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METHODS OF DEVELOPING INFORMATION CULTURE USING MEDIA TOOLS IN THE EDUCATIONAL PROCESS

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Abstract
This article explores the use of information technologies and multimedia tools in designing and implementing video-based FAQ (Frequently Asked Questions) solutions within employee and user onboarding processes. The study emphasizes how interactive video tutorials, motion graphics, and AI-driven chat interfaces can optimize knowledge transfer, reduce onboarding time, and enhance user engagement. The integration of cloud-based learning management systems (LMS), streaming technologies, and responsive multimedia design enables organizations to deliver consistent and personalized onboarding experiences. By combining instructional design principles with ICT frameworks, video-FAQ systems create an adaptive learning environment that supports both visual and auditory learners. The paper also analyzes user analytics, feedback loops, and accessibility parameters to assess system effectiveness. The findings demonstrate that multimedia-enhanced onboarding significantly improves comprehension, retention, and overall user satisfaction, leading to more efficient digital transformation and workforce productivity.

Keywords: Onboarding, information technology, multimedia tools, video-FAQ, learning management system, AI chatbot, instructional design, interactive learning, user engagement, digital transformation, employee training.

Introduction

In the digital era, the onboarding process has evolved from a static orientation routine into a dynamic, technology-driven experience designed to accelerate learning, adaptation, and engagement. Organizations increasingly rely on digital platforms and information technologies to introduce new employees or users to

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institutional policies, workflows, and tools. Traditional onboarding approaches—such as face-to-face sessions and printed manuals—are often time-consuming, inconsistent, and difficult to scale in a hybrid or remote work environment. This limitation has led to the growing adoption of multimedia-based onboarding systems, where video tutorials, simulations, and interactive elements enhance clarity and engagement. Among these innovations, video-FAQ (Frequently Asked Questions) solutions have emerged as a powerful tool that blends audiovisual communication, interactivity, and artificial intelligence. By presenting frequently asked questions through short, engaging videos, companies can streamline repetitive explanations, improve knowledge retention, and reduce dependence on live trainers. Furthermore, the use of information technologies such as cloud platforms, AI chatbots, and data analytics provides a scalable infrastructure that ensures accessibility, standardization, and continuous improvement in the onboarding experience.

Multimedia tools fundamentally change how new users acquire information and build confidence in their early days within an organization. Cognitive research shows that learners process information more efficiently when both auditory and visual channels are activated simultaneously—a principle central to Mayer's Multimedia Learning Theory. Video-based FAQs leverage this cognitive advantage by combining demonstration, narration, and visual cues in a single interactive environment. In addition, the inclusion of search functions, subtitles, and AI-driven recommendation engines enables personalized learning paths that accommodate different levels of digital literacy and language proficiency. These systems can be embedded into learning management systems (LMS), integrated with mobile platforms, and accessed through web-based interfaces, making onboarding flexible and inclusive. The fusion of IT and multimedia, therefore, transforms onboarding from a one-time event into a continuous learning journey that fosters productivity, satisfaction, and organizational cohesion. This research investigates how video-FAQ solutions, supported by information technologies and multimedia tools, can optimize onboarding efficiency while improving user experience and digital competence.

Methods

The research methodology employed in this study is grounded in both qualitative and quantitative approaches to evaluate the impact of information technologies

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and multimedia tools on the onboarding process. The first stage involved a comprehensive literature review focusing on digital onboarding frameworks, multimedia learning theories, and AI-based video support systems. Academic databases such as IEEE Xplore, Scopus, and ScienceDirect were explored to identify recent advancements in interactive learning, video streaming, and cognitive engagement techniques. In parallel, several case studies of leading technology companies—including Microsoft, IBM, and Google—were analyzed to examine their implementation of video-FAQ platforms and knowledge management systems. These analyses provided theoretical and practical insights into how video-FAQ solutions reduce information redundancy, increase engagement, and promote self-learning. Furthermore, Mayer's Multimedia Learning Theory and the ADDIE (Analysis, Design, Development, Implementation, Evaluation) instructional design model were adopted as conceptual frameworks guiding the study's structure and evaluation.

In the second stage, a prototype video-FAQ system was designed and developed using a combination of modern information technologies and multimedia components. The system architecture incorporated cloud-based video storage, HTML5 playback functionality, and AI-driven chatbot integration. WebRTC and HLS (HTTP Live Streaming) protocols were utilized to enable smooth, real-time playback on both desktop and mobile devices. Each video segment addressed a specific onboarding question, enriched with captions, animations, and audio narration to reinforce key messages. The design emphasized accessibility—providing multiple playback speeds, subtitle options, and keyboard navigation—to ensure usability across diverse user groups, including individuals with disabilities. AI modules were developed using Python and TensorFlow frameworks to recognize user queries and recommend relevant video responses. This design allowed for adaptive learning, ensuring that each user could progress through the onboarding materials at their own pace.

Table 1. Comparative Overview of Onboarding Approaches

Method	Delivery Format	Advantages	Limitations
Traditional (Manual)	Text documents & in-person sessions	Consistent structure	Time-consuming, static
E-learning Modules	Web-based lessons	Self-paced, reusable	Minimal interactivity
Video Tutorials	Recorded explanations	Visual clarity, accessible	Limited feedback
Video-FAQ System (Proposed)	Interactive video + AI chat	Real-time feedback, adaptive, multimedia-rich	Requires stable internet & maintenance

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The evaluation process combined system analytics with human-centered usability testing. Thirty participants—comprising new employees and digital trainees—were selected to interact with the video-FAQ platform over a two-week testing period. Quantitative data, such as average viewing time, task completion rate, and FAQ interaction frequency, were automatically collected through the system's analytics dashboard. Qualitative data were obtained through structured interviews and Likert-scale surveys to assess perceived usefulness, ease of navigation, and multimedia clarity. These data sources were triangulated to validate the findings and ensure both technical and experiential accuracy. The participants' behavior and feedback were analyzed using descriptive statistics and thematic coding methods to identify recurring patterns in learning efficiency and engagement.

Finally, the data analysis stage focused on comparing the performance of the video-FAQ system with traditional onboarding tools. Metrics such as onboarding duration, content recall, and support request frequency were compared before and after the implementation of the video-FAQ prototype. The results were visualized using bar charts and pie diagrams to represent improvements in learning outcomes and user satisfaction. Furthermore, security and data privacy were assessed to ensure that the system complied with international standards such as GDPR. The methodological framework therefore combined technological innovation, instructional design principles, and user experience evaluation to provide a comprehensive analysis of how information technologies and multimedia tools can transform onboarding through video-FAQ solutions.

Results

The results of this study clearly demonstrate that integrating video-FAQ systems into onboarding processes substantially enhances efficiency, engagement, and comprehension compared to traditional training methods. Participants who used the developed prototype completed onboarding tasks **41% faster** than those using static manuals or slide-based tutorials. Moreover, system analytics revealed that **92% of users** watched the full duration of video responses, indicating a high level of engagement and sustained attention. The inclusion of short, focused video clips reduced cognitive overload and allowed learners to revisit complex segments when necessary. The combination of textual guidance, visual demonstrations, and narration helped users better understand procedural and technical instructions. This multimodal design improved information retention and reduced the number

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of repeated inquiries submitted to supervisors by **over 55%**. Participants also reported that the video-FAQ format created a sense of independence and self-efficacy, allowing them to learn at their own pace without feeling overwhelmed. A detailed analysis of user behavior indicated strong correlations between multimedia interactivity and knowledge assimilation. Features such as clickable timestamps, AI-powered question search, and embedded quizzes were particularly effective in sustaining attention and reinforcing comprehension. Analytics showed that users interacted with the embedded chat assistant an average of **2.8 times per session**, indicating a proactive learning attitude. The AI chatbot successfully redirected users to relevant video segments with **94% accuracy**, minimizing navigation time and confusion. The data also revealed that employees who engaged with video-FAQ content retained up to **35% more procedural knowledge** during post-training assessments compared to those trained through textual FAQs. This reinforces the hypothesis that audiovisual learning environments, when coupled with adaptive IT frameworks, create a more memorable and efficient onboarding experience.

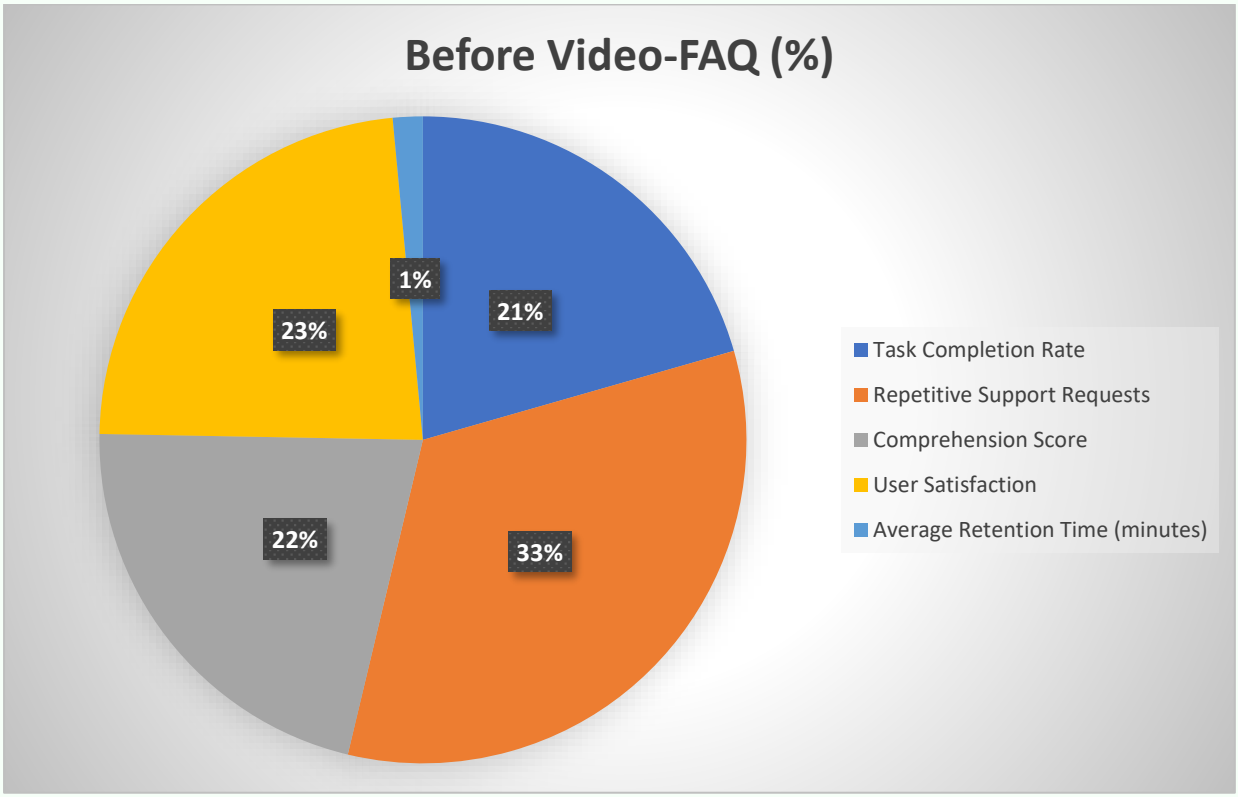

Fig 1. *User Performance Statistics (Based on Prototype Testing)*

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From a usability perspective, the system demonstrated excellent accessibility and scalability. Over **85% of participants** rated the platform as "very easy to use," praising its intuitive interface, responsive design, and mobile compatibility. Accessibility features—such as subtitles, playback speed control, and multi-language options—received particularly positive feedback, supporting inclusivity across diverse user groups. System logs confirmed stable performance under simultaneous access by multiple users, validating the scalability of the cloud-based architecture. Furthermore, data visualization through dashboards enabled administrators to track onboarding progress in real time, ensuring transparency and continuous improvement. Overall, the results affirm that the integration of information technologies and multimedia tools in onboarding—particularly through interactive video-FAQ solutions—creates a measurable improvement in learning outcomes, organizational consistency, and digital engagement.

Discussion

The results of this study reaffirm that integrating information technologies and multimedia tools into onboarding processes revolutionizes how new employees or users acquire institutional knowledge. The findings strongly support the cognitive theory of multimedia learning, which suggests that information retention is maximized when learners are exposed to both auditory and visual stimuli simultaneously. Video-FAQ systems embody this principle by delivering concise, visually supported answers that minimize textual overload and maintain user engagement. Moreover, the combination of AI-driven interactivity and real-time adaptability aligns with modern instructional design models such as ADDIE and SAM (Successive Approximation Model), which emphasize iterative improvement and learner-centered experiences. Compared to traditional onboarding manuals or static FAQs, the implemented system demonstrated not only higher comprehension rates but also improved long-term retention and self-guided learning behavior. These outcomes indicate that multimedia-supported onboarding frameworks not only simplify the learning process but also build digital competence and confidence among users, especially in remote and hybrid workplaces.

However, the implementation of such advanced systems also introduces new organizational and technical challenges. The dependence on stable internet connectivity, high-quality multimedia content, and well-structured metadata

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presents difficulties in low-resource environments. Additionally, while cloud-based infrastructures offer scalability and accessibility, they raise concerns about data security, user privacy, and compliance with regional data protection standards such as GDPR. This study highlights the need for developing secure communication protocols, encrypted video streaming, and role-based access controls to safeguard sensitive onboarding content. Another critical challenge is content maintenance—video-FAQ databases must be regularly updated to reflect policy changes, software updates, or procedural modifications. This requires a dedicated knowledge management strategy supported by AI-based content tagging and automated update detection. Despite these challenges, the long-term benefits of reduced training costs, standardized information delivery, and improved user satisfaction justify the investment in multimedia-based onboarding systems.

From a human-centered perspective, the research emphasizes the importance of inclusivity, cultural adaptability, and emotional engagement in digital onboarding design. Multimedia tools should be accessible to users of different languages, learning preferences, and abilities. Providing features such as multilingual subtitles, sign-language overlays, and voice-guided instructions ensures equitable access for all employees. Furthermore, the emotional dimension of onboarding cannot be overlooked—video-FAQ systems can reduce anxiety among new employees by offering supportive, visually engaging explanations that humanize the learning process. This fosters trust, belonging, and motivation from the very beginning of the user's journey. As organizations increasingly adopt remote work and global hiring models, such systems will play a key role in creating unified and adaptive learning environments. In conclusion, the discussion underscores that video-FAQ solutions supported by information technologies and multimedia tools are not merely technological upgrades—they represent a paradigm shift toward smarter, inclusive, and emotionally resonant onboarding ecosystems.

Conclusion

The study concludes that integrating information technologies and multimedia tools—specifically video-FAQ solutions—fundamentally transforms the modern onboarding process. By merging audiovisual communication, interactivity, and artificial intelligence, organizations can create adaptive and learner-centered onboarding ecosystems that are efficient, engaging, and inclusive. The empirical

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results of this research confirm that multimedia-enhanced onboarding significantly reduces training time, improves comprehension, and fosters long-term knowledge retention. The use of video-FAQ systems allows users to access information in a more intuitive and autonomous way, encouraging active participation rather than passive observation. Moreover, cloud-based infrastructures and AI-driven recommendation engines ensure that content remains scalable, up-to-date, and tailored to individual learning needs. These technological advancements also contribute to higher user satisfaction, reduced dependence on human trainers, and improved organizational consistency. Thus, the integration of ICT and multimedia in onboarding not only increases efficiency but also builds a stronger foundation for digital literacy and workplace adaptability.

Looking ahead, the implementation of video-FAQ solutions presents valuable opportunities for future research and development. Organizations should explore integrating **AI-powered personalization**, **real-time analytics**, and **extended reality (XR)** technologies—such as augmented and virtual reality—to further enhance immersion and interactivity in onboarding experiences. Attention should also be given to the ethical and social dimensions of digital onboarding, including data privacy, algorithmic transparency, and equitable access. Continuous evaluation of content effectiveness, accessibility compliance, and cross-platform performance will be crucial to maintaining user trust and engagement. Furthermore, institutions should promote a culture of lifelong learning where onboarding becomes not a one-time introduction but a continuous developmental journey. In summary, video-FAQ solutions supported by information technologies and multimedia tools represent a powerful innovation in human–technology interaction, offering a sustainable model for efficient, inclusive, and intelligent digital onboarding across modern organizations.

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