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(IJMOE)**[www.gaexcellence.com/ijmoe](http://www.gaexcellence.com/ijmoe)**TARANNUM PEDAGOGY: A CHRONOLOGICAL REVIEW  
FROM CLASSICAL TRADITIONS TO DIGITAL  
INNOVATION**

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**Abstract:**

This study presents a chronological literature review of Tarannum pedagogy, a specialized field within Qur'anic education that integrates melodic recitation, spiritual refinement, and instructional practice. Although Tarannum has long functioned as an important component of Islamic learning, existing studies remain dispersed across different themes and periods, making it difficult to trace the developmental trajectory of the field in a systematic manner. Accordingly, this review aims to examine the evolution of Tarannum pedagogy over time by identifying major patterns, shifts in research orientation, and emerging instructional trends in the literature. The study employed a systematic advanced search strategy using the Scopus database, guided by the main keywords tarannum, pedagogy, and recitation. Relevant records were screened according to predefined criteria to ensure thematic relevance and academic quality. A final dataset of 77 primary studies (n = 77) was selected for analysis. The findings reveal a clear upward trend in research productivity and conceptual development across three chronological phases: Foundational and Sparse Emergence (2002–2013), marked by limited and exploratory studies centered on traditional recitational practices; Transitional Growth and Pedagogical Structuring (2014–2018), characterized by increasing scholarly attention to structured teaching methods, curriculum concerns, and early digital

interventions; and Rapid Expansion and Digital Integration (2019–2025), distinguished by strong publication growth, wider empirical inquiry, and the incorporation of multimedia, speech technologies, online learning platforms, and artificial intelligence into Tarannum-related instruction. Numerically, publication activity rose from isolated outputs of 1–2 studies per year in the earliest phase to 5–8 studies annually in the transitional and early expansion years, before reaching a peak of 11 publications in 2023, with sustained high output in 2024 and 2025. Overall, the review demonstrates that Tarannum pedagogy has evolved from a tradition-based instructional practice into a more structured, research oriented and technology responsive domain, offering a valuable foundation for future pedagogical innovation and interdisciplinary scholarship in Qur’anic education.

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Pedagogy, Recitation, Tarannum



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## Introduction

Tarannum pedagogy represents a specialized approach within Islamic education, focusing on the artful and melodious recitation of the Qur’an. Rooted in centuries old tradition, tarannum is more than a mere vocal embellishment; it is a sophisticated discipline that intertwines linguistic mastery, spiritual expression, and cultural heritage. The practice of tarannum enhances the phonetic beauty and semantic depth of Qur’anic verses, fostering a deeper engagement with the sacred text among learners and listeners alike (M. L. Ibrahim et al., 2021; Ramli et al., 2025; Ramli & Sahad, 2025). Historically, tarannum has played a pivotal role in preserving the Arabic language and Islamic civilization, serving as both an educational tool and a medium for transmitting religious knowledge across generations (Omar, 2016; Ramli et al., 2025). Its integration into formal and informal educational settings from elementary schools to higher learning institutions underscores its enduring relevance in shaping Muslim identity and spiritual aesthetics (Kamarudin & Abdul Razak, 2023; Salleh et al., 2020; Salleh, Hussin, et al., 2024).

In contemporary contexts, tarannum pedagogy faces both opportunities and challenges. On one hand, innovative teaching models and digital technologies are being developed to revitalize tarannum instruction, making it more accessible and engaging for diverse learners (Salleh et al., 2024; Awang et al., 2022; Hanum et al., 2021; Nadziman et al., 2023). These advancements include audio-visual modules, smart learning applications, and game-based platforms that cater to varying proficiency levels while maintaining fidelity to traditional methods. On the other hand, educators encounter obstacles such as limited pedagogical resources, varying teacher competencies, and declining emphasis within formal curricula (Latif et al., 2020; Lubis et al., 2013; M. Z. Zakaria et al., 2024). Despite these hurdles, research consistently highlights the

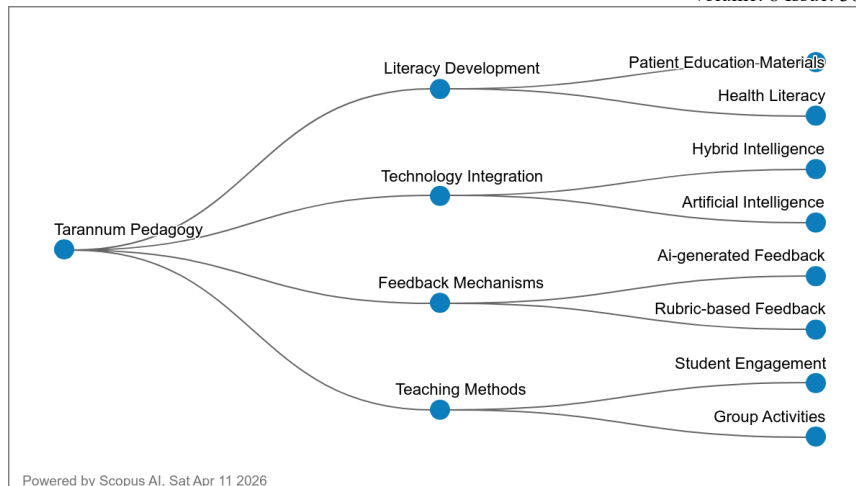
high value placed on tarannum by teachers and students alike, emphasizing its role in enhancing pronunciation accuracy, comprehension of Qur'anic language and overall learner well-being (Kamarudin & Abdul Razak, 2023; Ramli & Sahad, 2025; F. I. Zakaria et al., 2021). As such, tarannum pedagogy stands at the intersection of tradition and innovation inviting ongoing scholarly attention to ensure its continued vitality in Islamic education.

## Literature Review

Tarannum Pedagogy, a specialized approach to teaching the melodious recitation of the Quran, emphasizes the integration of rhythm, tone, and melody to enhance the spiritual and aesthetic experience of Quranic recitation. The development of tools like the Tarannum Smart Learning Application (Tarannum-SLA) has been instrumental in promoting this pedagogy. This application incorporates seven distinct Tarannum styles Bayyati, Nahwand, Hijaz, Rast, Soba, Jiharkah, and Sika and offers multilingual support to cater to diverse learners. Usability studies of Tarannum-SLA have shown its effectiveness in facilitating Quranic education, though further refinements, such as improved verse selection and reciter options, are needed to enhance its utility (Awang et al., 2022b). Additionally, the lack of interactive mobile applications for Tarannum learning has been identified as a barrier, as traditional one-on-one instruction limits accessibility and scalability. Game-based and algorithm driven learning tools have been proposed to address these gaps, making Tarannum pedagogy more engaging and widely accessible (Nadziman et al., 2024).

Challenges in implementing Tarannum Pedagogy are multifaceted. A study involving Quranic Tarannum teachers in Indonesia highlighted moderate to high difficulties in areas such as administrative management, teacher competency, and pedagogical understanding. Teachers' limited training and knowledge in Tarannum techniques further exacerbate these challenges, underscoring the need for targeted professional development and resource allocation (Aqsha Lubis et al., 2011). These findings align with broader pedagogical research, which emphasizes the importance of teacher training and curriculum design in overcoming instructional barriers (Muniandy & Abdullah, 2023; Qəhrəmanzadə, 2023).

Theoretical insights from other pedagogical frameworks can inform the development of Tarannum Pedagogy. For instance, the Ignatian Pedagogical Paradigm, with its focus on context, experience, reflection, action, and evaluation, offers a student-centered approach that could be adapted to Tarannum instruction. Reflection, in particular, could help learners internalize the spiritual and technical aspects of Tarannum, fostering deeper engagement (Tardiff, 2019). Similarly, principles from Dynamic Pedagogy, which emphasize metacognitive competencies and iterative learning, could enhance the adaptability and effectiveness of Tarannum teaching methods (Armour-Thomas & Gordon, 2025).



**Figure 1: Conceptual Mapping of Tarannum Pedagogy**

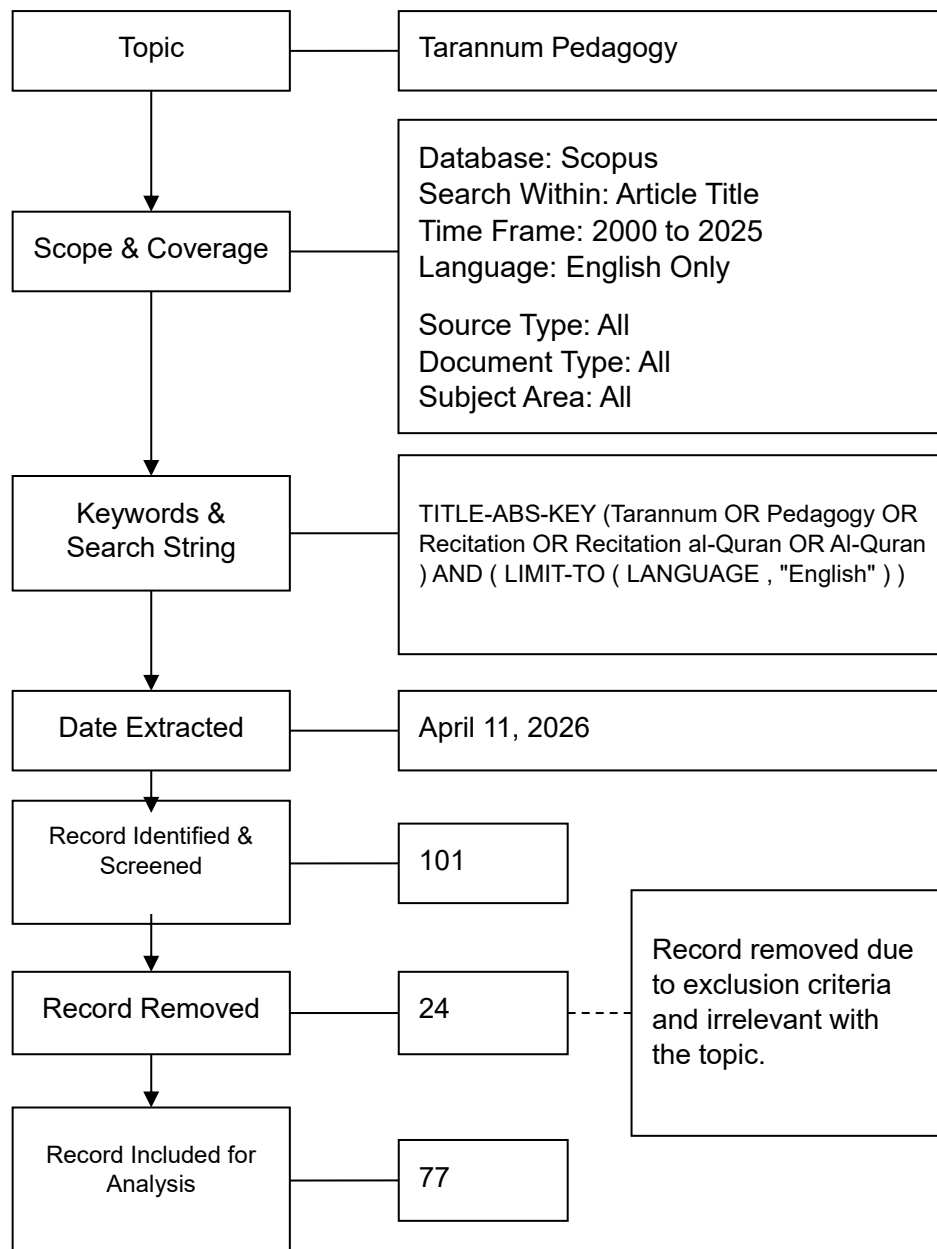
In conclusion, while Tarannum Pedagogy is a niche field, its development can benefit from integrating insights from broader pedagogical theories and leveraging technology to address existing challenges. Future research should focus on creating comprehensive training programs for educators, developing interactive learning tools, and exploring the cultural and spiritual dimensions of Tarannum to enrich its pedagogical framework.

## Materials and Methods

### *Data Collection*

Tarannum pedagogy, as an integral component of Qur'anic recitation, represents a dynamic intersection between aesthetic expression, spiritual formation, and instructional practice that has evolved across diverse historical and educational contexts. Rooted in the classical traditions of *talaqqi* and *musyafahah*, where knowledge is transmitted through direct teacher–student interaction, Tarannum pedagogy has progressively adapted to institutional, technological, and digital transformations, reflecting broader shifts in educational paradigms. Despite its enduring significance in preserving the beauty and integrity of Qur'anic recitation, existing scholarship on Tarannum remains fragmented, often confined to specific methodological approaches or temporal contexts, thereby limiting a comprehensive understanding of its pedagogical trajectory. This chronological review seeks to address this gap by systematically examining the development of Tarannum pedagogy across time, with particular attention to shifts in teaching methods, feedback mechanisms, literacy development, and the integration of emerging technologies. To ensure methodological rigor and scholarly reliability, this study employed a single-step data collection strategy using the Scopus database, widely recognized for its extensive coverage of peer reviewed and high impact academic publications. Relevant studies were identified through carefully constructed keyword combinations related to Tarannum, Qur'anic recitation, pedagogy, and educational technology, followed by a screening process based on predefined inclusion criteria such as relevance, publication quality, and thematic alignment. The adoption of a rigorous and systematic data collection process is critical in chronological reviews, as it enhances the reliability and validity of the findings while minimizing selection bias and ensuring consistency in the identification of relevant literature. Moreover, such methodological precision enables the accurate interpretation of longitudinal trends, allowing for a nuanced analysis of continuity and transformation within Tarannum pedagogy. By grounding the review in a robust and transparent data collection framework, this

study not only contributes to a more coherent synthesis of existing knowledge but also provides a credible foundation for future research and pedagogical innovation in the field of Qur’anic education.



**Figure 2. Flow Diagram Of The Search Strategy.**

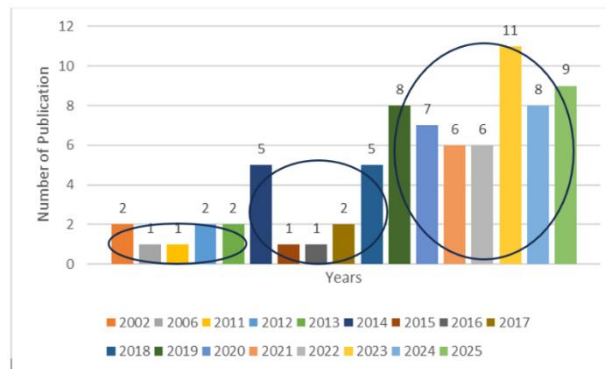
Source: Punj et al. (2021), Moher et al. (2009)

The data collection process for this chronological review was conducted using a structured and transparent search strategy within the Scopus database, selected due to its comprehensive indexing of high-quality, peer-reviewed literature across multidisciplinary fields. The search query, defined as TITLE-ABS-KEY (Tarannum OR pedagogy OR recitation OR “recitation al-Quran” OR “Al-Quran”), was applied with specific parameters to ensure both relevance and consistency, including limiting results to publications in the English language, covering the time frame from 2000 to 2025, and encompassing all source types, document types, and subject

areas. The search was further refined by focusing on the article title field to enhance topical precision and reduce the inclusion of peripheral or loosely related studies. This initial search yielded a total of 101 records, representing a broad yet relevant corpus of literature aligned with the study's objectives. A systematic screening process was subsequently undertaken to assess the eligibility of each record based on predefined inclusion and exclusion criteria, such as direct relevance to Tarannum pedagogy, conceptual alignment with Qur'anic recitation practices, and sufficient scholarly depth. As a result, 24 records were excluded due to issues such as duplication, lack of direct relevance, or insufficient academic rigor, leading to a final dataset of 77 studies included for analysis. The adoption of this rigorous and methodologically justified approach is critical in ensuring the reliability and validity of the review, as it minimizes selection bias, enhances transparency, and supports replicability. Furthermore, by maintaining a clearly defined scope and systematic filtering process, the study enables a more accurate and meaningful interpretation of temporal trends, pedagogical shifts, and emerging themes within Tarannum education. Such methodological robustness is particularly essential in chronological reviews, where the integrity of data selection directly influences the credibility of insights regarding the evolution and transformation of pedagogical practices over time.

### **Data Clustering**

In a chronological review of Tarannum pedagogy, the clustering of publication data into meaningful temporal phases constitutes a critical analytical strategy for uncovering patterns and trajectories within the literature. Given that the dataset was systematically retrieved from a reputable and comprehensive database such as Scopus using carefully constructed keywords and advanced search strategies, the resulting corpus reflects a high level of scholarly reliability and coverage. However, raw publication counts by year alone provide limited interpretive value unless organized into coherent groupings that reflect shifts in research intensity and focus. Clustering based on publication year and volume enables the identification of distinct phases of development, thereby transforming descriptive data into analytically meaningful segments that capture the evolution of the field over time. This approach is particularly important in the context of Tarannum pedagogy, where scholarly output has transitioned from sporadic, tradition-based discussions to more structured, technology-enhanced pedagogical inquiry. By grouping years with similar publication patterns, researchers can more effectively discern periods of emergence, growth, and maturity, as well as correlate these phases with broader educational, technological, and methodological developments. Furthermore, clustering enhances the interpretability of longitudinal trends by reducing complexity, allowing for clearer comparisons across time periods and facilitating a more nuanced understanding of continuity and transformation within the field. As such, the use of data clustering not only strengthens the analytical rigor of the review but also provides a robust framework for presenting and discussing temporal trends in a manner that is both systematic and insightful.



**Figure 3. Number Of Publication Per Phase**

### ***Phase 1: Foundational and Sparse Emergence (2002–2013)***

This initial phase is characterized by low and irregular publication activity, with only 1–2 studies appearing sporadically across more than a decade. The limited output during this period suggests that Tarannum pedagogy was not yet established as a distinct field of academic inquiry but rather embedded within broader discussions of Qur’anic recitation and Islamic education. Research in this phase was largely descriptive, tradition-oriented, and exploratory, focusing on classical pedagogical practices such as talaqqi and musyafahah, with minimal engagement with formal instructional design or empirical validation. The absence of consistent publication trends indicates both a lack of systematic research frameworks and limited scholarly attention, justifying its classification as a foundational stage.

### ***Phase 2: Transitional Growth and Pedagogical Structuring (2014–2018)***

The second phase marks a transition towards increased research activity and conceptual consolidation, beginning with a noticeable rise in 2014 (5 publications), although still accompanied by fluctuations in subsequent years. This period reflects a growing recognition of Tarannum pedagogy as a legitimate academic domain, with researchers beginning to explore structured teaching methods, curriculum integration, and early forms of instructional innovation. The emergence of moderate peaks (e.g., 2014 and 2018) suggests renewed scholarly interest, possibly influenced by the expansion of Islamic education programs and the initial integration of digital tools. However, the inconsistency in output indicates that the field was still undergoing developmental stabilization, transitioning from traditional discourse to more systematic pedagogical inquiry.

### ***Phase 3: Rapid Expansion and Digital Integration (2019–2025)***

The final phase demonstrates a significant and sustained increase in publication output, with research activity rising sharply from 8 publications in 2019 to a peak of 11 in 2023 and consistently remaining high thereafter. This trend reflects the maturation and expansion of Tarannum pedagogy as a research field, driven by the integration of digital technologies, online learning platforms, and emerging interest in artificial intelligence-based instructional approaches. The stability and volume of publications during this phase indicate a shift towards empirical studies, model development, and innovation in teaching and assessment practices, including automated feedback systems and digital learning environments. This phase is thus appropriately classified as a period of rapid growth and technological transformation, where

Tarannum pedagogy evolves from a traditionally transmitted practice into a modern, research-driven educational discipline.

## Result and Discussion

### *Foundational and Sparse Emergence (2002–2013)*

Based on the abstracts available for the phase Foundational and Sparse Emergence (2002–2013), the chronological pattern shows a small but meaningful body of literature that gradually moved from historical textual reflection toward aesthetic appreciation, social participation, and early technological support for Qur'anic recitation practices. Although publication output remained low and irregular, the studies reveal that this early phase was not intellectually stagnant. Instead, it laid the conceptual groundwork for later developments in Tarannum pedagogy by clarifying the religious status of recitation, the social position of reciters, the sensory impact of Qur'anic sound, and the first attempts to support recitation learning through computational systems. The year-based clustering within this phase may be organized into three sub-periods: textual-sacral and social foundations (2002), aesthetic and performative orientation (2006–2011), and technological experimentation in recitation support (2012–2013). This arrangement makes the developmental direction of the literature easier to interpret, since each sub-period reflects a distinct shift in research focus and methodological preference.

The first sub-period, textual-sacral and social foundations (2002), is represented by the two studies of Afsaruddin. In *The excellences of the Qur'ān: Textual sacrality and the organization of early Islamic society* and *In Praise of the Word of God: Reflections of Early Religious and Social Concerns in the Fadā'il al-Qur'ān Genre*, the findings and discussion emphasize that literature on the excellences of the Qur'an provides more than devotional praise (Afsaruddin, 2002b, 2002a). According to Afsaruddin, this corpus contains important information on the place of Qur'an reciters in early Muslim society, attitudes toward oral and written transmission, norms of teaching, and the authority attached to various modes of engagement with the sacred text. The main pattern in this earliest cluster is that recitation was treated not primarily as a technical teaching problem, but as a socially meaningful and religiously charged practice. The focus remained historical and interpretive, yet these works indirectly contributed to Tarannum pedagogy by establishing that recitation, memorisation, transmission, and instruction were central to communal identity and moral status. In other words, the earliest literature did not yet formulate a structured pedagogical model, but it clarified the civilizational and epistemic foundations upon which such pedagogy could later be conceptualized.

The second sub-period, aesthetic and performative orientation (2006–2011), reflects a shift from historical-textual analysis to lived experience and performance. Graham & Kermani (2006) in *Recitation and aesthetic reception* highlighted the oral nature of the Qur'an and showed that its beauty is inseparable from recited sound, not merely from written form. The discussion placed strong emphasis on the auditory, devotional, and aesthetic dimensions of recitation, suggesting that the act of reciting carries formative value in Muslim religious life. This marks an important development because the literature began to acknowledge recitation as an embodied and affective practice, which is closely related to Tarannum even if the term itself was not yet pedagogically elaborated. Rasmussen, (2011), in *"The Muslim Sisterhood": Religious Performance, Transnational Feminism(s), and the Particularity of Indonesia*, added a different layer to the discussion by showing that women in Indonesia actively participated in Qur'anic study, teaching, interpretation, and high-level recitational performance. The findings

suggest that excellence in recitation was not limited to male institutional authority and that pedagogical transmission occurred across diverse learning spaces, from study circles to higher education institutions. This sub-period therefore expanded the literature from textual authority to performance, inclusion, and educational participation. It also indicated that recitation pedagogy was beginning to be understood through social practice and access, not only through religious legitimacy.

The third sub-period, technological experimentation in recitation support (2012–2013), shows the clearest methodological change within the foundational phase. Here, the literature moved into empirical and system-oriented work, especially through engineering and speech-processing approaches. Zulkurnaini et al. (2012) compared listening to Qur'anic recitation and classical music through EEG measurement in *the comparison between listening to Al-Quran and listening to classical music on the brainwave signal for the alpha band*. Their findings showed a stronger increase in alpha-band response during Qur'anic listening, and the discussion associated this with a more relaxed yet alert condition. While this study did not directly design a pedagogical tool, it contributed to the broader educational significance of recitation by suggesting measurable cognitive and affective effects. In the same year, Wahidah et al. (2012) in *Makhranj recognition using speech processing* proposed a recognition system based on MFCC and MSE to verify pronunciation accuracy. The reported performance, including zero false reject rate and full accuracy in the experiment, reflects an early belief that recitation correction could be partly automated. This is a notable transition from descriptive scholarship to applied intervention, where learning difficulties were approached through technical modelling rather than traditional oral instruction alone.

This technological movement became more explicit in 2013. N. J. Ibrahim et al. (2013), through *Automated tajweed checking rules engine for Quranic learning*, reported recognition rates of 91.95 percent at verse level and 86.41 percent at phoneme level using MFCC and HMM. The discussion indicated that such a system could function as a supportive educational tool, especially for students learning outside direct teacher supervision, while still preserving the main place of the teacher in Qur'anic instruction. A similar orientation appears in Ahsiah et al., (2013), *Tajweed checking system to support recitation*, where speech recognition was proposed to detect mismatches between learner recitation and expert models stored in a database. The dominant pattern in 2012–2013 is therefore the emergence of assistive pedagogical technology. The studies did not attempt to replace *talaqqi* and *musyafahah*, but rather to complement them by increasing opportunities for self-learning, revision, and pronunciation support. This shows that even within the sparse foundational phase, the literature had already begun to move toward issues that later became more central in Tarannum pedagogy, namely learner autonomy, digital mediation, feedback automation, and the extension of classical recitation training into technologically supported environments. Overall, the chronological progression across 2002–2013 demonstrates a gradual shift from historical-religious understanding to aesthetic and social participation, and finally to computational assistance for recitation learning. Such a pattern confirms that the foundational phase was limited in quantity but important in setting the conceptual, experiential, and technical bases for the later structuring of Tarannum pedagogy as a more defined field of study.

### ***Transitional Growth and Pedagogical Structuring (2014–2018)***

Within the phase Transitional Growth and Pedagogical Structuring (2014–2018), the abstracts indicate a clear movement from basic technological support for Qur'anic learning toward more

organized pedagogical design, functional evaluation, and broader educational justification. This phase may be divided into three chronological sub-periods: initial digital adaptation (2014–2015), system refinement and learner-response orientation (2016–2017), and broadening integration and applied consolidation (2018). Such clustering reflects not only the increase in publication activity, but also a visible shift in emphasis from application construction and technical experimentation to more structured educational use, learner outcomes, and integration of recitation-related knowledge with wider instructional concerns. Compared with the earlier foundational phase, the literature in this period became more intervention-oriented and increasingly concerned with how technology, pedagogy, and recitation practice could be linked in a usable framework.

The first sub-period, initial digital adaptation (2014–2015), shows that the field began to adopt a more intentional design logic in relation to learning tools. Elobaid et al., (2014) described the design and modelling of *Noor Al-Quran* for Android devices, with the findings emphasizing requirement analysis, feature identification, database preparation, interface modelling, and business logic development. Although the abstract focuses more on development stages than measured learning outcomes, the discussion implied that Qur'anic learning applications were beginning to be treated as structured educational systems rather than simple repositories of religious content. In the same year, Rosmani et al. (2014), though *I-Wirid: Construction of digital wirid via mobile platform*, reported high user satisfaction and strong agreement regarding the attractiveness of the application in daily use. This suggests that recitation-related mobile tools were already receiving positive reception when multimedia elements were combined with guidance and accessibility. A similar instructional orientation appears in Aljunid et al. (2014), whose *Scaffolded Arabic language mobile educational game* was found helpful by most learners in supporting understanding before and after formal classes. Although the direct focus was Arabic, the pedagogical relevance to Tarannum is clear because language understanding was positioned as a bridge to Qur'anic engagement. Meanwhile, Noh et al., (2014) in *The study of quranic teaching and learning: United Kingdom experience* reported that teachers used varied strategies based on children's differing abilities, but the quality of recitation and proper tajwid was often neglected. This finding is important because it shifted the discussion from technological enthusiasm alone to curriculum and instructional quality. In the same year, A. Ismail et al., (2014) in *MFCC-VQ approach for Qalqalah Tajweed rule checking* demonstrated that a hybrid MFCC-VQ approach substantially improved speed over MFCC alone across male, female, and child groups. Taken together, the 2014 studies show that transitional growth began with two parallel tendencies: the expansion of mobile and digital learning environments, and the gradual realization that such tools needed pedagogical direction, not only technical feasibility. The 2015 study by Mohammed et al. (2015), *Quranic verses verification using speech recognition techniques*, strengthened this direction by framing verse verification as a response to the spread of distorted digital audio. The discussion therefore extended the field beyond self-learning into authenticity protection, showing that speech technology was not merely a learning aid but also part of preserving correct recitation in emerging online environments.

The second sub-period, system refinement and learner-response orientation (2016–2017), reveals a more specific concern with performance, classification, and learner effect. Asda et al. (2016) developed a reciter identification system using MFCC and neural networks and reported a 91.2% successful match. The significance of this finding lies not only in technical performance, but in the fact that recitation was increasingly analysed as a measurable vocal identity. This represents a subtle but important pedagogical change, since the literature was

beginning to operationalize recitation quality and style in ways that could later support personalized feedback and model-based learning. Yosrita & Haris, (2017) discussed the identification of Qur'anic recitation accuracy through tajwid and MFCC, while also outlining several maqām and tonal variations such as Bayyati, Shoba, Nahawand, Hijaz, Rost, Sika, and Jiharka. Even though the abstract is technically framed, it is particularly relevant for Tarannum pedagogy because it connects voice-recognition methods with melodic dimensions of recitation. This suggests that the literature was beginning to move from general tajwid correction toward elements more closely associated with tarannum structure and vocal variation. In the same year, Zamri & Rahman (2017), in *Memorization of al-Quran to produce calmness and relaxation of mind through the reading of alpha mean in EEG of the paper*, found that memorization accompanied by understanding of meaning produced a stronger increase in alpha waves than memorization alone. The discussion emphasized calmness, relaxation, and well-being, and recommended that Islamic institutions place greater value on understanding meaning rather than concentrating only on memorization and recitation. This finding widened the pedagogical frame: Qur'anic learning was no longer treated only as technical mastery, but also as a cognitive and affective process. Thus, by 2016–2017, the literature had started to integrate system accuracy, tonal recognition, and learner mental response into the discussion, showing a field that was becoming both more empirical and more educationally differentiated. The final sub-period, broadening integration and applied consolidation (2018), represents the strongest and most diverse point in this transitional phase. Several studies from 2018 show that the field began to combine engineering precision, educational utility, and broader human outcomes. Altalmas et al. (2018), in *Analysis of two adjacent articulation Quranic letters based on MFCC and DTW*, found that letters from the same articulation point produced lower similarity distance than letters from different articulation points. This is a technical result, but pedagogically it is meaningful because it provides a scientific basis for distinguishing difficult pronunciation pairs, an issue central to accurate recitation training. Gunawan et al. (2018), through *Development of quranic reciter identification system using MFCC and GMM classifier*, reported a 100% recognition rate for the tested reciters and successful rejection of unknown samples. Compared with the 2016 neural-network-based identification study, this suggests an improvement in system robustness and a growing interest in reciter-specific modelling. A different direction appears in Yasin et al. (2018), whose review on *Contributions of technology towards development of Qur'anic Tajweed knowledge* concluded that technology can benefit tajwid learning across phonetics, speech recognition, and interactive applications, but only under five conditions, including the preservation of *talaqqi musyafahah* as the main method. This is one of the most direct pedagogical statements in the dataset because it clearly defines the role of technology as supportive rather than substitutive. The same year also saw recitation discussed in relation to health and psychological outcomes. Aida Maziha et al. (2018), in a randomized controlled trial, found that Al-Quran recitation reduced the number of cigarettes smoked and altered craving more significantly than counselling alone, although changes in carbon monoxide level were not statistically significant. Rahman et al. (2018) further argued that Qur'an recitation, understanding, and repeated disciplined practice can contribute to prevention, protection, and cure of psychological disturbance. These studies are not direct Tarannum-instruction papers, yet their inclusion shows that the field in 2018 was broadening beyond classroom technique into therapeutic and behavioural domains. Overall, the 2018 corpus reflects a phase of consolidation in which the literature no longer revolved around isolated prototypes only. Instead, it linked phonetic analysis, reciter identification, technological facilitation, preservation of traditional learning principles, and psychological or behavioural benefit. This combination indicates that Tarannum-related pedagogy was

becoming more structured, more interdisciplinary, and more confident in positioning recitation as both an educational and applied field.

Viewed chronologically, the phase 2014–2018 demonstrates a recognizable transition from experimentation to structuring. Early studies concentrated on mobile design, basic application usefulness, and speech-based checking tools. Mid phase work refined classification systems and began to account for tonal elements and learner well-being. By 2018, the literature displayed wider methodological variety and clearer pedagogical reasoning, including the explicit insistence that technological advancement should remain aligned with the classical authority of *talaqqi* and *musyafahah*. This indicates that the phase was transitional not only because publication numbers increased, but because the field itself was reorganizing its priorities. Technology became more than an external supplement, yet traditional recitational legitimacy continued to shape the boundaries of innovation. In that sense, this period can be understood as the stage in which Tarannum pedagogy moved from loose technological adaptation toward more deliberate pedagogical structuring, preparing the field for the later phase of rapid expansion and digital integration.

### **Rapid Expansion and Digital Integration (2019–2025)**

Within the phase Rapid Expansion and Digital Integration (2019–2025), the publication pattern shows a field that moved from digital support for recitation accuracy into broader pedagogical, institutional, therapeutic, and AI-assisted ecosystems. The chronology may be interpreted through three internal sub-phases: early expansion (2019–2020), systemic digital consolidation (2021–2022), and AI-driven diversification and pedagogical maturity (2023–2025). This clustering is justified by visible changes in research emphasis. The earliest years in this phase still concentrated on solving specific instructional problems such as tajwid recognition, recitation assessment, and learning participation. The middle years brought more integrated tools, platform-based learning, augmented reality, and dedicated tarannum applications. The most recent years then widened the scope further, with deep learning, social media mediation, AI-supported memorization, flipped learning, and more explicit reflection on how digital systems should complement rather than replace traditional Qur'anic pedagogy.

In the early expansion period (2019–2020), the findings suggest that the literature was no longer limited to isolated speech-processing experiments, but had started to engage real educational settings and applied decision systems. Kurniawan et al. (2019) showed that profile matching could support the selection of Qur'an teachers in TPQ Anbata, indicating a move toward institutional quality management in recitation education. In a more technical direction, S. Ibrahim et al. (2019) reported an accuracy of 84.44% for automatic recognition of Idgham rules using image processing and k-nearest neighbour, while Shafie et al. (2019) proposed a correction-mapping model for the nur-IQRA evaluation engine and concluded that automated correction could address current and future digital-society needs. At the same time, Syaiful Romadhon et al. (2019) found positive evaluation results for a blended tahsin learning system using social media, especially in relation to curriculum fit, participation, time efficiency, rewards, and collaborative reading activities. Supriyadi et al. (2019) also reported that the LOVVE method reduced phonological interference and improved recitation fluency for 96% of students from a Javanese background. These findings show that by 2019 the research focus had shifted from simple tool construction to structured learning intervention, performance evaluation, and context-sensitive pedagogy. Alongside this, Yuniarti et al. (2019) demonstrated that murrotal recitation reduced pre-surgery anxiety, while Diah et al. (2019) linked Qur'anic

sound to driver behaviour patterns. Such work broadened the meaning of recitation research beyond classroom correction into applied psycho-behavioural outcomes. In 2020, this trend intensified. Noeman and Handayani, (2020) achieved an average accuracy of 93.25% for CNN-based detection of *Mad Lazim Harfi Musyba*, and Khowarizmi et al. (2020) identified normalized Manhattan distance as the more suitable formula for image-based tajwid classification. Hitami et al. (2020) further showed that Macromedia Flash media was highly valid, highly practical and significantly improved understanding and application of nun sakinah and tanwin rules. Even when a study was not directly about tarannum, such as the FAHP-COPRAS admission model of Kustiyahningsih and Aini (2020), recitation fluency and makhraj appeared as recognized evaluative criteria. Overall, the 2019–2020 literature reflects a stage in which digital recitation pedagogy became more operational, measurable and institutionally embedded.

The systemic digital consolidation period (2021–2022) reveals a clearer turn toward integrated platforms, deeper automation, and user-centered educational technology. Rajagede & Hastuti (2021) proposed Siamese LSTM for memorization verification and reported a best F1-score of 77.35%, showing that self-checking memorization systems had become a legitimate research direction. Farooq and Imran (2021) reported 85% recognition with RASTA-PLP, 90% performance in a real-time IQRA application, and 98% in a recorded application for mispronunciation detection, suggesting that recitation support tools were becoming increasingly usable outside conventional teacher-led settings. A related concern with fine-grained pronunciation modelling appears in Shafie et al. (2021), where sequential classification of articulation and co-articulation classes produced particularly strong performance through KNN at 92.24% in one band setting. The pedagogical environment also broadened in format. Ginting et al. (2021) developed marker-based augmented reality for Hijaiyah and tajwid learning for children, indicating that recitation pedagogy was being redesigned to compete with recreational smartphone culture through immersive educational media. On the non-instructional side, Naqvi et al. (2020) found that heart-auscultation classification while listening to Tilawat-e-Quran and music reached 98.6% cumulative accuracy, reinforcing the recurring theme that Qur'anic sound was increasingly studied for physiological and affective influence as well as pedagogy. In 2022, the field displayed even stronger consolidation around dedicated digital platforms. Most importantly for the review topic, Awang et al. (2022a) reported high perceived usability for the Tarannum Smart Learning Application (Tarannum-SLA), which included seven tarannum styles and multilingual support. This is a major milestone because tarannum itself, rather than general tajwid or recitation, became the explicit object of multimedia learning design. At the same time, Shafie et al. (2022) reported above-80% threshold-classification performance for syllable-based harakaat assessment using Dynamic Time Warping, showing that the field was moving toward finer micro-assessment of recitation timing and prolongation. Ghazali et al. (2022) found that TikTok functioned as a mediator for teaching, recitation, and interpretation, while also shifting authority from exclusively traditional instruction to more dynamic social-media learning. Masruri et al. (2022) likewise reported that online congregational recitation and digital friendship were perceived by more than 96% of respondents as beneficial for calmness, serenity, and mental well-being in the post-COVID context. Taken together, the studies from 2021–2022 demonstrate that recitation pedagogy had become platform-based, socially networked, and usability-conscious, while tarannum itself finally emerged as a clearly named technological learning domain.

The AI-driven diversification and pedagogical maturity period (2023–2025) marks the strongest expansion in methodological sophistication and conceptual breadth. Agil Alaydrus and Zahra (2023) highlighted a notable gap in support systems for *maqām* learning and proposed machine-learning-based classification of Qur’anic *maqām*, signaling an important narrowing from general recitation support toward tonal analysis that is directly relevant to tarannum pedagogy. In another line, Nigar et al. (2023) developed a deep-learning framework for online Qur’an learning during the pandemic using MFCC and LSTM, achieving 97.7% accuracy and demonstrating that recitation assistance could function when face-to-face instruction was disrupted. Several 2023 studies also broadened the interpretive horizon of the field. Muna and Ikhwan (2023) emphasized that the canonization of *qirā’āt sab’ah* was shaped not only by religious unification but also by political factors, while Garadaghli, (2023) showed that differences between Hafs and Warsh recitation systems did not substantially alter overall context although they revealed linguistic and phonetic richness. Ally (2023) further demonstrated how disputes over word-breaking in Mamlūk Qur’an commentary reflected a deeper tension between oral and written modes. These studies do not build applications, yet they deepen the intellectual frame of recitation pedagogy by restoring attention to authority, orality, canon, and linguistic plurality. Meanwhile, Ibrahim and Shah (2023) documented 387 Qur’anic verses from 58 surahs used in Malay medical treatment manuscripts, but also identified seven categories of spelling error, indirectly underscoring the enduring pedagogical importance of accuracy in transmission. Norwati et al. (2023) found statistically significant immediate reductions in systolic blood pressure, diastolic blood pressure, and heart rate after listening to Qur’anic recitation among uncontrolled hypertensive patients, while S. Ismail et al. (2023) showed that Fatihah recitation displayed stronger rhythmicity and broader neural activation than Arabic news, suggesting large-scale psychospiritual and cognitive effects even without external melodic tarannum. Thus, 2023 was not only a year of digital intensification, but also one of disciplinary diversification: pedagogy, neuroscience, sound aesthetics, social media, *maqām*, and the historical study of *qirā’āt* came into closer contact.

By 2024–2025, the discussion became more explicitly future-oriented and pedagogically self-aware. Alvindo et al., (2024) concluded from a systematic review that methods such as WPD, MFCC, and LPC have strong potential for recitation acknowledgement and verification, and that AI can reduce dependence on inconsistent human availability while raising precision in memorization support. Mustapa et al. (2025) evaluated the AI-based Tarteel application and found significant benefits in automated correction, progress tracking, and instant feedback, yet at the same time stressed that *barakah*, sanad, and the formative role of the human teacher remain irreplaceable. This balance between innovation and traditional authority is one of the clearest markers of maturity in the whole phase. A similarly pedagogical emphasis appears in Zakariyah et al. (2025), who showed that a blended-learning flipped-classroom model raised students’ motivation from 2.8 to 4.1 and improved memorization rates from 5.3 to 8.7 verses per week, alongside better self-regulation and more efficient feedback. In a wider AI-in-education framework, Supriyadi et al. (2025) reported that the DEEP-AI model significantly improved interpretive literacy with N-Gain values from 0.64 to 0.73 and very strong student perceptions, indicating that Qur’anic pedagogy in the digital age was no longer confined to recitation mechanics alone. Even studies such as Sultan et al. (2025), which addressed Arabic pronouns and gender-sensitive pedagogy, point toward a more contextual, critical, and discourse-based approach to Qur’anic language learning. Viewed chronologically, the years 2024–2025 therefore represent a mature stage in which artificial intelligence, digital verification, pedagogical redesign, and critical Islamic educational thought converged. The strongest overall pattern across 2019–2025 is a movement from supportive digital tools toward

integrated ecosystems of assessment, multimedia learning, social dissemination, AI feedback, and hybrid pedagogy, while still maintaining the principle that technology functions best as a facilitator rather than a replacement for embodied, teacher-guided Qur'anic transmission.

## Conclusion

The present chronological review was conducted to systematically examine the development of Tarannum pedagogy over an extended timeframe from 2002 to 2025, utilizing a rigorously filtered dataset derived from the Scopus database. The study aimed to analyse the evolution of research trends by organizing 77 selected publications into structured temporal phases, thereby providing a comprehensive understanding of how Tarannum pedagogy has progressed from traditional instructional practices to contemporary, technology-supported educational approaches. This scope enables a clear observation of how scholarly attention, methodological design, and pedagogical focus have transformed across different periods within Qur'anic education.

The synthesis of chronological trends demonstrates a progressive and multi-layered development. The earliest phase was characterized by sparse and descriptive studies focusing on foundational religious, aesthetic, and social aspects of Qur'anic recitation. This was followed by a transitional phase marked by increased scholarly activity and the emergence of structured pedagogical frameworks, including the initial integration of digital tools and learning applications. The most recent phase reveals a rapid expansion in publication output alongside significant methodological advancement, particularly in the use of multimedia platforms, automated feedback systems, and artificial intelligence technologies. This progression reflects not only quantitative growth but also a qualitative shift toward empirical validation and instructional innovation.

Several key patterns emerge across the timeline. There is a gradual transition from tradition-based, teacher centered approaches toward structured, learner-oriented pedagogies supported by digital environments. Methodological development is evident in the movement from descriptive and conceptual discussions to experimental, system-based, and data-driven studies. The integration of artificial intelligence, speech processing, and interactive applications further indicates that the field has entered a stage of technological maturity, where pedagogical effectiveness and system usability are increasingly emphasized.

The chronological organization of the literature contributes significantly to knowledge development by offering a time-based analytical structure that enhances interpretability. Grouping studies according to temporal phases allows clearer identification of research growth, shifts in focus, and emerging innovations that may remain less visible in conventional thematic reviews. This structured perspective provides a more coherent narrative of how Tarannum pedagogy has evolved in response to changing educational and technological contexts.

The findings also carry important practical and research implications. The increasing integration of digital and AI-based approaches suggests strong potential for scalable and interactive Tarannum learning systems, particularly in formal and informal educational settings. At the same time, the observed emphasis on maintaining traditional instructional principles highlights the need for balanced integration that preserves authenticity while embracing innovation.

Despite its contributions, several limitations should be acknowledged. The reliance on a single database and specific keyword combinations may limit the comprehensiveness of the dataset, while the defined timeframe may not fully capture the most recent developments. Future research should expand data sources, incorporate interdisciplinary perspectives, and explore real-world implementation to strengthen both theoretical and practical contributions.

In conclusion, this chronological review demonstrates that Tarannum pedagogy has undergone a significant transformation from a tradition-based practice into a dynamic, research-driven, and technology-responsive field. The application of chronological analysis proves essential in capturing this evolution, offering valuable insights that can guide future innovation and support evidence-based advancement in Islamic educational pedagogy.

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