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Digital Storytelling and Audio Summaries: A Hybrid Approach to Inclusive Education

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Peer Review Information	Abstract
<i>Submission: 05 Nov 2025</i> <i>Revision: 25 Nov 2025</i> <i>Acceptance: 17 Dec 2025</i> Keywords <i>Digital Child Mentorship, Curated Learning, Audio-Based Education, Cultural Knowledge, Reading Habit Development, Value-Based Learning.</i>	In today's fast-paced digital world, children's emotional and intellectual development faces challenges from increased screen distractions and less access to traditional mentorship from extended families. MetaGurukul, a digital approach to child mentorship, addresses this gap by combining cultural heritage, value-based education, and modern digital learning. The platform provides a curated library of age-appropriate books, stories, and cultural insights, delivered through brief, high-quality audio clips lasting 5 to 15 minutes. These audio narratives aim not just to summarize content but to spark curiosity, explain relevance, and encourage deeper exploration. By including meaningful commentary, MetaGurukul turns screen time into a useful learning experience that promotes reading habits, critical thinking, and cultural understanding. The system also acts as a helpful resource for parents, teachers, and grandparents looking for structured guidance tools. By serving as a co-mentor, MetaGurukul connects traditional wisdom with modern access, fostering holistic development and lifelong learning habits in an engaging and scalable format.

Introduction

The rapid advancement of digital technology has redefined how children access, consume, and interact with information. The digital era provides unprecedented opportunities for learning, offering vast repositories of educational material, interactive platforms, and diverse resources. However, these opportunities are accompanied by significant challenges. Excessive and unstructured screen time, fragmented learning patterns, and reduced attention spans are becoming increasingly common among children. Much of the online content consumed by young audiences is designed primarily for entertainment, rather than fostering intellectual, emotional, or moral development. Consequently, this shift has contributed to declining reading

habits, weaker critical thinking abilities, and diminished connections to cultural heritage.

Historically, the guidance of grandparents and extended families played an essential role in transmitting moral values, cultural traditions, and life wisdom to younger generations. With the decline of joint family systems and the fast-paced nature of modern lifestyles, children today are growing up with limited access to such mentorship. Although digital platforms provide a vast array of educational resources, they often lack proper curation, age-specific structuring, and cultural grounding. This has created a growing gap between traditional mentorship and contemporary learning environments.

To address these challenges, MetaGurukul is envisioned as a culturally rooted, value-driven

digital mentorship platform. It integrates the accessibility of technology with the timeless wisdom of traditional learning. By offering a carefully curated library of age-appropriate stories, books, and cultural insights—delivered through engaging short audio narratives—MetaGurukul aims to nurture curiosity, critical thinking, and reading habits while reinforcing cultural identity and moral values. Furthermore, the platform serves as a resource for parents, teachers, and grandparents, enabling them to mentor children effectively despite demanding schedules.

By blending cultural heritage with modern digital delivery, MetaGurukul positions itself as a scalable and adaptable model of mentorship for the digital generation. It transforms passive screen time into an active, enriching experience and provides a holistic framework for intellectual, emotional, and cultural development.

Literature Survey

The literature strong intersection between digital learning technologies, cultural heritage education, and child engagement strategies. This review highlights diverse approaches and technological innovations in digital learning, cultural heritage education, and personalized content delivery, demonstrating their collective potential to enhance engagement, preserve cultural values, and improve educational outcomes. [1] Magal-Royo et al. (2010) highlight that adapting audiovisual content for mobile devices enables flexible, anytime learning but requires careful design to address screen size, interface, and usability challenges. [2] Rajkumar et al. (2024) argue that as libraries evolve into digital and institutional repositories, they must be adaptable and designed to meet changing user expectations, supporting scholarly access and engagement in a digital age. [3] Mitric et al. (2024) show that AI and computer vision can enhance cultural heritage preservation by enabling automated inspection, damage detection, and data-driven conservation strategies. [4] The study by Osuchukwu (2020) found that most children preferred picture books, highlighting a strong interest in visual storytelling. Major barriers to library use included long distances from home and limited resources. The author recommended increased advocacy in schools and the provision of more diverse audiovisual materials to sustain children's reading interest and support academic development. [5] Zou et al. (2025) highlight that digital integration in education—through AI, VR, mobile platforms, and online tools—enhances accessibility, engagement, and personalization.

However, they identify persistent technical, pedagogical, and socioeconomic challenges undermining equitable use. The authors recommend coordinated action by educators and policymakers to build inclusive, effective digital learning environments. [6] Alzboun et al. (2023) found that digital content tailored to students' learning styles significantly improved both academic achievement and motivation compared to traditional teaching, recommending broader adoption of such personalized approaches. [7] Yang & Wu (2012) conducted a year-long quasi-experimental study involving 110 10th-grade students learning English. Comparing traditional lecture-style instruction with a digital storytelling (DST) approach, the study revealed that the DST group achieved significantly higher outcomes in English academic achievement, critical thinking, and learning motivation. Qualitative feedback from both students and the instructor reinforced these results, reporting that DST enhanced content understanding, curiosity, and critical thinking skills—key capacities for success in the 21st century. [8] Lode et al. (2024) show that digital libraries significantly improve teaching and learning by enhancing access, usability, and content quality and supporting student engagement and teacher preparedness. However, challenges like content overload and quality assurance persist. They advocate for comprehensive evaluation frameworks that assess usability, pedagogical alignment, and resource relevance to optimize digital library effectiveness. [9] Gonzalez-DeHass et al. (2022) adapt the Hoover-Dempsey & Sandler model to digital contexts, revealing that parents must reframe their roles as facilitators in K-12 online learning, and that their confidence with technology and communication efficacy significantly influence student engagement and learning outcomes. [10] Haddad (2014) argues that conventional heritage education undervalues early cultural engagement and recommends heritage edutainment—using 3D, interactive media, and virtual tech—to make heritage learning both fun and meaningful, supported by multidisciplinary design teams for impactful implementation. [11] Haddad (2016) argues that conventional heritage education fails to engage digital-age children and instead advocates for heritage edutainment using serious games, 3D, and VR. He recommends designing age-appropriate, curriculum-aligned games via stakeholder collaboration and iterative testing. Examples include "Treasure Map" for ages 4–7 and "Stone's Without Borders" for ages 8–13, which promote critical thinking, cultural pride, and empathy. [12] Haddad (2014) highlights the importance of

introducing children to cultural heritage from an early age and critiques the limitations of conventional museum-based education. He proposes integrating “heritage edutainment” through tools such as 3D visualization, interactive multimedia, and virtual reality to create engaging and meaningful learning experiences. The study stresses the role of multidisciplinary teams in developing culturally accurate, pedagogically sound, and enjoyable heritage programs. [13] Ott & Pozzi (2011) explore how ICT (Information and Communication Technology) can reshape Cultural Heritage Education by moving it from static, teacher-centered delivery toward dynamic, learner-focused experiences. They emphasize that digital tools not only broaden access to heritage resources but also enable richer, more interactive learning environments that encourage active exploration and deeper engagement with cultural content. [14] Joshi (2025) discusses strategies to balance screen-based learning with traditional methods, aiming to maximize educational benefits while minimizing the negative effects of excessive screen time. [15] Klizienė et al. (2021) found that integrating the virtual learning platform EDUKA into primary-level mathematics instruction significantly enhanced students' basic and advanced achievement levels, while also boosting engagement and intrinsic motivation. [16] Morrison (2024) explores how digital storytelling affects the socio-emotional development of early elementary children, likely finding that interactive and narrative-rich media can promote empathy, emotional awareness, and interpersonal skills in young learners. [17] Arrahma et al. (2024) examined the effect of audio-visual aids (AVA) on listening comprehension among high school students. In an experimental setup, students using AVA outperformed their peers who did not, demonstrating a statistically significant boost in understanding spoken content. The study suggests that visual support helps learners interpret spoken information more effectively, thereby improving comprehension. [18] Mortara et al. (2014) demonstrate that serious games are highly effective tools for cultural heritage education, as they merge entertainment with learning. Their findings reveal that game-based heritage learning significantly improves knowledge retention, engagement, and motivation, particularly among young learners. The study emphasizes that interactive narratives, challenges, and rewards allow students to explore historical and cultural themes actively rather than passively, promoting deeper cognitive involvement. [19] DaCosta et al.

(2022) provide a comprehensive review of serious games in cultural heritage education, identifying their growing adoption for museum learning, historical exploration, and cultural storytelling. The authors conclude that serious games enhance experiential learning and emotional connection with heritage, but also highlight challenges such as high development cost, lack of teacher training, and the need for pedagogically aligned game design to ensure meaningful learning outcomes.

[20] Zhao et al. (2025) establish that virtual reality (VR) significantly enhances heritage education by providing immersive, first-person learning experiences. Their review confirms that VR improves spatial understanding, historical empathy, and learner engagement. The authors further emphasize the importance of careful instructional design, usability, and accessibility to ensure that VR applications remain educationally effective and inclusive. [21] Anwar et al. (2025) explore the role of the metaverse and extended reality (XR) in cultural heritage education and conclude that immersive digital ecosystems offer unprecedented opportunities for interactive, global access to heritage resources. Their findings highlight that XR platforms enable learners to participate in virtual tours, reconstructions, and collaborative heritage exploration. However, they also identify challenges related to infrastructure, interoperability standards, and digital equity. [22] Liao (2025) shows that augmented reality (AR)-driven educational puzzle toys effectively promote children's cultural heritage learning by combining physical interaction with digital visualization. The study finds that AR-based puzzles significantly improve creativity, curiosity, cultural awareness, and hands-on engagement, demonstrating the strong educational potential of hybrid physical-digital learning tools for young children. [23] Nair and Yunus (2021), through a systematic review, confirm that digital storytelling significantly improves learners' speaking skills, particularly in language education. The study reports consistent gains in vocabulary usage, narrative fluency, pronunciation, and learner confidence, while also increasing student motivation and participation due to the creative and interactive nature of storytelling-based digital learning environments. [24] Erdogan (2021) demonstrates that digital storytelling positively influences both academic achievement and democratic attitudes among primary school students. The findings reveal that students exposed to digital storytelling show higher subject comprehension, increased social awareness, and improved critical thinking. The

study emphasizes that narrative-based digital learning fosters not only academic growth but also civic values and responsible citizenship.[25] Swider-Cios et al. (2023) investigate the impact of screen-based media on young children's cognitive and socio-emotional development and conclude that moderate, well-guided media use can support learning and emotional growth. However, excessive or poorly supervised screen time may negatively affect attention span and emotional regulation. The authors strongly emphasize the importance of parental mediation in ensuring healthy and developmentally appropriate digital media engagement.

Problem Statement

Many children today spend a lot of time on screens, but most of what they watch is focused on entertainment rather than real learning. Such exposure often lacks cultural understanding, moral guidance, or structured ways to grow. At the same time, the decline of joint family systems and reduced interaction with elders have limited children's access to traditional mentorship and value-based guidance. Beside vast amounts of educational content are available online, much of it remains overwhelming, poorly organized, and not adapted to the developmental needs of specific age groups. As a result, young learners often end up with scattered knowledge, weaker reading habits, and less ability to think critically. To address this, there is a pressing need for a digital platform that not only teaches but also guides—one that is engaging, age-appropriate, culturally rooted, and designed to help children balance traditional values with modern learning which helps to bridge the gap between conventional wisdom and contemporary learning practices.

Proposed Approach

To meet the growing demand for simplified and engaging educational content, we propose MetaGurukul, a web-based learning platform that provides book summaries and courses through high-quality audio and video content in Marathi. MetaGurukul works like an OTT platform, allowing users to subscribe monthly and access a curated library of content designed for quicker understanding. The platform has a user-friendly interface with dedicated sections for courses, memberships, and webinars. It supports live sessions via Zoom, sending automated email and SMS notifications before the session starts, and recordings are available afterward for continued access. The backend, built with Node.js and MongoDB, ensures secure data handling, while the React-based admin panel simplifies course creation, content

uploads, and scheduling. By focusing on learning in regional languages and improving both user and admin experiences, MetaGurukul offers an efficient, accessible, and scalable solution for modern learners.

Methodology

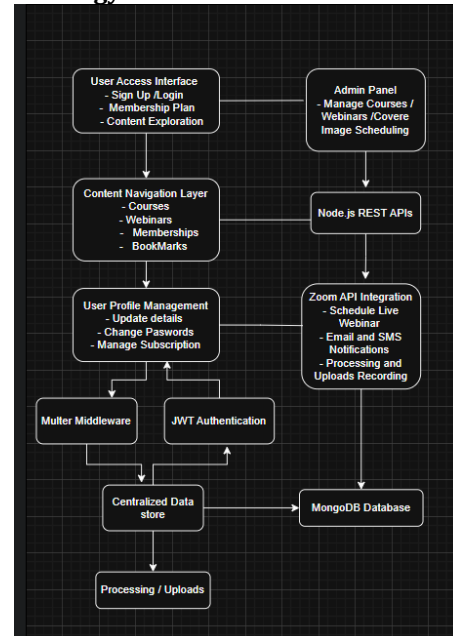


Fig 1: Flow of Proposed Methodology

The diagram shows the setup and workflow of MetaGurukul, an OTT-style educational platform that delivers recorded and live audio-visual content on book summaries, courses, and webinars. The system combines both frontend and backend components to provide a smooth experience for learners and administrators. At the starting point, the User Access Interface lets students sign up, log in, and browse content based on their membership plan. After logging in, users go to the Content Navigation Layer, where they can find sections like Courses, Webinars, Membership Plans, and their own dashboards (User and Admin). The platform is controlled through a custom Admin Panel. This panel allows authorized staff to upload and manage course content, webinar schedules, and book summaries. Each course has metadata like title, tags, cover image, and scheduled times. This information is stored and accessed using a Node.js REST API linked to a MongoDB Database. For live webinars, the system integrates with the Zoom API, enabling admins to schedule sessions and notify users via email and SMS, usually 30 to 40 minutes before the event. After the webinar is finished, the recorded session is processed and added to the relevant course module for future learners. To improve content delivery and engagement, MetaGurukul

includes User Profile Management. This feature allows users to update personal information, change passwords, and manage subscription options. All uploaded media, such as images and videos, are handled by Multer Middleware and stored securely. JWT-based authentication ensures safe session management. All user activities, content access, and transaction information are logged in the Centralized Data Store. This system supports analytics, feedback tracking, and performance improvement for both learners and administrators.

Expected Result

This digital mentorship platform is meant to help children grow in every way—intellectually, emotionally, and culturally. Instead of spending time on random entertainment, children will engage with carefully chosen, age-appropriate, and value-based content that makes learning both enjoyable and meaningful. This approach is expected to improve their reading habits, critical thinking, and curiosity. By including cultural stories and moral lessons, the platform will also strengthen children's connection to their roots and help them make thoughtful, ethical choices. Additionally, the platform will serve as a reliable mentorship resource for parents, educators, and grandparents, offering consistent support and structured guidance despite their time limitations. Ultimately, the goal is to create a scalable and adaptable digital model that bridges the gap between traditional wisdom and modern educational needs, ensuring holistic development of children in the digital era.

Conclusion

This study shows that digital platforms can be more than just places to find information—they can act like full mentors for young learners. By combining cultural values, moral education, and well-structured lessons, these platforms can connect traditional wisdom with modern learning needs. The model being proposed has the power to help children grow in knowledge, values, and critical thinking, while also keeping cultural heritage alive in today's digital age. Future research should focus on large-scale implementation, diverse content formats, and extended studies to measure long-term impact.

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