dalam mengoptimalkan perkembangan siswa. Studi ini dilakukan di MBS Pleret, Yogyakarta, dengan melibatkan satu guru agama dan sepuluh siswa sebagai informan. Pendekatan studi kasus kualitatif digunakan dengan metode pengumpulan data melalui wawancara dan observasi. Analisis data mencakup reduksi, penyajian, dan verifikasi. Hasil penelitian menunjukkan bahwa proses pembelajaran berbasis teori dan praktik di MBS Muhammadiyah Pleret didukung secara signifikan oleh manajemen perubahan yang efektif. Hasil belajar dan perkembangan siswa mengalami peningkatan yang cukup besar. Studi ini menyoroti manfaat bagi para pendidik melalui integrasi strategi manajemen perubahan dan manajemen pengetahuan. Data yang dikumpulkan setiap enam bulan menunjukkan pertumbuhan yang signifikan dalam potensi belajar siswa, terutama melalui penerapan prinsip-prinsip neurosains. Budaya pesantren juga memiliki pengaruh kuat terhadap perilaku siswa dan guru. Penerapan manajemen perubahan meningkatkan hasil belajar, pengetahuan manajerial, dan budaya sekolah. Namun, penelitian ini tidak menemukan korelasi yang signifikan antara manajemen perubahan dan manajemen pengetahuan, sehingga diperlukan penelitian lebih lanjut untuk mengeksplorasi hubungan keduanya secara lebih mendalam.

Kata kunci: Dinamika perubahan; Kemajuan siswa; Manajemen perubahan; Pencapaian siswa; Proses pembelajaran.

Abstract

The integration of Islamic and scientific culture in Islamic boarding schools is crucial in today's era of technological advancement. As students' potential grows dynamically, effective change management is essential to enhance their capabilities and learning outcomes. This study examines change management's role in optimizing student development. Conducted at MBS Pleret, Yogyakarta, the research involved one religious teacher and ten students. A qualitative case study approach was used, with data collected through interviews and observations. Data analysis included reduction, display, and verification. Findings reveal that theory- and practice-based learning at MBS Muhammadiyah Pleret is significantly supported by effective learning change management. Students' outcomes and overall development improved considerably. The study highlights benefits for educators through the integration of change and knowledge management strategies. Data collected every six months shows notable growth in students' learning potential, particularly through neuroscience applications. The pesantren culture strongly influences students' and teachers' behavior. Implementing change management enhances learning outcomes, managerial knowledge, and school culture. However, no significant correlation between change

and knowledge management was found, indicating the need for further research to explore their relationship in depth.

Keywords: *Change management, Dynamics of change in Islamic boarding schools, Knowledge of student achievement, Learning process, Student progress*

Introduction

Islamic boarding schools, as typical educational institutions in Indonesia, possess distinctive educational components that set them apart from general formal education. Dhofier (2011) outlines these elements as *kyai* (Islamic scholars), students (*santri*), Islamic boarding school infrastructure, mosques, and the *Kitab Kuning* (a compilation of Islamic teachings). This conceptualization of Islamic boarding schools with these five core elements serves as a foundational discovery, guiding the comprehension of such institutions.

The objective of pesantren education is to cultivate and instill qualities akin to those of the Prophet Muhammad in students characterized by creativity, integrity, and a profound love for knowledge with the ultimate goal of nurturing individuals who not only uphold their faith but also strive to become muhsins (those who excel in faith and deeds) (Rohman, 2022). Government Regulation No. 55 of 2007 regarding Islamic boarding school education outlines that such education aims to imbue students with faith and devotion to Allah SWT, noble character, and the traditions of pesantren to foster the development of abilities, knowledge, and skills. The ultimate goal is for students to become proficient in Islamic religious knowledge and to emerge as Muslims equipped with the skills necessary to contribute to the construction of an Islamic society (Perawironegoro et al., 2019).

In light of these objectives, pesantren education is expected not only to shape the character of santri but also to equip them with comprehensive religious knowledge and values. This study aims to explore the dynamics of change management in Islamic boarding schools, focusing on modern learning methodologies and the integration of neuroscience within the context of Muhammadiyah Boarding School (MBS) Pleret, Yogyakarta.

Despite the rich body of literature on Islamic boarding schools (pesantren) and their role in shaping students' character and religious knowledge, there remains a limited focus on the integration of modern pedagogical approaches, particularly neuroscience-based learning methodologies, within these institutions. Previous studies, such as those by Mujahid (2021) and Yahya et al., (2024), have predominantly examined the traditional elements of pesantren, including their foundational structure and objectives. However, they fall short of addressing how these institutions adapt to the demands of transformative education in the 21st century. Similarly, while Suyadi (2022) has explored the application of neuroscience in Islamic education, its specific implementation in pesantren settings, especially in subjects like ISMUBA (al-Islam, Muhammadiyah, and Arabic), remains underexplored. This gap underscores the need for research that bridges traditional pesantren values with contemporary educational innovations.

This study is distinct in its attempt to develop a humanist-religious school model that incorporates neuroscience principles within the pedagogical practices of Muhammadiyah Boarding School (MBS) Pleret, Yogyakarta. Unlike prior research that primarily focuses on either the traditional values of pesantren or the theoretical aspects of neuroscience in education, this study emphasizes the practical integration of these two dimensions. The research explores

how neuroscience-based strategies can enhance learning outcomes in ISMUBA subjects while maintaining the moral and spiritual ethos of pesantren education. By focusing on a Muhammadiyah pesantren, this study also contributes to understanding how modern Islamic educational institutions navigate the intersection of tradition and innovation, making it a novel contribution to the field of transformative education.

The integration of neuroscience principles with change management in Islamic boarding schools (pesantren) presents a promising yet underexplored approach. While previous studies, such as those by Suyadi (2022) and Nuryana & Suyadi (2019), have examined neuroscience-based learning in Islamic education, they mainly focus on theoretical discussions rather than its role in institutional transformation. This study bridges that gap by demonstrating how neuroscience-informed strategies enhance change management in pesantren. Applying neuroscience principles to leadership, pedagogy, and organizational adaptation, this research provides a framework for pesantren to modernize while maintaining their religious and cultural identity.

To strengthen its contribution, a structured gap analysis will be incorporated to define prior research limitations and highlight the study's novelty. The theoretical link between neuroscience and change management will be expanded using institutional transformation models and cognitive science findings. These improvements aim to provide theoretical and practical insights for effective neuroscience-based change management in pesantren.

Method

This research employs a qualitative methodology, specifically adopting a case study approach (Sugiyono, 2017). The reason for using case studies is the wisdom of researchers to find out and analyze information related to change management in the MBS Pleret Islamic boarding school, Yogyakarta.

This research setting is located at MBS Pleret Yogyakarta. Determining the research setting at MBS Pleret, with the reason to detect the management process of the pesantren, the learning process, distinguish learning before this research is carried out, especially to get new findings that will be included in this research later. The research participants included students, teachers, and administrators of the pesantren, encompassing both men and women. Among the 9 teachers at Ismuba, 5 were male and 4 were female. The selection of research subjects utilized purposive sampling, aiming for a comprehensive representation.

Data collection methods involved direct interviews, observation, and documentation conducted at MBS Pleret Yogyakarta. Data analysis followed the techniques of data reduction, data display, and data verification, drawing upon Sugiyono's research theory supplemented by Mules and Huberman's frameworks. The study identifies and validates themes through systematic coding and thematic analysis. To enhance credibility, member checking and intercoder reliability measures will be incorporated, ensuring consistency and accuracy. These steps will strengthen the trustworthiness of the findings by aligning interpretations with participants' perspectives and minimizing potential researcher bias. The study employs triangulation by cross-verifying teacher interviews, student observations, and administrative records to ensure data reliability. A detailed explanation of this process will be included to enhance methodological transparency, clarifying how multiple perspectives were integrated to strengthen the credibility and validity of the findings (Belkacem & Lakas, 2021; Hastasari et al., 2022).

Finding and Discussion

1. Research Finding

Based on the research problem formulation and the chosen research methodology, the researcher gathered findings and analyzed the study's discussions. Subsequently, the researcher described and analyzed these findings through the Results and Discussion section:

The Development and Implementation of Change Management Strategies Rooted in Neuroscience for Islamic Boarding Schools

Based on information from Ustadz NT at MBS Pleret, Yogyakarta, the current management still follows the previous system, with activities running as usual. The Islamic boarding school has yet to establish a new breakthrough that significantly impacts its progress. The management approach remains conventional, closely resembling that of formal schools or other formal institutions. Several pesantren administrators in the *kema'hadan* field, particularly the *Musyrif*, stated that there have been no significant changes in the learning methods being developed and taught to students.

Based on the information received by Ustadz NT, so far both the management and management of the ma'hadan in MBS have not been maximized. Managerial and learning still refers to conventional management, as is managerial management or learning management as usual which has been implemented. Several factors because the cottage is still in the process of expanding and enlarging the existing location at MBS. BPH and Mudir pesantren are still focusing on land acquisition in Dahromo and Bojong Yogyakarta. You can see the progress of change management at MBS Pleret Yogyakarta in the following table:

Table. 1 Managerial Progress and Change at MBS

NO	Conventional Strategy	Change Management Strategy	Response and impact
1.	Management and Ustadz/zah without debriefing	Ustadz-ustadzah are strengthened with knowledge management	75%-80%
2.	Ma'hadan FGDs are rare	The FGD strategy as a reference point for ustadz-ustadzah	74%- 90%
3.	ISMUBA pesantren learning is monotonous	Fun learning with edutainment brain	75%- 90%
4.	Conventional Managerial	Pesantren Change Managerial	74%-80%
5.	Management still refers to formal schools, even though they are recognized by pesantren/MBS	Management of Islamic boarding school culture	77- 85%
6.	Conventional based learning	Neuroscience-based learning	75-90%
7.	Curriculum development still refers to 2013	Implementation of the curriculum from 2013 to independent learning. As for ismuba, the holistic integrative-based curriculum	75%-85%

Based on Table 1 above, it can be observed that change management still adopts and relies on conventional pesantren management. Although it is implemented within a pesantren framework, its impact remains unclear. The development of cultural management in the pesantren follows a pattern similar to that of traditional pesantren in general. To calculate the statistical analysis, determine the average response rate for each change management strategy

by computing the mean of the given percentage ranges. For instance, if a strategy shows a 75%-80% impact, the average is $(75+80)/2 = 77.5\%$. This method applies to all listed strategies, allowing comparative analysis of effectiveness.

To statistically analyze the flow of change management at MBS Pleret Yogyakarta, data were collected through surveys of *ustadz-ustadzah*, pesantren administrators, and students regarding the effectiveness of conventional strategies compared to the implemented change management strategies. This data was then analyzed using descriptive statistical methods to observe the distribution of response percentages and their impact on pesantren development.

In this analysis, the independent variables (X) include the applied change management strategies, such as strengthening *ustadz-ustadzah* with knowledge management, implementing FGDs as a learning strategy, edutainment-based learning, and adopting an independent learning curriculum alongside a holistic-integrative ISMUBA curriculum. Meanwhile, the dependent variable (Y) represents the response and impact of these changes, measured in percentage terms. Mathematically, the relationship between these variables can be analyzed using multiple linear regression with the following formula:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + e$$

where:

- Y = response and impact of change (in percentage)
- X_1, X_2, \dots, X_n = applied change management strategies
- β_0 = constant
- $\beta_1, \beta_2, \dots, \beta_n$ = regression coefficients for each strategy
- e = error term

Furthermore, Pearson correlation analysis can be used to measure the relationship between change management strategies and their impact. If the correlation value approaches 1, it indicates a strong relationship between the implementation of change strategies and the improvement of management effectiveness and learning quality in the pesantren. Based on this analysis, the pesantren can formulate strategic policies to optimize management systems and implement neuroscience-based learning while fostering a pesantren culture that is more adaptive to contemporary educational developments.

In the second column in the table above, it means that the management of the pesantren is still being practiced by MBS Pleret. Whereas in the third column are changes from management that lead to change management in the MBS Pleret Yogyakarta. At the same time, the change management implemented after the conventional management has changed greatly and has had many impacts. Starting from learning management, managerial, improving student learning outcomes and improving student achievement which is conceptualized with knowledge management.

Some of the offers from researchers listed in this study are neuroscience-based change management. Neuroscience is basically the study of intelligence, thinking ability, the human subconscious, and critical thinking, the center of which is in the human brain, precisely the brain as the main center in blood circulation, nerve cells, and the center of intelligence for students.

Likewise, the management of this neuroscience-based pesantren is not only focused on the students, but also on the *ustadz*, pesantren administrators, and pesantren administrators. The impact of neuroscience is the essence of how students and *ustadz* synchronize with each other and are relevant to the targets and goals of achieving pesantren (Jailani & Huda, 2022b).

The neuroscience intended and applied by PPM MBS Pleret is only intended as a stimulus and motivation for the administrators of the Islamic boarding school and *ustadz-ustadzah*. How is neuroscience considered as the vanguard of motivation and creativity of students in supporting the learning and management of Islamic boarding schools. with the aim of distinguishing

pesantren policies that occurred before and were different compared to previous management. especially neuroscience aimed at MBS Pleret is directed at supporting the learning of students, especially in the fields of religion and language. Neuroscience as a learning concept that is relevant to the slogan of the MBS Pleret modern Islamic boarding school, namely boarding school based on "*Excellent and Qur'anic*".

The MBS Pleret Islamic Boarding School makes students strong in their Islamic literacy and literature and linguistics, both English and Arabic. Learning in PPM MBS is the same as learning in junior and senior high schools in general.

Based on the results of interviews with Ustadz at MBS Pleret with the initials SKMT "that the learning implemented in MBS is based on two blocks, namely block of theory and block of practice. PPM MBS Pleret consists of two formal schools. Even though it is a boarding school, there are schools, including junior and senior high schools. SMP consists of boys and girls, as well as SMA, consists of boys and girls. learning change management consists of religious subjects, namely ISMUBA (Al-Islam Kemuhamaadiyah and Arabic) and there are also general subjects, the focus of the majors is Science".

Based on the results of the interviews above, it can be concluded that the learning and management focus of the students at MBS Pleret is not only a pesantren/religious education, but education that moves into the realm of education and general knowledge. The focus of the students at MBS Pleret is more directed to natural sciences (IPA), religion, and language.

Table. 2 Tahassus is the focus of the Yogyakarta Pleret MBS study program

No.	The name of the focus of the study program	Interest
1.	Arabic and English	80%
2.	IPA (Natural Science)	90%
3	ISMUBA (Al-Islam Kemuhammadiyah and Arabic)	70%
4.	Al-Qur'an	80%

The findings from Table 2 indicate that the specialization generating the highest interest among students and prospective students is the Science major. This preference can be attributed to the predominant interest among students in the natural sciences field. It is common to observe a significant portion of students opting for higher education programs in disciplines such as pharmacy, physics, sports science, chemistry, and mathematics. However, there is also interest in other majors, including Arabic, English, ISMUBA, and Al-Qur'an. Additionally, apart from the main academic curriculum offered by MBS, there are also extracurricular programs such as Hizbul Wathon, Tapak Suci, and others.

The statistical analysis of study program interests shows that Natural Science (IPA) has the highest preference (90%), indicating strong student inclination toward scientific fields. Arabic and English, along with Al-Qur'an, each have 80% interest, reflecting a balanced focus on religious and language studies. ISMUBA has the lowest interest (70%), suggesting potential curriculum engagement challenges.

The data in the table above was obtained through a survey method, where students' interests in various study program focuses were measured using a percentage scale. Statistically, this technique falls under descriptive statistics, specifically frequency distribution and percentage analysis. The percentage values indicate the proportion of students who expressed interest in each study focus.

Descriptive analysis of the data reveals that the highest level of interest is in Natural Science (*IPA*), with 90% of students showing enthusiasm for this field. Arabic and English, as well as the Al-Qur'an study focus, each received 80% interest, indicating a strong inclination toward language studies and religious learning. Meanwhile, the ISMUBA program, which includes Al-Islam, *Kemuhammadiyah*, and Arabic, received the lowest interest at 70%.

From this analysis, it can be inferred that while there is significant interest in religious and language studies, the Natural Science program is the most favored among students. This insight can help educational institutions tailor their curriculum and resource allocation to better align with students' preferences and learning needs.

Management of humanist change in Islamic boarding schools

The change management approach implemented at MBS Pleret is rooted in humanism. As expressed by BSDM MBS (Human Resources Agency of Muhammadiyah Boarding School) through SKM (Sukamto), the Islamic boarding school policy at MBS emphasizes humanization, treating individuals as human beings without authoritarian or arbitrary elements. This humanistic approach values the inherent dignity and worth of every person.

According to SKM "the policy implemented by the leadership of the pesantren is humanist. This means that the leadership continues to receive input and criticism from subordinates, namely employees and teachers/ustadz ustadzah. Receiving input or criticism that is intended is constructive and quality input and criticism. Whatever criticism is aimed at advancing Pleret MBS, this input is considered and used as a reference for pesantren management.

The interview findings from MBS Pleret indicate that the pesantren's policy program is fundamentally humanistic and devoid of authoritarian characteristics. This implies that the implemented policies continue to prioritize the humane treatment of individuals. All teachers and employees are granted the liberty to express their opinions, and how leaders issue directives to subordinates are fair and not arbitrary.

Therefore, the humanist context is very closely related to human understanding. Humans who have understanding are one of the creatures created by Allah SWT, which can be educated as well how to educate humans can be viewed from several elements; among them are users of tools (homophobe), communicating (homo ligaments), fulfilling desires called (homo economicus) without being alone (homo diligence) cultural (homo legatus), mystical understanding is called (religious), educating students is known as (homo educandum), critical thinking is called (homo sapien) (Chair et al., 2020; Ipendang, 2020; Ramdhani et al., 2021).

The description above can be explained that some things cannot be separated from humans, namely, humans often make mistakes (problems), have ego and anarchy and do what they want without any good decisions, therefore humans need direction and enlightenment such as upbringing, guidance, to regulate patterns of behavior and develop existing potential. Norm learning is an absolute thing that cannot be contested because without direction and learning humans can't live and develop in line with their aspirations and outlook on life.

Islamic boarding schools are the only type of religious institution in Indonesia that some experts refer to as indigenous Indonesian educational institutions. As an institution that carries out and has educational tasks, pesantren have compatibility with other institutions. However, pesantren is also a distinctive religious institution and has a uniqueness that is not found in other types of religious institutions. Demands for change in the implementation of Islamic education are also demands for change for pesantren. At this time, pesantren, like other religious institutions, cannot be separated from the demands and needs for change.

The Principles of Humanistic Islam in the Objectives of Islamic Boarding School Education

Islamic boarding school education is a human potential to know his abilities and be able to develop these abilities, so that in the end humans with their abilities and awareness become free and unattached human beings (Hanif, 2020; Rahmawati et al., 2018).

Effective education within Islamic boarding schools can be achieved without resorting to violence, instead focusing on nurturing and maximizing human potential. Emphasizing the cultural process to enhance human dignity and value, which spans a lifetime, is crucial within families, Islamic boarding schools, and society. Thus, pesantren education is a collective endeavor involving families, communities, and the government. It is essential to manage education as an integrated and harmonious system to attain the desired educational objectives successfully.

However, a prevalent societal issue revolves around the effectiveness of Islamic boarding schools in producing high-quality graduates. This is evidenced by the observation of deviant behaviors and violations of fundamental human values among the younger generation, students, and alumni of Islamic boarding schools. Instances of drug dependency, academic non-completion, misconduct, and immoral actions have been reported across various regions. These social realities indicate a deviation from societal norms, where individuals engage in inappropriate and morally decadent behaviors, ultimately contributing to the decline of the nation's overall condition (Ipandang, 2020; Tourish & Tourish, 2010).

Knowledge management-based learning management

According to an interview with one of the leaders at Modern MBS Pleret Islamic Boarding School in Yogyakarta, specifically the Deputy Leader responsible for education, identified as Nurwanto (NWT), it was emphasized that supporting the learning process at the Pleret MBS involves empowering and guiding the ustadz/ustadzah with fundamental learning management skills. This includes both general subject teachers and those teaching Islamic Religious education (PAI subjects) or ISMUBA (Islamic Muhammadiyah Arabic). Before teaching at MBS, teachers are equipped with learning materials and receive training through workshops.

Likewise, NWT continued the results of the interview that "*the material presented refers to Muhammadiyah Research and Community Service Institute (LP2M) in other terms the Muhammadiyah Islamic Boarding School Education Development Institute which refers to the Al Azhar Islamic Science Institute (LIPIA) curriculum. This includes providing facilities to teachers or ustadz/ustadzah at MBS Pleret. As for extracurricular programs such as learning for subjects that are tested on the National Examination, the MBS Pleret as an introduction takes teachers from outside, while the next MBS Pleret uses teachers from MBS Pleret Yogyakarta*".

Hence, the educational approach at MBS Pleret emphasizes religious studies and Arabic language instruction. This strategy is highlighted by the Deputy Head of the MBS Islamic boarding school, who mentions that teachers are equipped with knowledge management, a policy or program implemented by MBS Pleret. The institution places particular emphasis on knowledge management, especially concerning religious studies and Arabic language learning. Furthermore, the skills and competencies of teachers are considered essential in supporting and

servicing as role models for Islamic boarding school education. Learning Arabic is deemed essential and mandatory for all students at MBS, as it is intended to inspire and be applied in various aspects of Islamic boarding school life.

Islamic boarding school-based knowledge management as a benchmark and prototype model of language learning to strengthen and develop material and the potential of students. In particular, such as the practice of muhadrasah and muhadzoroh as a special program at MBS Pleret. As a support and support for tamiyis learning and mahfudzot training as a support for the Arabic language curriculum at MBS. Tamiyis is a packaged subject and concept like modern nahwu. Namely, the rules of the Arabic language (quwaidul lugeh al arabiyah) and the knowledge of Arabic nahwu are packaged easily by being implemented based on songs followed by jidur or the sound of drums. Usually, ustadz or teachers who teach specifically with background from graduates of modern Islamic boarding schools such as Pondok Gontor Darussalam Gontor, Ponorogo.

The following is a tabulation of learning that is often carried out at the MBS Pleret Yogyakarta modern Islamic boarding school.

Table 3. Material and Arabic learning in the MBS Pleret

No.	Learning Name	Class	Support Teacher	Response
1.	Tamiyis	Grade 7 Middle School -12 High School	Ust. Syamsul Bahri	Student response is good
2.	Nahwu	7 Middle School - 12 High School	Ust. Kamiluddin	Good.
3.	Mahfudzot	7SMP-12 SMA	Ust. Sidiq	Good.
4.	Quwaidul Arabiyah	7SMP-12 SMA	Ust. Imron	Good

Based on the results of tabulation 3 above, it can be concluded that learning and concentration in the development of Arabic subjects in the SBM Pleret are divided according to the concentration focus of the ustadz or teaching teacher. For example, Tamiyis was taught by Ust. Syamsul Bahri, Nahwu was taught by Ust. Kamiludin, a mahfudzot taught by Ust. Sidiq, and the focus on Arabic rules was taught by Ust. Imron, with the feedback from the students according to the survey and evaluation of learning results in the student's category well. All students are focused on practicing mufradat at least five mufrodats every day and every Friday and Sunday students or female students practice in the field or in the boarding school yard.

Improvement in Arabic Language Learning Through New Management Approaches in MBS Pleret, Yogyakarta Indonesia

The implementation of new management in Arabic language learning has significantly improved several key aspects, particularly in student motivation, teaching effectiveness, and learning evaluation. Students have shown increased active participation in class, mainly due to the use of interactive methods and digital technology that enhance the learning experience. Additionally, the neuroscience-based approach has helped improve students' memory retention and understanding of Arabic language structures, making them more confident in speaking and writing.

To implement this learning model in other schools, thorough preparation is necessary, including teacher training, adaptive curriculum development, and the provision of adequate digital learning resources. Teachers should receive intensive training on neuroscience-based methods and educational technology to optimize classroom learning. Additionally, the integration of project-based and experiential learning approaches should be tailored to the needs of students at different educational levels. Continuous monitoring and evaluation are essential to ensure the effectiveness of this method and to make necessary improvements based on reflection and assessment results. See the following image:

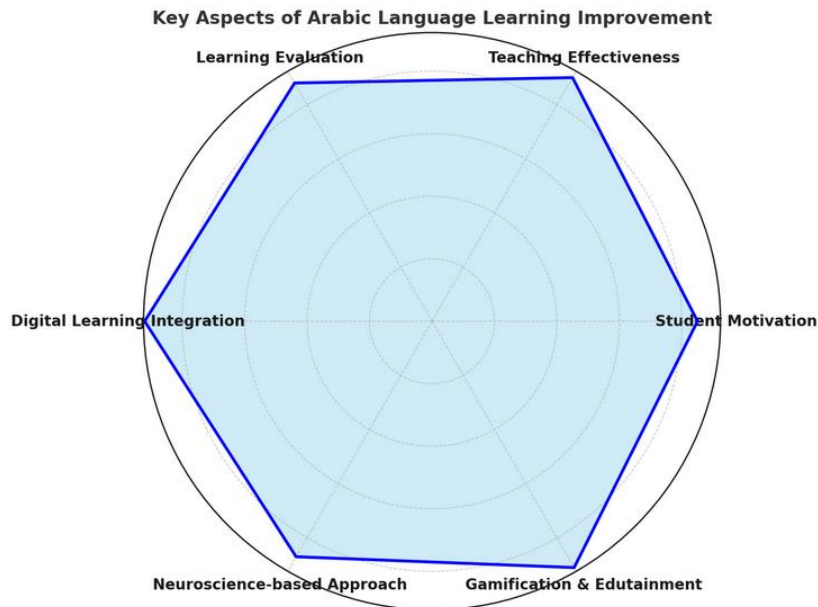


Figure 1. Aspects of Arabic Language Learning Improvement

The diagram above illustrates the key aspects contributing to the improvement of Arabic language learning through new management approaches. The six critical factors student motivation, teaching effectiveness, learning evaluation, digital learning integration, neuroscience-based approaches, and gamification & edutainment show significant enhancement under the new management system.

2. Discussion

Research has found that humans have not optimally used their brains in various ways both to solve problems and find new ideas, new ideas, creativity, and innovation. The current education system only focuses on the left outer brain and does not balance it with the use of the right brain (Nuryana & Suyadi, 2019; Suyadi et al., 2020). This left brain plays a role in the processing of logic, words, mathematics, and sequences which are dominant for academic learning. The right brain that deals with the rhythm of music, images, and creative imagination has not got a proportional share to be developed. Likewise, the limbic system is the emotional center that has not been involved in learning, even though this emotional center is closely related to the long-term memory storage system. Moreover, the utilization of all parts of the brain (whole brain) in an integrated manner has not been applied effectively in the education system. In the last decade, the brain has been extensively explored and concluded that the brain is indeed the center of thinking, creation, civilization, and religion (Fitriani & Abdullah, 2021; Taufik Pasiak, 2012).

Recent advancements in neuroscience have provided compelling evidence suggesting that specific regions of the brain are responsible for organizing various types of human intelligence. For instance, mathematical intelligence, as well as musical and spatial intelligence, are primarily centered in the right hemisphere of the brain. Kinesthetic intelligence, which pertains to bodily movements and coordination, is predominantly associated with the motor cortex area located in the frontal lobe of the cerebral cortex. On the other hand, intrapersonal and interpersonal intelligence are thought to be organized within the limbic system of the brain, with connections extending to the prefrontal and temporal lobes (Jailani & Huda, 2022a).

Neuroscience is a discipline focused on the study of the nervous system within the human brain. It investigates the intricacies of brain biology, perception, memory, and their interplay with the learning process. According to neuroscience theory, the nervous system and brain serve as the physiological foundation for human learning. By examining cognitive processes within the brain, neuroscience establishes connections between these processes and resulting behaviors. Essentially, every command processed by the brain activates crucial areas within the brain (Jailani, 2021).

The description above can be explained that some things cannot be separated from humans, namely, humans often make mistakes (problems), have ego and anarchy and do what they want without any good decisions, therefore humans need direction and enlightenment such as upbringing, guidance, to regulate patterns of behavior and develop existing potential. Norm learning is an absolute thing that cannot be contested because without direction and learning humans can't live and develop in line with their aspirations and outlook on life.

Daud, a good pesantren education is a very strategic and efficient effort to help perfect and actualize human abilities (Wan Daud et al., 2021). Islamic boarding school education is not a tool of oppression; rather, it serves as a means to nurture individuals towards positive personal development. However, achieving the intended goals of Islamic boarding school education requires more than just its intrinsic scope. It necessitates a conducive environment that can address any shortcomings or inadequacies to ensure the optimal realization of its objectives (Abu-Remaileh, 2021; Misrawi, 2013).

The values of humanity and Islamic humanism have something in common with Western humanism because the references are appropriate. However, according to Moussa, Western Humanism is indebted to the principles of freedom (*liberty*), friendship (fraternity), and equality (equality) in Islam. More than that, Iqbal explained that these three principles are the core teachings of Islam. In his book, *The Reconstruction of Religious Thought in Islam*, he states that the essence of monotheism is equality, solidarity, and freedom. The concept of monotheism has implications for efforts to realize equality. The existence of this equality will foster solidarity or brotherhood. Furthermore, solidarity demands the granting of freedom to fellow human beings during their lifetime. Freedom, friendship, and equality are the values of the concept of Islamic humanism (Perkins et al., 2019).

The concept of knowledge management entails a strategic approach aimed at leveraging an organization's intellectual assets, comprising both documented information and the expertise of its members, to enhance productivity, generate new value, and foster synergy. This concept encompasses elements of human resource management and information technology, with the ultimate goal of achieving heightened levels of productivity (M. Abdul Rojak, 2018; Nuryana & Suyadi, 2019).

Knowledge management involves the management of information within an organization through the implementation of strategies, structures, cultures, and systems, and leveraging the potential and attitudes of individuals regarding the knowledge they possess (Tang et al., 2021). Santoso and Surmarch as cited by Sangkala, termed knowledge management is a process by which a company creates intellectual assets and knowledge-based assets (Santoso, 2019).

Improvement in Arabic Language Learning Through New Management Approaches

The implementation of new management approaches in Arabic language learning has led to significant improvements in various aspects. Key enhancements include increased student engagement, improved instructional strategies, and more effective assessment methods (Jailani & Elbaghdadi, 2024). According to recent literature, innovative management techniques such as student-centered learning, integration of technology, and differentiated instruction have contributed to higher language retention and motivation among learners. Schools that adopt these strategies report better language proficiency outcomes and more active participation in Arabic language classes (Ritonga et al., 2023).

In practice, successful implementation of these approaches requires a shift in pedagogical techniques. For example, the integration of digital platforms and interactive language applications has provided students with personalized learning experiences. Additionally, the use of collaborative projects and communicative teaching methods has fostered real-world language application, enhancing both spoken and written Arabic proficiency. Furthermore, the implementation of continuous formative assessments allows teachers to track progress and adjust instruction to meet individual student needs effectively (Wahyuni et al., 2023). See the following image:

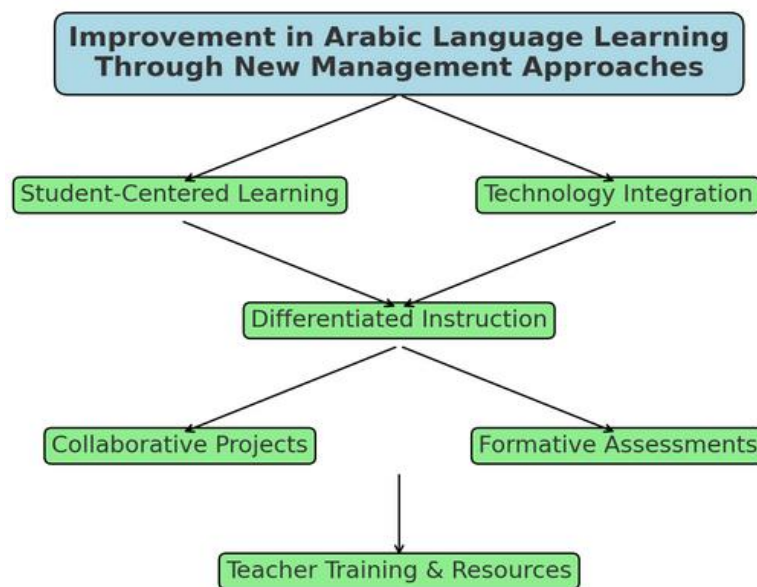


Figure 5. Improvement in Arabic Language Learning Through New Management Approaches

The diagram illustrates new management approaches in Arabic language learning that contribute to language skill improvement. The key elements include student-centered learning, technology integration, and differentiated instruction, which directly enhance student engagement and motivation. These approaches are reinforced by collaborative projects and

formative assessments, enabling continuous feedback. Additionally, teacher training and resource allocation play a crucial role in sustaining this model. By implementing these strategies in a structured manner, schools can significantly improve Arabic language learning outcomes.

Closing

1. Conclusion

This study demonstrates that neuroscience-based change management significantly contributes to the transformation of pesantren education by integrating innovative and humanistic approaches. By shifting from conventional methods to a more adaptive framework, pesantren can enhance student learning experiences, improve managerial structures, and strengthen institutional culture. The findings highlight how neuroscience principles can be systematically applied to change management in Islamic boarding schools, offering empirical insights into their impact on pedagogy and institutional development. Despite these advancements, challenges in implementation remain, requiring further refinement of strategies to ensure sustainable educational reform in pesantren settings.

2. Sugestion/Recommendation

To enhance neuroscience-based change management in pesantren, educators should apply brain-based learning and cognitive instructional strategies to boost engagement and outcomes. Administrators need to build structured knowledge management systems and offer continuous professional development for ustadz and ustadzah. Policymakers should formulate guidelines supporting neuroscience integration in curricula and leadership. Future research must compare traditional and modern pesantren implementing neuroscience-based approaches, evaluating long-term effects on institutions and students. Identifying challenges in adopting neuroscience-informed management and crafting solutions is crucial to strengthen and sustain educational transformation in pesantren environments.

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