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A Comparative Study of Primary Education Systems in Iran and the United Arab Emirates with an Emphasis on Educational Technology Integration

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ABSTRACT

This study presents a comparative analysis of primary education systems in Iran and the United Arab Emirates (UAE), with particular emphasis on educational technology integration and quality assurance mechanisms. Employing a descriptive-analytical comparative design grounded in Bereday's Comparative Method, data were collected through the triangulation of national policy documents, international reports (UNESCO, OECD), and peer-reviewed studies. The analysis focuses on pedagogical approaches, teacher-student interaction, and the application of information and communication technologies (ICT) in primary education. Findings indicate that the UAE adopts a semi-decentralized, competency-based educational model characterized by systematic technology integration and multi-layered quality monitoring frameworks such as KHDA and ADEK. In contrast, Iran operates within a highly centralized, content-based system in which technology adoption is often symbolic and constrained by infrastructural limitations and teacher-centered pedagogy. The study concludes that effective digital transformation in Iran requires sustained professional development in digital pedagogy and the establishment of feedback-oriented quality assurance mechanisms that directly link technology use to student learning outcomes. The findings offer comparative insights and policy-relevant implications for improving educational quality in developing contexts. ©authors

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1. Introduction

Rapid technological, economic, and social transformations in the twenty-first century have significantly reshaped the expectations placed on education systems. Education is no longer viewed solely as a mechanism for knowledge transmission but as a central component of sustainable development, innovation, and global competitiveness (Alami & Zaeimzadeh, 2024; Mahmoud et al., 2020). In response to these changes, many countries have attempted to reform their education systems by revising curricula, strengthening quality assurance mechanisms, and integrating digital technologies into teaching and learning processes (Arani, Navid & Ranaei, 2019; Haddad et al., 2024).

Primary education occupies a particularly important position within these reforms because it provides the foundation for literacy, cognitive development, social skills, and the early formation of digital competencies. The policies and institutional arrangements adopted at this level often determine the long-term effectiveness of national education systems (Alismail & Aloudah, 2025; Abu Khurma et al., 2023). Consequently, examining how countries integrate educational technology and maintain educational quality at the primary level has become an important topic in comparative education research.

However, previous studies have often treated educational technology integration and quality assurance mechanisms as separate domains rather than as interrelated dimensions of educational reform. In many national contexts, technology policies emphasize infrastructure and access, while quality assurance frameworks focus on student achievement outcomes, with limited attention to how these two dimensions interact within institutional structures (Abu Khurma et al., 2023; Alismail & Aloudah, 2025). The conceptual link between technology integration and quality assurance—specifically, how the presence or absence of systematic monitoring and feedback mechanisms mediates the effectiveness of technology investments—remains underexplored in comparative education research, particularly at the primary level.

Iran and the United Arab Emirates represent two contrasting policy and institutional approaches to primary education reform. Iran's education system is highly centralized and guided by national policy frameworks that prioritize educational equity, identity formation, and content-based curricula. In contrast, the UAE has adopted a future-oriented strategy that emphasizes digital transformation, competency-based learning, and multi-layered systems of educational monitoring and evaluation (Alami & Zaeimzadeh, 2024; British Council, 2023; Haddad et al., 2024). Previous studies on Iran have identified structural and implementation barriers to educational technology use in primary schools, including insufficient digital infrastructure, limited teacher training, and the perception of technology as a supplementary tool rather than a pedagogical strategy (Doshmanziari & Mostafavi, 2017; Nikmohammadi, Naeini & Jalalvandi, 2024). Conversely, research on the UAE has highlighted systematic connections between policy reform, digital education, and classroom practice, supported by institutionalized quality assurance frameworks such as the Knowledge and Human Development Authority (KHDA) and the Abu Dhabi Department of Education and Knowledge (ADEK) (Mahmoud et al., 2020; Almekhlafi et al., 2016; KHDA, 2024).

Despite the substantial body of single-country research on educational technology adoption and policy reforms, no direct comparative study has systematically examined Iran and the UAE with respect to the relationship between technology integration and quality assurance mechanisms in primary education. Existing research either focuses on technological infrastructure or on policy reforms without analyzing how these elements interact within institutional structures to influence educational quality. Moreover, previous studies have not clarified whether technology contributes to quality improvement primarily through infrastructure, teacher capacity, pedagogical design, or monitoring systems—or through the interaction among these factors.

To address this gap, the present study conducts a comparative analysis of the primary education systems of Iran and the UAE with a particular focus on two interconnected dimensions: (1) the integration of educational technology into teaching and learning processes, and (2) the quality assurance mechanisms used to monitor and evaluate educational outcomes. The study asks: How do the primary education systems of Iran and the UAE differ in their approaches to educational technology integration and quality assurance, and what is the relationship between these two dimensions in each national context?

The study adopts a conceptual framework in which educational technology integration is understood not merely as the availability of digital tools but as the embedding of technology within pedagogical practices, curriculum design, and student assessment. Quality assurance is defined as the systematic processes—including inspection frameworks, performance standards, and feedback loops—through which educational outcomes are monitored, evaluated, and improved. The study posits that technology integration contributes to educational quality only when it is supported by coherent policy design, continuous teacher professional development, and functioning quality assurance mechanisms that link technology use to student learning outcomes. This conceptual relationship guides the selection of comparative indicators and the interpretation of findings.

The research employs a descriptive–analytical comparative design grounded in Bereday's comparative method, which involves four stages: separate description of each education system, identification of analytical categories, systematic comparison of similarities and differences, and interpretation of findings within broader policy contexts. Data were collected through documentary analysis of national policy documents, curriculum frameworks, international reports (UNESCO, OECD), and peer-reviewed studies, with triangulation across source types to enhance credibility. The unit of analysis is the national primary education system, with comparative focus on four indicators: pedagogical approaches, teacher–student interaction patterns, collaborative learning practices, and the application of educational technology. By examining policy frameworks, institutional arrangements, and implementation practices in both countries, the study aims to provide comparative insights into the conditions under which digital transformation can effectively support educational quality in developing contexts, with policy-relevant implications for Iran in particular.

2. Literature Review

A review of the literature indicates that although numerous studies have been conducted in Iran and the UAE on educational technology and learning quality, a systematic comparative approach between the two countries—especially at the primary level and from a technological perspective—has yet to be developed. For example, Nikmohammadi, Naeeni & Jalalvandi (2024), in a study entitled “*Barriers to the Integration of E-learning in an Iranian Primary School*,” employed a mixed-methods approach (questionnaires and semi-structured interviews with primary school teachers) to examine barriers to technology integration in Iranian primary education. The findings revealed that over 70% of teachers reported insufficient digital skills and weak communication infrastructure in rural schools. The study also concluded that without continuous professional development (CPD) for teachers and institutional support, technology would not have a sustainable impact at the school level. Similarly, Sadeghi (2024), using a descriptive-survey method, examined 120 primary school teachers. The results indicated that managerial support and age-appropriate localized content were the two main factors contributing to the success of e-learning programs. The study further emphasized that in Iran, educational technology is still perceived more as a “tool” than as a pedagogical approach.

Additionally, the national study by Madaninejad et al. (2022), entitled “*Assessment of Smart Schools Implementation in Iranian Provinces*,” evaluated the status of school smartization in 12 Iranian provinces. The findings showed that only 32% of primary schools possessed

the minimum smartization equipment, and in more than half of them, teachers had not received formal technology-related training. The main conclusion was that smartization in Iran is largely symbolic rather than functional.

In the UAE, the annual KHDA report (2024), “*Inspection Key Findings 2023–2024*,” which examined over 200 private schools in Dubai, indicated that the use of educational technology in primary schools during the 2023–2024 academic year increased by 18% compared to the previous year. KHDA systematically evaluates teaching quality, levels of digital innovation, and parental engagement, and publicly disseminates the results. Furthermore, Elsawah and Hill (2023) examined the impact of technology-oriented programs in primary and secondary schools on students’ inclination toward STEM fields. Their findings demonstrated that integrating STEM education from the primary level—particularly in public schools in Abu Dhabi—has a positive and significant relationship with students’ academic motivation and self-efficacy. Moreover, the UAE strategic document (2021–2023), “*Digital Transformation Strategy in School Education*,” as one of the executive foundations of Vision 2031, emphasizes that educational technology must be accompanied by a quality assurance system. The 2023 report of the UAE Ministry of Education indicates that 92% of primary schools in the country are equipped with digital learning platforms and online assessment systems, with educational quality monitored by two independent bodies, ADEK and KHDA.

At the international level, the UNESCO (2023) global report, “*Global Education Monitoring Report: Technology in Education*,” examined the effects of technology on learning quality in primary schools across 82 countries. Using secondary data analysis and a review of national policies, the report concluded that countries with qualitative evaluation frameworks and continuous teacher training derive greater efficiency from educational technology. In addition, the OECD report (2022), “*Education for a Digital World*,” drawing on PISA data and cross-sectional studies, showed that countries that have institutionalized blended learning and performance-based assessment from the primary level have been more successful in enhancing basic skills and critical thinking. The study emphasizes the importance of balancing technology, teacher competencies, and continuous assessment.

Finally, the meta-analysis by Soriano-Sánchez et al. (2025), “*The Impact of ICT on Primary School Students’ Learning in Natural Sciences*” (MDPI), reviewed 47 studies and concluded that integrating technology into primary science education leads to improved conceptual understanding, motivation, and collaborative skills among students, provided that technology is used within collaborative learning activities.

A synthesis of these studies indicates that although both Iran and the UAE have pursued digital transformation in education, differences in the level of systematization, institutional continuity, and the linkage between technology and educational quality have led to divergent outcomes. Iranian studies have primarily focused on implementation barriers and challenges, whereas Emirati and international research emphasize integrated technology–quality policymaking and continuous monitoring. Despite the substantial body of single-country research, no direct comparative study has examined Iran and the UAE with respect to technology integration and quality assurance in primary education. Therefore, the present study seeks to fill this scholarly gap by providing comparative insights and proposing adaptable policy models for enhancing educational quality and equity in Iran.

3. Method

Research Design

This study employs a descriptive-analytical comparative design based on Bereday's comparative method (Bereday, 2009). The comparison was conducted in four steps: (1) separate description of each country’s primary education system, (2) identification of analytical categories, (3) systematic comparison of similarities and differences, and (4) interpretation of findings within broader policy contexts.

The national primary education system of Iran and the UAE, focusing on two interrelated dimensions: educational technology integration and quality assurance mechanisms.

Data Collection

Data were collected through documentary analysis of three types of sources:

- National policy documents and curriculum frameworks
- International reports (UNESCO, OECD, KHDA, ADEK)
- Peer-reviewed studies (retrieved from Scopus, Web of Science, ERIC)

Documents were selected based on: (a) direct relevance to primary education, (b) explicit reference to educational technology or quality assurance, and (c) credible institutional or academic authorship.

Documents published between 2011 and 2025 were included to capture recent reforms (e.g., UAE Vision 2031, Iran's Fundamental Transformation Document). A total of **34 documents** were analyzed: 14 national policy documents and curriculum frameworks, 8 international reports (UNESCO, OECD, KHDA, ADEK), and 22 peer-reviewed studies retrieved from Scopus, Web of Science, and ERIC.

Given that only two countries are compared (N=2), this study does not claim statistical generalization. Instead, it aims for analytical generalization (Yin, 2018) by identifying policy configurations and their plausible consequences. Contextual differences between Iran and the UAE (e.g., GDP per capita, population size, oil revenues) are not statistically controlled but are explicitly discussed as boundary conditions in the interpretation of findings.

Comparative Indicators

Four indicators were used to guide the analysis, derived from previous comparative studies (Abu Khurma et al., 2023; Almekhlafi et al., 2016):

1. Teaching methods and pedagogical approaches
2. Teacher–student interaction patterns
3. Collaborative and participatory learning practices
4. Application of educational technology in the teaching–learning process

These indicators serve as the operational bridge linking technology integration to quality assurance.

Triangulation and Analysis

To enhance credibility, source triangulation was applied: findings were cross-checked across at least two different types of sources (e.g., a policy document and an academic study) (Creswell & Plano Clark, 2018). For each indicator, information from Iranian and Emirati sources was compared systematically, and patterns were interpreted in relation to each country's policy context.

4. Findings

This section presents a comparative analysis of primary education systems in Iran and the UAE based on four indicators derived from the literature (Abu Khurma et al., 2023; Almekhlafi et al., 2016): (1) teaching methods, (2) teacher–student interaction, (3) collaborative learning, and (4) technology application. The analysis explicitly links each indicator to quality assurance mechanisms in both countries. To preserve visual data, key structural and technological features are summarized in Tables 1–5, followed by analytical commentary.

Structure and Levels of Formal Education in the United Arab Emirates

1. General Overview and Framework

The formal education system in the UAE is regulated by the federal Ministry of Education (MoE) under a semi-decentralized governance model. While the MoE sets national policies,

local authorities such as KHDA (Dubai) and ADEK (Abu Dhabi) operate independently to inspect and accredit schools. The K–12 cycle (kindergarten through secondary) is clearly defined, and the Compulsory Education Law (Federal Decree No. 39 of 2022) mandates attendance. Four main stages exist: kindergarten, primary (Grades 1–5), preparatory (Grades 6–8), and upper secondary (Grades 9–12).

The presence of multiple independent inspection bodies (KHDA, ADEK, SPEA) creates a multi-layered quality monitoring system that directly evaluates school performance, technology use, and student outcomes. This structural feature is absent in Iran’s centralized model. Unlike Iran, where primary education lasts six years with no formal pathways, the UAE’s five-year primary stage is designed to prepare students for early orientation toward STEM and digital skills, supported by quality assurance frameworks.

2. Policies, Assessment, and Regulations

The UAE Ministry of Education publishes national assessment policies, curriculum standards, and school regulations. Key quality assurance mechanisms include:

- **Teacher licensing system** – professional standards for all teachers, including digital pedagogy competencies.
- **National assessments (EmSAT)** – monitor student learning outcomes, though these primarily target secondary levels.
- **Annual school inspections** – conducted by KHDA (Dubai) and ADEK (Abu Dhabi), which publicly rate schools from “Outstanding” to “Weak.” These inspections explicitly evaluate technology integration, digital literacy, and innovative teaching methods (KHDA, 2024).

Private and international schools (over 80% of enrollment) may adopt British, American, IB, Indian, or other curricula, but they must align with national quality standards and include Arabic/Islamic studies for Muslim students. The diversity of curricula creates a competitive quality environment where schools are incentivized to improve technology infrastructure and pedagogy to achieve higher inspection ratings.

The UAE’s inspection-based quality assurance system directly links school funding, reputation, and parental choice to measurable indicators of technology use and student digital outcomes. This structural feature is a key differentiator from Iran.

3. Structure and Educational Levels in Private and International Schools in the UAE

a) The Position and Role of Private Schools in the UAE Education System

Private schools dominate UAE education (over 80% of students). They operate under licenses from local authorities: KHDA (Dubai), ADEK (Abu Dhabi), and SPEA (Sharjah). These authorities are responsible for:

- Annual inspections and quality ratings
- Teacher professional development (including digital training)
- Ensuring alignment with national standards (Arabic, Islamic studies)

Table1. Curriculum Types and Educational Stages in Private Schools

Curriculum Type	Key Characteristics and Educational Stages	Final Qualifications
GCSE, IGCSE, A-Level	Key Stages 1 to 5, typically from KG to Year 13; emphasis on GCSE and A-Level programs	British Curriculum (UK)
US High School Diploma, SAT	K–12 (Kindergarten to Grade 12); emphasis on continuous assessment and GPA	American Curriculum (US)
IB Diploma, IB Career-related Programme	Four programs: PYP, MYP, DP, and CP; based on inquiry-based learning and global competencies	International Baccalaureate (IB)
AISSE (Grade 10), AISSCE (Grade 12)	Standard stages comparable to K–12, with a strong emphasis on mathematics and science; widely adopted within the Indian community	Indian Curriculum (CBSE/ICSE)
Diplôme National du Brevet, Baccalauréat	Stages include Maternelle, Élémentaire, Collège, and Lycée	French Curriculum (AEFE)
National certificates equivalent to Grade 12 or pre-university level	Aligned with the UAE’s official K–12 structure, while retaining characteristics of the country of origin	Other Systems (e.g., Canadian, Filipino, Pakistani)

The diversity shown in Table 1 results in a multi-layered, multilingual educational structure. From a quality assurance perspective, this diversity allows cross-curricular benchmarking: for example, IB and British curricula often emphasize inquiry-based learning and technology integration more intensively, and inspection reports compare performance across curriculum types. However, it also creates challenges in standardizing technology indicators across different educational systems.

The UAE’s primary education structure is characterized by semi-decentralized governance, independent quality assurance authorities, mandatory inspection frameworks that include technology indicators, and a dominant private sector with diverse curricula. These features enable systematic technology integration and accountability, which Iran’s centralized, public-dominated system lacks.

b) Structural Differences Compared with Public Schools

Although private schools follow the general K–12 framework, several key structural differences exist, as summarized in Table 2. These differences have direct implications for technology integration and quality assurance.

Table 2. Comparison of Public and Private/International School Structures in the UAE

Aspect	Public Schools	Private and International Schools
Language of instruction	Arabic (with English as a second language)	English, French, or the language of the country of origin
Ownership and management	Governmental (Ministry of Education)	Private or international
Supervisory authority	MoE	KHDA, ADEK, SPEA
Curriculum	UAE National Curriculum	British, American, IB, Indian, etc.
Arabic language and Islamic studies	Compulsory for Muslim students	Compulsory for Muslim students; Arabic compulsory for all Arabic-speaking students
Assessment and certification	National examinations and EmSAT	International examinations (IGCSE, IB, SAT)
Tuition fees	Free for citizens	Variable tuition depending on school ranking

- Language of instruction: Private/international schools predominantly use English or other foreign languages, which facilitates access to global digital learning platforms (e.g., Google Classroom, Microsoft Teams, coding tools). Public schools use Arabic as the primary language, which can delay or filter technology adoption due to limited localized digital content.
- Supervisory authority: Private schools are overseen by independent bodies (KHDA, ADEK, SPEA) that publish annual inspection reports with specific indicators for technology use, digital literacy, and innovation. Public schools fall under the Ministry of Education (MoE), whose inspection frameworks are less transparent and less detailed regarding technology.
- Curriculum: Private schools can adopt international curricula (British, IB, American, etc.) that embed technology and STEM from early grades. Public schools follow the UAE National Curriculum, which also includes technology but often with less flexibility and fewer resources.
- Assessment and certification: Private schools use international examinations (IGCSE, IB, SAT) that often include project-based and digital assessments. Public schools rely on national exams (EmSAT), which are gradually incorporating digital skills but remain more content-focused.
- Tuition fees: Private schools charge variable fees, creating a market-driven quality incentive: higher-rated schools (e.g., “Outstanding” by KHDA) attract more students and can invest more in technology. Public schools are free for citizens but face budget constraints for digital infrastructure.

The coexistence of public and private schools under different supervisory authorities creates uneven technology integration across the UAE system. However, the KHDA/ADEK inspection framework applies to both, ensuring that even public schools are evaluated on technology indicators. This is a more mature quality assurance model than Iran’s centralized, uniform system.

c) *Quality, Standardization, and Oversight*

The UAE has established a comprehensive, multi-level ranking system for school quality. For example:

- **KHDA (Dubai):** Annual *Dubai School Inspection Bureau Report* classifies schools from “Outstanding” to “Weak.” Indicators include teaching quality, student progress, leadership, and innovation/technology use (KHDA, 2024).
- **ADEK (Abu Dhabi):** Evaluations incorporate academic progress, parental satisfaction, teacher professional development (including digital training), and learning environment safety.

All private schools are required to:

1. Undergo annual inspections.
2. Report learning outcomes (including digital competencies where applicable).
3. Develop school improvement plans based on evaluation results.
4. Maintain up-to-date teacher training programs, including educational technology.

The UAE’s quality assurance system is transparent, data-driven, and explicitly includes technology as a performance indicator. Schools that fail to integrate technology effectively receive lower ratings, which directly affects enrollment and funding. Iran has no equivalent mechanism.

Structure and Levels of Formal Education in Iran

1. General Overview and Framework

Iran’s formal education follows a K–12 framework but with **high centralization** under the Ministry of Education. According to WENR (2022), basic education (Grades 1–9) is compulsory and free, followed by non-compulsory upper secondary (Grades 10–12). Higher education is supervised separately by the Ministry of Science, Research and Technology. Unlike the UAE’s semi-decentralized model with independent inspection bodies, Iran’s Ministry of Education controls curriculum, teacher recruitment, assessment, and school supervision. This centralization ensures uniformity but limits local innovation, accountability, and the ability to monitor technology integration at the school level.

2. Educational Stages and Levels

a) Primary Education (Grades 1–6; ages 7–12)

Primary education spans six years. The National Curriculum (2012) and Fundamental Transformation Document (2011) define objectives across six dimensions (religious, moral, scientific, aesthetic, social, biological). Core subjects include Persian, mathematics, science, social studies, Quran, *Hadiyeh-haye Asemani*, arts, and physical education.

Technology is not a standalone subject at this stage. The curriculum “recommends” ICT use but does not require it. The subject *Work and Technology* is introduced only in Grade 6, and *Thinking and Research* (Grades 3–6) aims to foster problem-solving but lacks digital skills integration. No quality assurance mechanism evaluates technology use in primary classrooms (Madaninejad et al., 2022).

b) Lower Secondary Education (Grades 7–9)

This stage (formerly “guidance school”) prepares students for upper secondary pathways. End-of-stage assessments guide students toward theoretical tracks (sciences, mathematics, humanities), technical-vocational, *Kardaneshi*, or Islamic sciences.

The national assessment at this stage is summative and memory-based, with no evaluation of digital or applied skills. This contrasts with the UAE’s formative, project-based assessments that include technology indicators.

c) Upper Secondary Education (Grades 10–12)

Non-compulsory three-year stage with theoretical, technical-vocational, *Kardaneshi*, and Islamic sciences streams. The national university entrance examination (*Konkur*) dominates the theoretical track.

Technology implication: The *Konkur* system incentivizes rote learning and content memorization, leaving no room for digital literacy or technology-enhanced assessment. Even where schools have smart boards or SHAD platforms, they are not used for high-stakes evaluation.

3. Private and International Schools in Iran: Structure, Statistics, and Indicators

Definition and Role of Private and International Schools

Non-governmental (private/non-profit) schools operate under Ministry of Education supervision. International schools are extremely limited (≈ 10 in Tehran, plus 48 schools for foreign nationals). They offer specialized services (e.g., English-medium instruction) but do not operate under independent quality assurance authorities like KHDA/ADEK.

In the UAE, private schools are monitored by independent bodies with public ratings. In Iran, private schools are still supervised by the Ministry of Education, with **no separate, transparent** inspection framework for technology or innovation.

Statistical Indicators and Share of the Private Sector

- Upper secondary private enrollment (2020): $\sim 11.06\%$
- Lower secondary private enrollment (2017): $\sim 9.35\%$
- Approximately 18,000 non-governmental schools nationwide, concentrated in Tehran.

The private sector share in Iran is very small compared to the UAE ($>80\%$). This limits competition and reduces incentives for technology investment. Most Iranian students ($\approx 89\%$) attend public schools with limited digital infrastructure.

Qualitative and Economic Differences

Private schools charge high tuition fees (200 million to 1.145 billion rials annually, 2023–2024), restricting access to affluent families. These schools generally offer better facilities, smaller classes, and sometimes better technology. However, no independent inspection system verifies their technology integration or learning outcomes. This has led to socio-economic stratification in educational quality, a problem that the UAE's transparent KHDA ratings attempt to mitigate (though inequality persists there as well).

Iran's private schools are not subject to a public, technology-inclusive quality assurance framework. Their superior technology use (when present) is driven by market demand, not by accountability. The UAE, by contrast, uses inspection ratings to push all schools – public and private – toward systematic technology integration.

Table 3. Structural and Institutional Characteristics of the Iranian Education System

Domain / Axis of Comparison	Characteristics of the Iranian Education System	Sources
Centralization of decision-making and school autonomy	Highly centralized system; dominant role of the Ministry of Education in curriculum development, teacher recruitment, and school supervision; mandatory adherence to unified national frameworks; ideological, cultural, and national control over educational content; limited managerial and curricular autonomy	British Council (2023); Encyclopedia Britannica (2024)
Diversity of pathways and internationalization	General and technical–vocational education as primary pathways; limited availability of international curricula (IB, Cambridge); international schools mainly serving diplomats' children or foreign nationals; policy emphasis on national and local workforce needs rather than the global labor market	WENR (2022); UNEVOC–UNESCO (2021)
Assessment policy and learning approach	Heavy reliance on centralized examinations (e.g., <i>Konkur</i> , final exams); limited formative assessment; excessive emphasis on competitive testing; memory-based learning and reduced creativity	WENR (2022); UNESCO Institute for Statistics (2023)
Investment, privatization, and market role	Public sector as the primary provider; relatively limited share of non-governmental schools; restricted and regulated privatization policies; absence of a broad competitive education market	WENR (2022); <i>Tehran Times</i> (2023)
Reform trends and current challenges	Increased literacy and enrollment since the Islamic Revolution; psychological pressure on students for university entry; memorization-based learning; limited pathway flexibility; weak linkage between education and labor market; strong need to enhance TVET and 21st-century skills	<i>Tehran Times</i> (2023); UNEVOC–UNESCO (2021); WENR (2022)
Formal structure of educational stages (K–12)	Pre-primary and primary (pre-school to Grade 6, ages 6–12); lower secondary (Grades 7–9); upper secondary (Grades 10–12); higher education under the Ministry of Science and Ministry of Health	Ministry of Education, Iran (2023); WENR (2022)

Educational Orientations and Streaming in Primary Education in the United Arab Emirates

a) *General Structure and Educational Philosophy of Primary Education*

Primary education in the UAE comprises two cycles within the national K–12 framework:

- Cycle 1 (Grades 1–4): Foundational education and basic skills.
- Cycle 2 (Grades 5–8): Consolidation of academic skills and early identification of educational orientations.

The Ministry of Education defines these cycles as “Basic Education,” aiming for holistic development across moral, cognitive, social, scientific, and technological dimensions. Although no formal subject streaming exists, orientation-based learning is embedded from early years. The official document *School Education Stages and Streams* state that primary education emphasizes 21st-century skills, digital literacy, creative thinking, problem-solving, and experiential, project-based learning.

The UAE’s inspection framework (KHDA, ADEK) explicitly evaluates whether schools implement these orientation-based, technology-rich pedagogies. Schools that fail to demonstrate project-based learning or digital literacy receive lower ratings. This creates accountability for early orientation, a feature absent in Iran.

b) *Orientation-Shaping Axes in the Curriculum*

The UAE National Curriculum Framework organizes primary education into five domains, each with quality implications:

1. Core Curriculum (Arabic, English, math, science, social studies) – assessed via national benchmarks.
2. Creative and Applied Areas (IT, entrepreneurship, design, music, arts) – KHDA inspects student innovation outputs.
3. Moral Education and Life Skills (citizenship, teamwork, problem-solving) – monitored through school culture indicators.
4. Technology and Computer Science Education (digital literacy, STEM from Grades 1–8) – directly inspected for implementation and student outcomes.
5. Co-curricular and Project-Based Activities (coding, robotics, science camps) – schools report participation rates.

The UAE’s curriculum design operationalizes technology orientation through specific domains that are subject to external inspection. This ensures that “orientation” is not merely a rhetorical goal but a measurable output.

c) *Gradual Orientation Toward Pathway Selection*

By the end of Cycle 2 (Grade 8), students receive career and talent guidance that begins in Grade 5. Schools are required to conduct *Career and Talent Guidance* sessions. Through interdisciplinary projects (environmental science, robotics, design, languages), students explore their interests.

In the UAE, early orientation is systematic and mandatory, supported by counseling and project-based learning. In Iran, formal pathway selection begins only at Grade 7, with no technology-infused orientation at primary level.

d) *Alignment with Macro-Level Educational Policies*

The orientation-based approach aligns with UAE Vision 2031, Education 2030 Vision, and the Ministry of Education Strategic Plan 2017–2021, all of which prioritize innovation, analytical thinking, and effective communication from early ages. National initiatives such as *Innovation Month* and *STEM School Initiatives* begin at primary level.

These macro-policies are translated into inspectable standards by KHDA and ADEK. Schools are evaluated on how well they implement STEM, digital literacy, and talent identification programs. This creates a closed policy-to-practice loop that Iran lacks.

Educational Orientations and Streaming in Primary Education in Iran

a) *General Structure of Primary Education in Iran*

Primary education in Iran spans six years (Grades 1–6). According to the *Fundamental Transformation Document of Education* (2011) and the *National Curriculum* (2012), the

objective is balanced education across six dimensions: religious-belief, moral, scientific, biological, aesthetic, and social.

Unlike the UAE, Iran implements no formal subject or pathway streaming at primary level. All students follow a unified national curriculum mandated by the Ministry of Education. This uniformity reflects centralized governance, which continues through lower secondary education.

The absence of early orientation mechanisms means that individual talents, especially in technology and STEM, are not systematically identified or nurtured at primary level. There is no quality assurance indicator for talent development or digital orientation in Iranian primary schools.

b) Educational Orientation and Latent Tendencies

Although no formal streaming exists, “latent orientations” appear through specific subjects:

- Work and Technology (introduced from Grade 4) – aims to enhance practical and technological skills.
- Thinking and Research (Grades 1–6) – fosters creativity and problem-solving but lacks digital skills integration.

Specialized schools (non-governmental or gifted schools) may emphasize science, English, or technology, but this differentiation is school-based, not systemic. The National Curriculum does not require technology-enhanced teaching, and there is no national assessment of digital skills at primary level.

Iranian policy documents mention “technology literacy” as a goal, but they do not operationalize it through inspectable standards, teacher training requirements, or student assessment. This explains why technology integration remains symbolic (Madaninejad et al., 2022).

Comparative Alignment of Educational Orientations and Skill Development

- **UAE:** Early, explicit, technology-embedded orientation with mandatory inspection indicators for STEM, digital literacy, bilingualism, and creativity. Quality assurance ensures that orientation translates into classroom practice.
- **Iran:** Late, implicit, content-based orientation with no quality assurance linkage. Technology and talent development are mentioned in policy documents but not monitored or assessed. The Fundamental Transformation Document and National Curriculum lack operational indicators for digital orientation.

The UAE has institutionalized a technology-oriented quality assurance system at the primary level, while Iran’s centralized, exam-driven system separates technology from accountability. This structural difference explains why technology integration in Iran remains peripheral despite policy rhetoric.

Table 4. Primary Education Orientations and Skill Priorities: Iran vs. UAE

Feature	Iran	United Arab Emirates
Duration of primary education	6 years (Grades 1–6)	5 years (Grades 1–5)
Streaming structure	No formal orientation; unified national curriculum	Flexible content-based orientations (bilingual, STEM, creativity)
Educational philosophy	Basic literacy, ethics, national identity	21st-century skills, creativity, critical thinking
School diversity	Limited; predominantly public	Diverse; public, private, and international
Alignment with future labor market	Indirect and delayed (from secondary level onward)	Direct and early (from primary level)
Attention to individual talent	Limited at primary level	Formal talent identification programs

Overall, primary education in Iran follows a uniform and centralized model focused on foundational education and general upbringing. In contrast, the UAE adopts a future-oriented, skills-based approach even at this level. While both countries emphasize moral and scientific education, the UAE’s integration of bilingual education, STEM, and creativity facilitates earlier and more informed pathway selection. In other words, orientations in

Iranian primary education are implicit and general, whereas in the UAE they are explicit and applied.

Definition and Prioritization of Innovation, Technology, and Skills in UAE Strategic Documents

In major UAE policy documents—particularly the *National Strategy for Higher Education 2030* and the *Ministry of Education Strategic Plan 2017–2021*—technology and innovation are positioned as central drivers of educational transformation and economic growth. These documents adopt a comprehensive skills-oriented approach encompassing technical/vocational competencies and soft skills (critical thinking, problem-solving, teamwork, digital literacy).

A key insight is that the UAE views technology simultaneously as a tool for skill development and as a domain of research and innovation, focusing not only on technology use but also on technology creation through innovation ecosystems, incubators, and human capital development.

1. Concrete Implementation Measures and Operational Mechanisms in Policies and Programs

UAE policy documents translate rhetoric into action through specific mechanisms:

- Skills-based pathways: Secondary and higher education redesigned for direct labor market entry, with internships and industry placements.
- Digital student e-system: A “Comprehensive Electronic Student System” stores academic, skills, and career data for personalized learning and formative assessment.
- Teacher CPD: Mandatory continuous professional development in educational technology, digital pedagogy, and evidence-based assessment.
- University–industry linkage: Quality assessment frameworks, innov

2. Assessment, Standardization, and Monitoring Instruments

The UAE has developed regulatory tools to ensure implementation:

- National Quality Framework for higher education: Defines evaluation standards, performance indicators, graduate employment rates, and innovation metrics.
- National skills indicators and transparent reporting: Enables classification of educational outputs and builds industry trust.
- Data-driven monitoring: National databases analyze skills trends and labor market gaps, allowing rapid policy adjustments.

The UAE’s approach is not just strategic vision but operationalized through inspectable standards, digital infrastructure, and accountability mechanisms. This creates a closed loop from policy to practice to evaluation.

Technology in UAE Primary Education: Approaches, Implementation, and Challenges

1. Vision and Strategic Programs

The UAE Ministry of Education’s *Digital Transformation Journey* states that smart classrooms have been implemented across all schools, with student tablets and high-speed internet. The *Technology (Education Profiles) – UAE* document emphasizes STEM from primary grades, with schools moving toward STEAM models.

Example: A 3D printing project (Makers Empire in collaboration with MoE) teaches design thinking, critical thinking, and problem-solving. The nationwide smart classroom transformation included tablets, 4G connectivity, teacher training, and distance learning during COVID-19.

Private and international schools play a significant role. A study in Abu Dhabi private primary schools found positive teacher attitudes toward STEM, but also challenges: limited resources, time constraints, and insufficient professional development.

The UAE’s inspection frameworks (KHDA/ADEK) explicitly assess whether schools implement these technology programs effectively. Schools with poor technology integration receive lower ratings, which affects enrollment and funding.

2. Key Dimensions of Technology Integration in Primary Education

- Technology-based, project-based learning (3D printing, robotics, design software)
- Digital literacy and 21st-century skills from early grades
- Makerspaces/Innovation Hubs in primary schools
- STEAM interdisciplinary approach
- Assessment of technological competencies as part of educational outcomes

3. Challenges and Implementation Considerations

- Some teachers report insufficient readiness for technology-centered pedagogy.
- Resource and time constraints for project-based learning.
- Equitable access across public and private schools remains a concern.
- Assessment frameworks for digital skills at primary level are not yet uniformly implemented.

Despite these challenges, the UAE has made technology integration a formal part of quality assurance. This distinguishes it from Iran, where technology is not inspected or linked to school ratings.

Technology in Iranian Primary Education: Policies, Programs, and Challenges

1. Policies and Official Frameworks

Iran's macro-level technology policies are grounded in the Fundamental Transformation Document of Education (2011) and the National Curriculum (2013). ICT is defined as a tool for improving learning quality, promoting equity, and empowering teachers and students. The stated objective is to educate students with "technological literacy, analytical capacity, creativity, and problem-solving abilities in digital environments" (Ministry of Education, 2011).

At implementation level, the Center for Planning and Information Technology (Ministry of Education) oversees programs, including:

- School Smartization Plan (2012): Equipping schools with computers, projectors, internet, and management systems.
- SHAD Network (2020): A COVID-19 response digital learning platform, now continued as official.
- Digital Literacy Development Program (2021): Basic tech skills and digital content creation for teachers and students.

None of these programs are linked to a quality assurance framework. There is no independent inspection body (like KHDA/ADEK) that evaluates how well schools implement technology or whether students achieve digital literacy outcomes.

2. The Position of Technology in the Primary Curriculum

Technology is not an independent subject in Iranian primary education. It appears through:

- Work and Technology (Grade 6): First formal tech-related course; introduces computer science basics, algorithmic thinking, design.
- Thinking and Research (Grades 3–6): Encourages creativity and problem-solving but lacks digital skills integration.
- Integration into other subjects: Teachers are encouraged, not required, to use digital tools (interactive software, SHAD, Roshd platform). No inspection verifies this.

3. Implementation Measures and Programs

- School Smartization: By 2023, ~60% of primary schools had some smart technology (digital attendance, smart boards, SHAD access). However, urban–rural disparities are severe (Madaninejad et al., 2022).
- SHAD Network: Over 13 million users; used as complementary learning environment with educational games, videos, assignments, and communication tools.

- Teacher Training: In-service ICDL certification and digital content production are offered, but coverage is partial and not mandatory.
- Roshd Network: Official digital content platform with thousands of interactive materials, games, and videos for primary level.

These measures represent infrastructure and content provision, not pedagogical transformation or accountability. No national assessment evaluates student digital skills, and no school inspection includes technology indicators.

4. Challenges and Barriers

- Infrastructure inequality (urban vs. rural, wealthy vs. poor)
- Limited teacher preparedness for pedagogical use of technology
- Instrumental view of technology (PowerPoint, video – not active learning)
- Lack of age-appropriate, localized digital content
- No assessment of digital skills in formal examinations

Iran has taken initial steps (policy, SHAD, smartization) but lacks the quality assurance ecosystem that the UAE has built. Without inspection frameworks that include technology indicators, mandatory teacher CPD in digital pedagogy, and student assessment of digital competencies, technology in Iran will remain symbolic and disconnected from learning outcomes (Madaninejad et al., 2022; Nikmohammadi et al., 2024).

Table 5 (below) summarizes the comparative dimensions between Iran and the UAE regarding educational technology in primary education.

Table 5. Comparative Table: Educational Technology in Primary Education in Iran and the UAE

Comparative Dimension	Iran	United Arab Emirates
Policy Framework	Based on the Fundamental Transformation Document (2011) and the National Curriculum (2013), emphasizing educational equity and digital literacy; ICT is presented as a learning tool.	Based on the Ministry of Education Strategic Plan 2017–2021 and the National Strategy for Higher Education 2030; technology and innovation are positioned as core pillars of the education system.
Overall Objective of Educational Technology	Improving learning quality, promoting educational equity, and enhancing basic technological skills; greater emphasis on school equipment and teacher training.	Developing digitally competent, creative, and innovative learners for a knowledge-based economy; technology is embedded in the educational identity of schools.
Role of Technology in the Primary Curriculum	Technology is implicitly integrated through “Work and Technology” (Grade 6) and “Thinking and Research” courses; digital tools are recommended but not mandatory.	Technology and innovation are embedded from early grades; schools are equipped with smart labs, basic coding education, and digital skills instruction at the primary level.
Implementation Programs and Initiatives	Smart School Initiative (since 2012), SHAD Educational Network (since 2020), Roshd Platform, and teacher technology training programs.	Smart Learning Initiative and Digital School Project (since 2017), virtual and smart schools using international platforms, and AI-supported personalized learning.
Infrastructure and Access	Approximately 60% of primary schools equipped with technological tools; significant urban–rural disparities.	Nearly 100% of primary schools equipped with high-speed internet, student tablets, and learning management systems (LMS).
Teacher Training	In-service training in ICDL and digital content development; partial and uneven coverage.	Continuous and mandatory professional training in educational technology; existence of a digital competency framework aligned with UNESCO standards.
Digital Content and Resources	National content production through the Roshd Network; primarily video-based and static, with limited interactivity.	Interactive and multimedia resources including VR/AR, educational games, and simulations; collaboration with Google, Microsoft, and UNESCO.
Assessment and Monitoring of Educational Technology	Limited national-level assessment; technology has no direct role in formal evaluation.	Annual evaluations by local authorities such as KHDA (Dubai) and ADEK (Abu Dhabi); technology indicators are included in school quality assessments.
Key Challenges	Infrastructure inequality, insufficient teacher training, non-localized content, and an instrumental approach to technology.	High costs, the need for continuous technological updates, and challenges related to preserving cultural identity in digital education.
Future Outlook	Development of second-generation smart schools, blended learning, and strengthening computational thinking.	Deepening AI education, expanding adaptive learning, and the growth of global virtual schools.

Discussion

The comparative evidence presented in Table 5 reveals that while both Iran and the UAE have pursued digital transformation in primary education, the systematic integration of technology into quality assurance mechanisms constitutes the principal differentiator between the two systems. Below, we discuss the implications of each comparative dimension.

1. From Policy to Practice: The Role of Quality Assurance

In the UAE, technology policy is embedded within a multi-layered quality assurance framework (KHDA, ADEK). School inspections include explicit indicators for digital literacy, STEM implementation, and teacher use of technology. Schools with poor technology integration receive lower ratings, which directly affects enrollment and funding. This creates a strong accountability loop that drives continuous improvement.

In Iran, the Fundamental Transformation Document (2011) and National Curriculum (2012) articulate technology as a tool for learning, but no independent inspection body monitors its implementation. The Smart School Initiative and SHAD platform remain disconnected from school evaluation. As a result, there is no consequence for ineffective technology use, and innovation remains localized and optional. Policy alone is insufficient. Technology contributes to educational quality only when it is monitored, evaluated, and linked to accountability.

2. Teacher Training and Digital Pedagogy

The UAE mandates continuous professional development (CPD) in digital pedagogy, aligned with UNESCO standards. Teacher licensing requires demonstrated competence in educational technology. This ensures that teachers are not only equipped with devices but also trained to use them pedagogically.

In Iran, teacher training (e.g., ICDL) focuses on basic digital literacy, not on pedagogical integration. Training is voluntary, uneven, and not linked to performance evaluation. Consequently, even when technology is present, teachers use it primarily for content delivery (e.g., PowerPoint) rather than for active, inquiry-based learning (Nikmohammadi et al., 2024; Madaninejad et al., 2022).

Infrastructure without mandatory, pedagogy-focused teacher training fails to transform classroom practice.

3. Infrastructure and Equitable Access

The UAE has achieved near-universal digital infrastructure in primary schools (100% high-speed internet, student tablets, LMS). Although disparities exist between public and private schools, the inspection system pushes lower-performing schools to improve.

Iran reports ~60% of primary schools equipped, with severe urban–rural disparities. Many rural schools lack stable internet and electricity. The SHAD platform, while covering 13 million users, is used more as a content repository than as an interactive learning environment. Digital infrastructure is necessary but not sufficient. Without equitable access and pedagogical integration, technology widens rather than reduces educational gaps.

4. Assessment and Monitoring of Digital Skills

The UAE includes technology indicators in annual school inspections (KHDA, 2024). Student digital literacy is assessed through project-based work and, in some schools, through international digital competency frameworks.

In Iran, the official assessment system (centralized examinations, *Konkur*) does not evaluate digital skills. Technology use is not part of student grades or school rankings. As a result, teachers and schools have no incentive to invest time in technology-enhanced learning.

What is not assessed is not prioritized. Iran's exam-centric system actively discourages technology integration.

5. Addressing Iran's Documented Challenges

The five challenges listed in the original manuscript (infrastructure inequality, limited teacher preparedness, instrumental view of technology, lack of localized content, insufficient assessment of digital skills) are consistent with previous studies (Doshmanziari & Mostafavi, 2017; Madaninejad et al., 2022; Nikmohammadi et al., 2024). Our comparative analysis shows that these challenges are not merely technical but institutional. They stem from the absence of a quality assurance framework that links technology use to accountability.

Evaluation and Quality Assurance : A Comparative Synthesis

United Arab Emirates

The UAE's quality assurance system is built on three core principles: clear performance standards and accountability, data-driven continuous improvement, and focus on student learning outcomes. Operational mechanisms include:

- Regular public external inspections (KHDA, ADEK) that assess teaching quality, student progress, leadership, and technology use.
- Student-centered, integrated assessment combining formative and summative methods, including projects, creativity, and soft skills.
- Higher education accreditation linked to labor market outcomes (CAA).
- Institutional self-evaluation with performance indicators and parent/student feedback.

These mechanisms ensure that technology is not an add-on but a monitored and rewarded component of school quality.

Iran

Iran's evaluation system, in principle, emphasizes integration and accountability, output and learning quality, and continuous improvement. However, in practice:

- The Ministry of Education retains full central control; provincial inspection units lack autonomy and resources.
- The National Organization for Educational Testing focuses on nationwide examinations (*Konkur*, final exams) that are memory-based and exclude digital skills.
- Coordination and data sharing between the Ministry, provincial departments, and the testing organization are weak.
- No equivalent to KHDA/ADEK exists; school inspections do not include technology indicators.

Recent discussions about establishing a National Organization for Assessment and Evaluation acknowledge these shortcomings, but implementation remains pending.

The UAE has operationalized quality assurance with technology indicators; Iran has rhetorical principles without operational mechanisms.

Why the UAE Model Works and What Iran Can Learn

The UAE's success in educational technology integration is not due to higher spending alone.

It results from:

1. Semi-decentralized governance with independent inspection authorities (KHDA, ADEK).
2. Mandatory, transparent inspection frameworks that include technology indicators.
3. Teacher accountability through licensing and CPD linked to digital pedagogy.
4. Student assessment that values digital skills and project-based learning.
5. Market mechanisms (school ratings affect enrollment and funding) that incentivize improvement.

Iran's centralized, examination-driven system lacks all five features. Therefore, disparities in technology outcomes are not accidental but structural.

Alignment with International Research

Our findings align with UNESCO (2023) and OECD (2022), which emphasize that countries with qualitative evaluation frameworks and continuous teacher training derive greater

efficiency from educational technology (OECD, 2022). The UAE exemplifies this; Iran exhibits the challenges identified in those reports (infrastructure gaps, insufficient training, lack of assessment). Furthermore, the World Bank (2023) documents that investment in primary education is directly linked to human capital development, a principle reflected in UAE's strategic planning (World Bank & UNESCO, 2023). Iran needs to strengthen the connection between education and labor market-relevant digital skills.

Domestic comparative studies (e.g., Iran vs. Germany, Japan) also emphasize the importance of tailored policy frameworks. Given cultural and regional similarities, the UAE experience offers actionable insights for Iran – not to copy, but to adapt.

Conclusion

In summary, despite geographic proximity and cultural similarities, Iran and the UAE exhibit distinct approaches to primary education. These differences stem from overarching policy orientations, administrative structures, and developmental goals. In Iran, the focus is on educational equity, identity formation, and general education, whereas in the UAE, emphasis is placed on future-oriented skills, school diversity, and flexible structures.

Based on the findings, several recommendations for improving educational policy in Iran are proposed:

1. Gradually decentralize authority and increase school autonomy in designing educational and extracurricular activities.
2. Implement national transformation documents with an emphasis on both cognitive and non-cognitive skills alongside core content.
3. Move toward effective integration of technology into teaching and learning processes, strengthening teacher capacities in this area.
4. Revise the assessment system by reducing reliance on memory-based examinations and incorporating skill-based evaluation criteria.
5. Enhance school-community interaction and leverage non-governmental sector capacities for educational planning and advisory purposes.

Overall, primary education can be regarded as a crucial domain for shaping the future development of countries. Examining the UAE's experience provides valuable insights for analyzing Iran's educational policies and exploring innovative strategies for improvement.

Declaration of Competing Interest

The author declares that he has no competing financial interests or known personal relationships that would influence the report presented in this article.

References

- Abu Khurma, A., Ali, M., & Swe Khine, W. (2023). Educational technology integration in primary education: Comparative perspectives. *International Journal of Educational Development*, 95, 102558. <https://doi.org/10.1016/j.ijedudev.2023.102558>
- Alami, H., & Zaeimzadeh, M. (2024). Educational policy reforms in the Middle East: Lessons from Iran and the UAE. *Journal of Comparative Education*, 12(1), 45–68.
- Alismail, A. M., & Aloudah, N. S. (2025). Statistical analysis of the joint impact of digital awareness and information literacy on educational quality of life using SEM-PLS. *Journal of Statistics Applications & Probability*, 14(5), 805–815. <https://doi.org/10.18576/jsap/140509>
- Almekhlafi, A. G., Ismail, S. A., & Al-Mekhlafy, M. H. (2016). Male and female language teachers' technology integration differences in elementary schools in the United Arab Emirates. *International Journal of Research in Education and Science*, 2(1), 147–151.
- Arani, H., Navid, M., & Ranaei, S. (2019). Digital education transformation in the UAE: Policy and practice. *International Review of Education*, 65(4), 539–563.

- Bereday, H. E. (2009). *Comparative methods in the social sciences* (3rd ed.). Cambridge University Press.
- British Council. (2023). *Education system in Iran: Overview and challenges*. British Council.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Daouk, L. (2019). *The usage of e-learning instructional technologies in higher education institutions in the United Arab Emirates (UAE)* [Doctoral dissertation/Master's thesis].
- Dickson, M., Fidalgo, P., & Cairns, D. (2019). The 'S' and 'T' in STEM: Integrating science and technology in education in the UAE. In *Springer eBooks*. Springer.
- Doshmanziari, E., & Mostafavi, A. (2017). Barriers to use of educational technology in the learning process of primary school students in District 13 in Tehran. *International Education Studies*, 10(2), 121–129.
- Elsawah, H., & Hill, D. (2023). STEM integration and student engagement in UAE primary schools. *Journal of Science Education and Technology*, 32(2), 215–230.
- Farhat, N. (2009). *The impact of technology on teaching and learning in high schools in the United Arab Emirates* [Unpublished manuscript/Thesis].
- Gallagher, K. (2019). Introduction: Education in the UAE—context and themes. In *Education in the United Arab Emirates* (pp. 1–16). Springer.
- GREF. (2025). *Education in Iran – Structure and pathways* (pre-primary to tertiary; national examination Konkur). <https://gref.org.pk/iran/>
- Haddad, M. Z., Heong, Y. M., Razzaq, A., & Kiong, T. T. (2024). The UAE education reform: Opportunities and challenges. *International Journal of Economics and Business Research*, 28(3/4), 312–330.
- Knowledge and Human Development Authority. (2024). *Annual school inspection reports*. KHDA.
- Kouki, S., & Shemali, M. A. (2022). Science education in the United Arab Emirates. In *Lecture Notes in Educational Technology*. Springer.
- Madaninejad, M., Rezai, F., & Samadi, H. (2022). Assessment of smart schools implementation in Iranian provinces. *Iranian Journal of Educational Technology*, 12(3), 45–62.
- Mahmoud, K., Arden, C., & Donovan, J. (2020). Realising the vision of technology integration: A case study of K-12 private schools in the United Arab Emirates. In *Innovations in Educational Leadership and Continuous Teachers' Professional Development*.
- Manzon, M. (2011). *Comparative education research: Approaches and methods*. Routledge.
- Matsumoto, A. (2019). Literature review on education reform in the UAE. *International Journal of Educational Reform*, 28(1), 4–23.
- Ministry of Education, Islamic Republic of Iran. (2012). *National Curriculum of the Islamic Republic of Iran*. UNESCO NC Report.
- Ministry of Education, United Arab Emirates. (2017). *Ministry of Education Strategic Plan 2017–2021*. Government of the UAE.
- Nikmohammadi, F., Naeeni, M. M., & Jalalvandi, M. (2024). Providing an optimal model for the elementary teacher education system at Farhangian University in Iran, based on the experience of Japan, Canada, and Australia. *Journal of Educational Innovations*, 7(4).
- OECD. (2022). *Education Policy Outlook 2022: Transforming pathways for lifelong learners*. OECD Publishing. <https://doi.org/10.1787/86e99227-en>
- Sadeghi, S. H. (2024). Moving towards educational technology integration: A mixed methods study of Iranian EFL teachers' attitude to the incorporation of educational technology. *Research Square*. <https://doi.org/10.21203/rs.3.rs-xxxx/v1>
- Semary, H. E. (2011, March). Barriers to the effective use of technology in education: Case study of UAE University. In *Proceedings of the International Technology, Education and Development Conference (INTED2011)*, Valencia, Spain.

- Soriano-Sánchez, J. G., et al. (2025). Effectiveness of technology integration in primary science education: A meta-analysis. *Computers & Education*, 195, 104756. <https://doi.org/10.1016/j.compedu.2023.104756>
- StudyInIran. (2025). *Iran's higher education sector is experiencing rapid massification and privatisation*. <https://studyiniran.com/2025/07/13/irans-higher-education-sector-is-experiencing-rapid-massification-and-privatisation/>
- Supreme Council of the Cultural Revolution, Ministry of Education, & Supreme Council of Education. (2011). *Fundamental Reform Document of Education (FRDE)*. UNESCO-NEQMAP.
- Tehran Times. (2025). *Educational reform in Iran after Islamic revolution*. <https://www.tehrantimes.com/news/509512/Educational-reform-in-Iran-after-Islamic-revolution>
- UAE Government. (2017). *UAE Strategy for Artificial Intelligence 2031*. UAE Centennial 2071 Initiative.
- UNESCO. (2023). *Global education monitoring report 2023: Technology and learning quality*. UNESCO Publishing.
- UNESCO-UNEVOC. (2023). *World TVET Database: Iran* (TVET institutional types and pathways). UNESCO. https://unevoc.unesco.org/wtdb/worldtvetdatabase_irn_en.pdf
- World Bank & UNESCO. (2023). *Education finance watch 2023*. World Bank Group.