Journal of Data Acquisition and Processing
ISSN: 1004-9037
https://sjcjycl.cn/
DOI: 10.5281/zenodo.777893

A NEW COMPETENCY MODEL FOR DIGITAL INSTRUCTORS: TOWARDS INNOVATIVE TEACHING AND LEARNING IN THE DIGITAL ERA

Ahmed Al-Hunaiyyan[1]*, Salah Al-Sharhan[2], Shaikhah Alainati[3], Manal Al-Duaij[4]
[1*]Computers & Information Systems Department, College of Business Studies, PAAET, Kuwait
[2] Computer Science Department, International University of Science and Technology of Kuwait
[3, 4] Management Department, College of Business Studies, PAAET, Kuwait
*Corresponding Author:- Ahmed Al-Hunaiyyan
Computers & Information Systems Department, College of Business Studies, PAAET, Kuwait E-mail: aa.alhunaiyyan@paaet.edu.kw

Abstract
The foundational pillars of the digital economy are digital skills, which are defined as the ability to find, evaluate, use, share, and create digital content. In the field of education, most people agree that digital technology can enhance teaching and learning by creating more engaging and interactive learning environments, which motivates students to learn. Human resource management (HRM) practices are largely responsible for maintaining a positive environment for the effective use of technology in teaching and learning. This new digital age has vastly improved citizens' access to information. In the context of online learning delivery, instructors with digital skills play a crucial role in creating immersive learning spaces that offer students new ways to learn and play a pivotal role in guiding students to become ethical and responsible digital citizens. By reviewing relevant literature and conducting a qualitative analysis in the form of a focus group, this study employed a mixed methodology. The authors then proposed a new competency model for instructors, labelled the "Digital Instructor Model," within the context of innovative and virtual learning, encompassing five aspects: strategic; pedagogical; technical skills; human resource management; and technological readiness. The objective is to assist in the development of digital instructor skills and to meet the needs of digital-age students. The model will serve as a guide for carrying out effective digital instructions supporting successful implementations of e-learning systems.
Keywords: Digital Instructor, Human Resource Management, e-learning, Models.

1. Introduction

The goal of HRM operations is to help organizations achieve their objectives by putting out initiatives and providing assistance and direction on matters pertaining to employees who work for the organization. A digitally competent workforce can assist in reinforcing the foundational pillars required to mobilize digital innovations to revolutionize economies, societies, and governments, including e-government services, commercial products, and news, as well as engage with the larger educational community (Bashir & Miyamoto, 2020). The efficient use of technology by educational institutions is largely dependent on HRM practices. Since e-learning is a requirement for 4th generation education, which is demanded by 4th generation industries, educational institutions were forced to relocate and fully utilize advanced technology

in teaching practices. Not all actors have been adequately prepared to adapt to this change, instructors' capacity to handle online and virtual learning is crucial to promising its successful deployment (Alainati S. , 2015). However, the importance of instructors in adopting online and virtual learning cannot be overstated (Alainati, Al-Hammad, & Alhajri, 2023). Instructors play a crucial role in the context of Human Resources and online learning delivery. In online learning environments, instructors are responsible for facilitating and guiding the learning experience for learners, providing feedback and support, and evaluating learners' performance to ensure that the program meets the learning objectives of the organization.

A digital citizen is someone who regularly uses digital technologies for social interaction, community building, and information gathering and dissemination. They should be conscious of their actions on the internet, take precautions to safeguard their personal information, and engage in civil discourse with others (İşman's & Canan Gungoren, 2014). In online education, "digital instructors" are teachers who primarily rely on digital tools to convey course materials and facilitate student interaction. They must act as role models for their students by demonstrating ethical and responsible use of technology in all their online interactions (Falloon, 2020). The foundation for innovation, knowledge improvement, and the digital economy rests on the digital skills of educators, which encompass a wide range of domains and competencies and require distinct models and frameworks that specify the relevant competencies and proficiency levels (Alainati S. , 2021 B). Because of their shared participation and responsibilities to the online community, digital instructors and digital citizens have inextricable bonds. The role of digital educators in instilling in their students a sense of responsibility as a member of the global community and encouraging ethical conduct in the digital sphere is crucial. Instructors must have a thorough grasp of digital safety, citizenship, and data privacy, in addition to essential skills like information literacy, communication literacy, problem-solving, critical thinking, and digital content creation. Furthermore, they must demonstrate responsible and ethical use of digital technologies at all times (Van Laar, Van Deursen, Van Dijk, & De Haan, 2020). They can aid their students' development as responsible and ethical digital citizens by incorporating digital citizenship principles into their lessons (Tohara & Al, 2021).

We are currently witnessing the development and entry of emerging technology in several fields such as Data Science, Artificial Intelligence, Nano Technology, the Internet of Things- IoT, Simulation, and Virtual and Augmented reality (Philbeck & Davis, 2018). In higher and continuing education, the use of e-learning methodologies is becoming a common resource. The fast expansion of ICTs has transformed the world and transformed classical teaching methods into Technology Enhanced Learning (TEL) systems to accommodate stakeholder groups in their educational institutions' teaching and learning activities. Many higher education institutions are seeing the move to the development of instructors' capacity, known as "digital instructors", to the development of e-Courses merging traditional courses with online learning opportunities (Rudestam & Schoeholtz, 2010; Adeoye, 2020). Further obstacles to the successful implementation of integrated e-learning systems include the instructors' ability to utilize the technological tools. The accelerated application and investment in technology have

altered education, and instructors play a crucial role in the transition to 21st-century learning standards and methods. These changes necessitate a variety of behaviors, including creativity, abilities, awareness, and dependability in the work of implementing, leading, and interacting with others (Ally, 2019).

This study will propose recommendations by proposing a new instructor competency model "Digital Instructor Model" in the context of innovative and virtual learning as well as a road map for successful e-learning implementations so policymakers, scholars, and developers can consider improvement possibilities for a wide implementation of e-learning platforms and systems that satisfy not only digital instructors but also stakeholders such as students, administrators, and parents. In a broad sense, digital skills for instructors working in educational institutions involve various domains and competencies and necessitate distinct frameworks or models that specify the relevant competencies and proficiency levels, which are regarded as a foundation for innovation, knowledge enhancement, and the digital economy (Falloon, 2020).

This article is organized as follows. Section 2 defines the research objectives, while Section 3 explains the research methodology. Section 4 reviews the relevant literature focusing on digital instructors' competencies and skills needed for the innovative learning environment. Section 5 presents the results of the focus group discussion, while section 6 proposes the new "Digital Instructors' Model". Finally, section 7 draws the conclusion.

2. Research Objectives

The evolving technologies now adays focused on e-learning within digital instructors and competencies. It is therefore anticipated that the research will be significant by developing a new instructor competency model, empowering the digital instructor, which can promote the successful implementation of innovative learning. We expect the results to be useful for the academic community in their quest to ensure instructors engage more actively and thus improve teaching and learning processes being skilled in innovative learning in the digital era. The proposed model should be developed in light of identified critical factors, and international practices as discussed in the literature review, as well as strong management support. In addition, the outcome of the focus group discussion contributed to the proposed digital instructors' model. Independent tiers will be provided within the model and implementation framework to ensure efficient design and development of the e-learning environment. The proposed model can be used as guide to develop the skills of the digital instructor, which expands learners' ability to engage in non-linear, interactive, and pervasive learning experiences to satisfy the needs of digital-age learners, Specific Objectives are:

1. Review the literature concerning e-learning practices to understand success stories and research results for digital instructors and related competency models and frameworks.
2. Investigate issues related to enhancing the competencies of the digital instructor, barriers, and future trends in innovative learning to further their knowledge of working in the new e-learning environment through a focus group session and other interviews.
3. Propose a new instructor competency model "Digital Instructor" to effectively adapt the efficient use of technologies and pedagogical and behavioral dimensions.

3. Literature Review

Many e-learning frameworks and models have been proposed to explore and outline e-learning issues. However, these frameworks mainly cover common e-learning issues including technology infrastructure, course development, and learning outcomes and less focus on the development of instructors' competency "Digital Instructor", particularly in the Arabic context (Al-Hunaiyyan, Alhajri, Alzayed, & Alraqqas, 2016). According to (Nutsubidze & Schmidt, 2021), most educational institutions train instructors to use online and virtual learning, focusing on the use of technology such as learning management systems (LMS) and other related technical issues (Al-Hunaiyyan, Al-Sharhan, & Al-Hajri, 2020). Among the obligations imposed on instructors using e-learning are consistent participation and prompt communication, as well as acting as facilitators of group discussion, guides for students, and on-hand advising (Jackson, 2019; Al-Hunaiyyan, Alhajri, Al-Ghannam, & Al-Shaher, 2021 A). Technical skills alone are insufficient in this changing environment; instructors must also acquire the skills of modeling learners' social and cognitive abilities (Al-Hunaiyyan, Alhajri, & Al-Sharhan, 2018; Alainati S. , 2021 A). The biggest challenge will be the continuous professional development of instructors to keep pace with developments in the information and technology field. Therefore, the spread of artificial intelligence (AI), the use of data science, and the proliferation of talent cities in schools increase the need for advanced skills in the management of the educational system and the preparation of educational content (Jackson, 2019).

3.1. Pedagogical Approaches: Design and Delivery of Online Learning

Pedagogical approaches are essential for teaching, which encompass knowledge, skills, attitudes, and values (From, 2017). These approaches encourage active learning, critical thinking, and problem-solving, empowering students to effectively tackle sustainability challenges using digital technologies (Eufimia & Tafa, 2019). According to (Bodsworth & Goodyear, 2017), It is essential to investigate pedagogy and digital competencies, including specific teaching methods and facilitation. Moreover, technology integration, instructor competency, desire for change, digital access, and resources are all vital factors that must not be overlooked (Alainati, Alshawi, & Al-Karaghouli, 2009; Alainati S. A.-K., 2010). Numerous studies have highlighted gaps in instructor digital competencies (Al-Hunaiyyan, Al-Sharhan, & Al-Sharrah, 2012; Alainati S. , 2021 A; Alainati, Al-Hammad, & Alhajri, 2023; From, 2017; Bigatel, Ragan, Kennan, May, & Redmond, 2012; Falloon, 2020). Despite this, many countries still rely on traditional teacher-centered instruction and routine learning, while blended learning initiatives are gaining traction. Face-to-face teaching combined with digital resources and mobile technology has facilitated innovative pedagogical approaches (Eufimia & Tafa, 2019; AL-Sharhan, Al-Hunaiyyan, & Gueaieb, 2006).

Instructors' role in online collaborative learning is to facilitate, guide, and support learners in achieving their learning goals creating an environment that encourages collaboration, active participation, and learning (Gudmundsdottir & Hatlevik, 2018). There are several models and frameworks that can be used by digital instructors to design and develop effective online courses that meet the needs of different learners (Alhajri, Al-Sharhan and Al-Hunaiyyan; A. Al-Hunaiyyan). A study conducted by (Hadollu, 2021) to create a Competency-based education

(CBE) Framework that can be supported by Moodle LMS to successfully offer online Courses. According to (Pearson, 2015) CBE describes an approach of instruction, assessment, grading, and academic reporting, that focuses on students demonstrating that they have acquired the needed information and abilities as they advance through their educational journey, improving instructors' understanding of future digital education (Ally, 2019; Pearson, 2015). However, (Hadollu, 2021) stated that little is known about how to develop, design, and implement an online supported CBE programs to ensure that students complete activities. In order to establish an online CBE framework suitable for education in Kenya, he presented theoretical viewpoints on CBE, and identified the most critical elements in determining the effective implementation of an Online CBE program in HEIs, according to the study.

Students learn synchronously and asynchronously and create effective communication processes for online learners to construct new knowledge in collaboration with peers (Hennessy, et al., 2022; Dooley, Lindner, & Richards, 2003). They can research best practices in online engagement and use key and intelligent functions of learning management systems (LMS) (Al-Hunaiyyan, Alhajri, Alzayed, & Alraqqas, 2016). On the role of instructors in e-learning, a substantial amount of research has emerged. The model developed by (Yengin, Karahoca, Karahoca, & Yucel, 2010) outlines the steps instructors can take to develop content for online learning that effectively engages students. It also provides instructors with access to free tools for producing interactive learning. Similarly, (Brown, Bird, Musgrove, & Powres, 2017) utilize a variety of innovative strategies, such as merging learning theory and technology, innovative problem-solving using technology, including more technological tools for practical application, and displaying knowledge through technology (Alainati, AlShawi, & Al-Karaghouli, 2011). In the meantime, the authors (Zareie & Navimipour, 2016) examined the relationship between e-learning systems and instructor commitment and discovered that the latter was significantly influenced by four variables: learner satisfaction, anytime access to learning resources, personalized learning, and efficiency. Additionally, (Liu, Zhao, & Su, 2022) investigated instructors' perceptions of students' online learning outcomes and the extent to which such outcomes could be predicted by instructors' resilience and online delivery competence.

Instructors use in education is to promote the development of 21st-century abilities among students (Koh, Chai, & Lim, 2017; Ally, 2019; Falloon, 2020). Evaluation and quality assurance are important factors in achieving such a goal. It is essential to introduce some models and frameworks that can be used by managements and instructors to evaluate the effectiveness of online learning. The Quality Matters Rubric is a framework (QM, 2018) was developed for evaluating the quality of online courses. The rubric includes eight general standards, each with specific criteria, that cover course design, assessment, and course delivery. Instructors can use this model to evaluate their online courses and to identify areas for improvement. While Universal Design for Learning (UDL) Framework (CAST, 2011), is a set of principles and guidelines that can be used to design inclusive and accessible online learning environments. This framework provides multiple means of representation, expression, and engagement to support learning needs.

3.2. Instructors' Digital Competencies in the Digital Era

According to (Nutsubidze & Schmidt, 2021), most educational institutions encourage their instructors to use online and virtual learning while training them on the use of technology such as learning management systems and other related services, such as setting up online tests and sending files and notifications. Less focus was given to e-content development, as well as issues related to cultural and behavioral connection, collaboration, and relationship development amongst instructors and between instructors and learners (Al-Hunaiyyan, Alhajri, Alzayed, & Alraqqas, 2016; Alainati, Al-Hammad, & Alhajri, 2023). In a successful online learning environment, instructors must consistently participate, communicate effectively, and provide students with direction, encouragement, and empathy. Instructors must possess a wide range of technical and operational skills, social skills, and content preparation skills which will be a feature of the "instructor of the future," whose role will be to lead the educational process (Al-hunaiyyan, Al-sharhan, & Al-sharah, 2012; Ally, 2019). Accordingly, the biggest challenge will be the continuous professional development of instructors to keep pace with developments in the information and technology field; The spread of artificial intelligence (AI), the use of data science, and the proliferation of talent cities in schools increase the need for advanced skills in the management of the educational system and the preparation of educational content.

The authors (Al-hunaiyyan, Al-sharhan, & Al-sharah, 2012) proposed an Instructional Competency Model. The model stressed behavioral, social, and cultural dimensions due to their importance (Al-Hunaiyyan & Al-Sharhan, 2009). The model demonstrates how an instructor can gradually improve their competence levels with a focus on planning instructional design, and e-Content development. Another useful framework was created by (Pérez-Sanagustin, Kotorov, Teixe, Mansilla, & Broisin, 2022) for recognizing the teaching and learning competencies targeted by institutions, their shortcomings, and their planned modifications. In particular, the analysis demonstrates that most institutions had instructor training programs in place prior to this period, primarily in the areas of digital technology and pedagogical quality, but that other efforts have since been implemented, such as students' support actions, were created to reinforce them.

According to (Dooley, Lindner, & Richards, 2003), areas of competence are important factors in today's teaching and learning. They listed ten important competencies for digital instructors that needs considerations: "Course planning and organization; Verbal and nonverbal presentation skills; Collaborative teamwork; Questioning strategies; Subject matter expertise; Involving students and coordinating their activities at field sites; Knowledge of basic learning theory; Knowledge of the distance learning field; Design of study guides; Graphic design and visual thinking". They believe that these skills and competencies facilitate instructor-student relationships, which are crucial for effective learning and motivation. Ideas that were effective in conventional classrooms must now be adjusted to support effective online learning (Adeoye, 2020). It is stated by (Dooley & Lindner, 2002), that any instructor competencies are applicable to both in-person and online instruction and added that an online teacher's professional development plan should include online learning competencies. In addition, (Alainati S. , 2021 A) proposed an HRM-Instructure Competency Model as a guide to educational institutions to

support virtual and blended learning in critical situations such as Covid-19 crisis. The research has shown that HRM practices have adapted to incorporate online education, new learning technologies, and ensure student and instructor competence (Al-Hunaiyyan, Alhajri, & Bimba, 2021 B).

Online learning practices and competencies were reviewed by (Bigatel, Ragan, Kennan, May, & Redmond, 2012). This empirical study aimed to determine faculty perceptions of the most crucial teaching behaviors linked with effective online instruction. The study contained 64 teaching activities that were connected and assessed to identify seven primary online teaching qualities. Furthermore, an interesting study was conducted by (Farmer & Ramsdale, 2016) to identify key competency areas that lead to success in online instructions. The resulting analysis produced the Online Teaching Competency (OTC) Matrix including five competency areas: Community & Netiquette, Active Teaching/Facilitating, Instructional Design, Tools & Technology, and Leadership and instruction (Almonawer, et al., 2023).
According to (Redecker, 2017), instructors must now possess a broader and more sophisticated set of competencies than in the past due to the rapid evolution of educational expectations. Specifically, the prevalence of digital devices and the obligation to assist students in becoming digitally competent necessitate educators to develop their digital competence. The DigCompEdu framework developed by to (Redecker, 2017), in cooperation with European Commission's science and knowledge service, includes general and vocational education and training, special needs education, and non-formal learning environments. It seeks to provide a broad framework for Digital Competence model creators. Areas and scope of the framework include educators' professional competencies; educators' pedagogic competencies; and learners' competencies (McGarr & Mcdonagh, 2021).

4. Methodology

To achieve the study objectives, the researcher will perform a thorough literature review method to determine the current situation, related issues, and barriers of online learning, within the context of digital instructors and the technical skills for the digital era. In addition, the authors of this article will review and analyzed international distance and e-learning models and frameworks with an emphasis on instructor competency models and frameworks, accordingly, proposing a new integrated Instructor Competency Model. An integrated research method was followed based on the precepts of systems thinking (Elias & Cavana, 2011; Raza, Siddiqui, & Standing, 2018). Hence, the first step is to identify the system in focus (Kuwaiti educational institutions) and define its boundary and principal stakeholders (instructors).

1. Boundary & Stakeholders Definition
2. Primary Acceptance Factors Extraction (literature)
3. Contextual Acceptance Factors Extraction (environment)
4. Factors-Focus Group Transformation
5. Analysis & Recommendations
6. Proposed an Integrated Instructor Competency Model
7. Implementation Framework and Roadmap Presentation

The second step consists of a thorough literature review concerning e-learning practices to understand success stories and research results for digital instructors and related competency models and frameworks. The third phase necessitates the identification of contextual elements affecting the digital instructor by both sets of stakeholders; hence, factors identified in the literature are integrated in actual occurrences in the investigated environment. The fourth phase includes the transformation of the outcome of the focus group discussion emphasizing identified critical factors and international practices. A focus group session was organized in which 15 faculty members from the College of Business Studies in Kuwait were involved. The objective was to find in-depth issues related to the requirements of the digital instructor in specific and innovative learning in general. Finally, the new instructor competency model will be developed and a roadmap toward successful implementation are presented.

5. Results and Discussions

5.1. Faculty Perceptions of Online Learning: Kuwait Case Study

5.1.1. Focus Group Discussion

A discussion session was organized at the Public Authority for Applied Education and Training (PAAET), in which 15 instructors were involved to participate in a focus group session considering their individual differences (Alhajri and Al-Hunaiyyan; Alhajri, Al-Sharhan and Al-Hunaiyyan; Alhajri, Al-Hunaiyyan and Almousa). The objective was to ask the participants to give their opinions, notes, and ideas about their experiences, including their recommendations about the use of online learning including instructors' role and skills in the online learning environments. By utilizing a qualitative approach, we can gain insight into the rationales, perspectives, motivations, and opinions of participants. This understanding can lead to the generation of new ideas and insights into challenges. The session took place in a college meeting room and was led by the main researcher. The study participants were encouraged to discuss potential problems and offer recommendations. The session lasted approximately one hour.

5.1.2. The Study Outcome

In the discussion session, the participants discussed the advantages and disadvantages of online learning. Some participants mentioned that online learning was a helpful solution during the pandemic. Others enjoyed teaching online, especially with a smaller number of students. A faculty member noted that online learning motivated both instructors and students to improve their technological skills. The college also provided online training to upskill instructors. One participant found it useful for sending assignments to all students. Additionally, online platforms offer many helpful features for instructors. Another participant noted that online learning prepares students for the labor market by using more technology. Using e-learning platforms also creates a paperless environment and streamlines the exam correction process. During the focus group session, it was mentioned that cameras help monitor students during exams and the help desk provides fast technical support. Online learning also allows instructors to use multiple media and tools for teaching, making it efficient and time-saving. Summarizing instructors' feedback about the advantages of online learning includes Flexibility of online learning (allows students to learn at their own pace and convenience) was emphasized. In

addition, Personalized learning (Online learning can be tailored to individual student needs) was also stressed. In addition, Diverse learning materials (Online learning can provide access to a wide range of multimedia resources). Similarly, Increased accessibility (Online learning can provide access to education anytime anywhere). In addition, Increased collaboration, and participation (greater collaboration and participation among students through virtual discussion boards, group projects, and other interactive activities), and Cost-effectiveness (Online learning can be less expensive than traditional classroom-based learning, as it can eliminate the need for physical classroom space and course materials).

Summarizing instructors' feedback about the advantages of online learning includes Flexibility of online learning (allows students to learn at their own pace and convenience) was emphasized. In addition, Personalized learning (Online learning can be tailored to individual student needs) was also stressed. In addition, Diverse learning materials (Online learning can provide access to a wide range of multimedia resources). Similarly, Increased accessibility (Online learning can provide access to education anytime anywhere). In addition, Increased collaboration, and participation (greater collaboration and participation among students through virtual discussion boards, group projects, and other interactive activities), and Cost-effectiveness (Online learning can be less expensive than traditional classroom-based learning, as it can eliminate the need for physical classroom space and course materials).

Various drawbacks have been identified concerning online learning. Some educators find teaching certain subjects challenging and struggle to communicate with students and maintain classroom discipline remotely. Additionally, e-learning platforms have been misused by both instructors and students, while poor internet connectivity poses a significant obstacle, particularly on campus. Some argue that students lack a private and quiet place to engage effectively online, and that digital educational content is limited. Others note that instructors rely too heavily on PowerPoints, neglecting textbooks, and that students cheat easily on online exams. One faculty member highlights the difficulty of observing students' facial expressions on small cell phone screens, while others point out that online learning poses greater challenges for students with learning disabilities. Cultural issues also arise, particularly when asking female students to turn on cameras. Students often lack adequate technical support, and some may attend online classes without actively participating. Poor interaction between students and instructors is another issue, and some students may find it challenging to stay focused during online teaching. Finally, some instructors lack the skills to use online tools and features effectively.

Summarizing instructors' feedback about the disadvantages of online learning includes Poor engagement and motivation (Students may feel less motivated to participate actively in online classes, leading to reduced engagement, which can lead to less effective learning outcomes and lower student achievement). In addition, Cheating (Online learning can create more opportunities for cheating as students can access online resources or receive help from others). Technical difficulties (Online learning requires a reliable internet connection, suitable hardware, and software, which can be challenging for some students) were emphasized as disadvantages of online learning. Furthermore, it increased instructor workload (Online

learning can create more workload for instructors, as they must adapt to new technology, develop, and implement new teaching strategies, and monitor students' progress closely). Similarly, limited assessment options (Online assessments can be limited in terms of the type and scope of questions that can be asked, which may not accurately measure the depth of students' understanding of the subject).

5.2. A New Digital Instructors' Model

The application of digital education or the development of smart digital schools must be in accordance with a clear strategy and through a scientific model that defines its pillars, and an integrated operational framework through which it implements its various components that make up the system and integrates them in an effective and accurate manner (Al-Hunaiyyan A. , Al-Sharhan, Al-Hajri, & Bimba, 2021 C). The goal is to achieve the best-desired results from applying the digital school system and ensure its success so that it can provide educational potential using unique educational resources and tools, learning management systems (LMSs) or smart learning experience management systems (LXPs). In addition, interactive e-curricula, digital libraries, resources, and enrichment materials, regularly help students develop their scientific abilities and skills, enabling them to handle modern knowledge. The new model should also include empowering faculty members to develop their educational abilities and digital tools; to be instructors of the learning process.

A new "Digital Instructor Model" for immersive learning is shown in Figure 1. Components are interconnected; failure in one can cause problems in the whole implementation. The model is efficient, taking all success factors into account, and is based on the national distance learning strategy with stakeholder engagement. Implementation should consider all aspects of instructors' and stakeholders' interest. Here is the model's anatomy:

5.2.1. Strategic Level

The main requirements for successful e-learning transformation include strategic planning, change management, and delivery support. This involves developing a clear mission statement, faculty training, proper ICT infrastructure, and culture change. A comprehensive strategic plan should outline technology adoption,

curriculum development, instructor digital capability, and learner engagement. The plan should also define an implementation roadmap with major milestones, timescales, and dependencies. Aligning immersive learning environments with national education strategies is crucial for achieving educational goals. Proper governance, planning, and change management principles are necessary for the successful adoption of new technologies and processes ensuring the sustainability of the e-learning strategy beyond the initial transformation phase, including maintenance, updates, and continuous innovation. Engaging stakeholders and communicating the goals and benefits of e-learning transformation is essential for ensuring transparency and gaining support from the wider community.

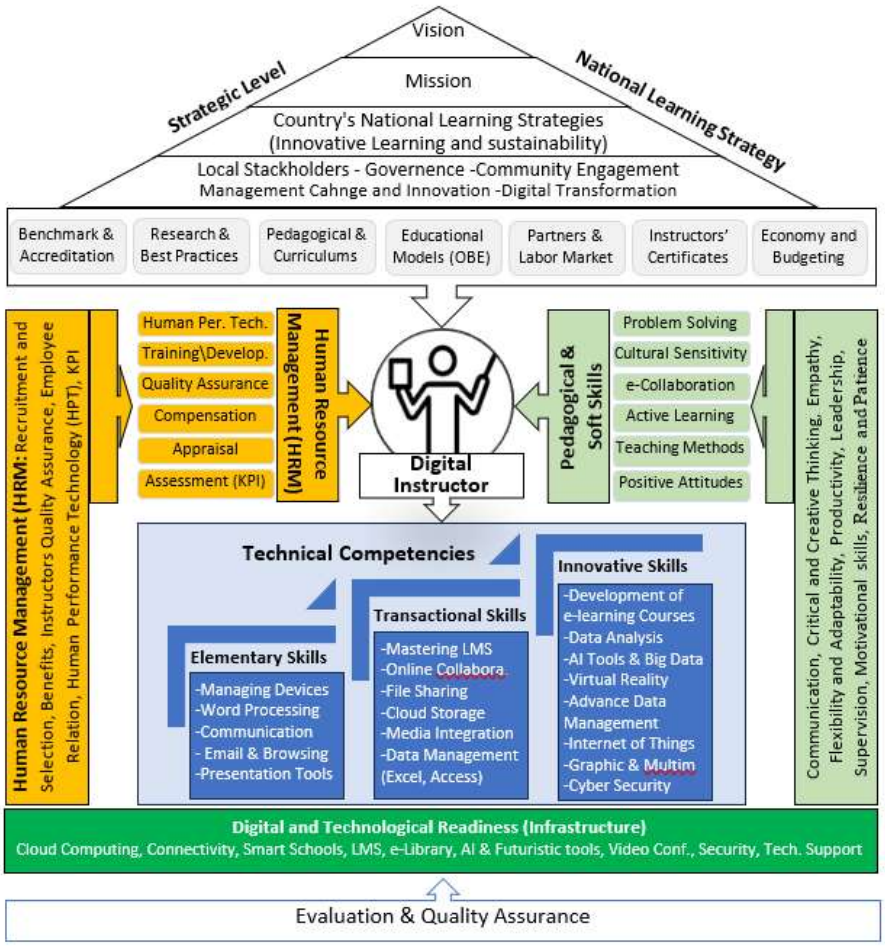

Figure 1. Digital Instructor Model

Educational institutions must utilize benchmarking, research, and best practices to accurately measure their progress and compare their efforts in providing industry-aligned best practices to digital instructors. Research studies are crucial in evaluating the effectiveness of digital instructors and gathering evidence of their impact. It is imperative to partner with relevant stakeholders to ensure that instructors are highly effective in meeting the needs of students and schools. Accreditation can play a significant role in supporting the provision of digital instructors for educational institutions by ensuring quality, accountability, and alignment with educational standards. In addition, the effectiveness of digital teaching in educational institutions heavily relies on curricula and educational models such as the outcome-based education (OBE) approach. To ensure successful digital instruction, instructors must adopt a learner-centered instructional approach and tailor content, activities, and assessments to meet diverse learning needs in virtual environments. Colleges of Education have a vital role in preparing future instructors with the skills, knowledge, and attitudes required to effectively incorporate digital technologies and encourage the development of digital competence. This includes the teacher's ability to use digital tools, resources, and pedagogies in their teaching practices and to guide students in navigating the digital world responsibly (Hennessy, et al., 2022). Therefore, a well-designed curriculum is essential in equipping digital instructors with

the necessary knowledge, skills, and strategies to effectively teach in online and digital learning environments. Furthermore, certificates for instructors play a crucial role in validating their competencies and readiness to effectively teach in digital and online learning environments.

5.2.2. Pedagogical Approaches & Soft Skills

To enhance learning with digital instructors, a pedagogical framework should be established that aligns with learning objectives and educational standards. Digital instructors should be integrated into the curriculum, and resources for digital pedagogy should be provided, as well as training on digital tools and platforms. In addition, soft skills are crucial for successful online interactions and meaningful learning experiences. Effective communication, empathy, student-centered learning, positivity, conflict resolution, resilience, cultural sensitivity, and adaptability are essential skills for digital instructors in online teaching. They should be able to convey instructions, explanations, and feedback effectively through written and verbal communication, inspire and motivate students, foster a sense of enthusiasm for learning, and create an inclusive environment where all students feel valued. Additionally, they should remain resilient, patient, and composed under pressure, and be open to adjusting their teaching methods, content, and activities based on student needs and feedback.

Effective time management, problem-solving, critical thinking, and collaboration skills are essential for digital teachers and students. Digital instructors should organize their time to provide timely feedback and support. They should be skilled at troubleshooting technical issues and finding creative solutions to ensure smooth learning experiences. Additionally, they should encourage critical thinking skills and promote collaboration among digital teachers and students. In addition, Creativity and innovation are essential for instructors to design engaging online activities and interactive content, enhancing the learning experience. Digital teachers should use positive reinforcement, set achievable goals, and celebrate student successes to motivate students in online environments. Lastly, digital instructors should take on a leadership role by guiding discussions, facilitating online activities, and creating a sense of direction in the virtual classroom.

5.2.3. Technical Skills

One of the biggest challenges in adopting e-learning successfully is the technical skills of instructors. Before introducing new technology to a traditional environment, it's important to evaluate the users' knowledge and skills and assess the instructors' and management's training needs to ensure successful implementation of the e-learning components (Al-Sharhan & Al-Hunaiyyan, 2012). The literature discusses the technical skills required for digital instructors (Al-Hunaiyyan, Al-Sharhan, & Al-Sharrah, 2012; ITU, 2018 B; Farmer & Ramsdale, 2016; Alainati S. , 2021 A). Al-Hunaiyyan et al (2012) presented a model for developing teachers' computer skills, which relied on a gradual ladder of six degrees. Meanwhile, ITU 2018 B, Farmer, and Ramsdale (2016) divided digital skills into three levels: beginner, intermediate, and advanced. The proposed model classifies technical skills into three levels: elementary, transitional, and innovative, presented on a ladder. Mastering the first step takes the instructor into the second step.

Instructors should have elementary skills in using a computer, managing files, navigating an operating system, basic knowledge in word processing, sending emails and attachments, online communication, internet search, online resource evaluation, and proficiency in tools like Microsoft PowerPoint for presentations. Instructors should also have transitional skills in using LMS platforms such as Moodle, uploading content, managing student interactions, conducting virtual online classes through tools like Microsoft Teams, Zoom, or Google Meet, and storing and sharing documents through cloud-based storage services like Google Drive, Dropbox, or OneDrive; Ability to incorporate multimedia elements (images, videos, audio) into teaching materials and presentations (Al-Hunaiyyan, Hewitt, Jones, & Messer, 1999); Understanding of spreadsheets (e.g., Microsoft Excel, Google Sheets) for data management and simple data analysis. Innovative skills include the development of interactive learning courses; proficiency in data analysis and visualization tools (e.g., Excel); analyzing educational data and creating visualizations for insights; applying artificial intelligent and futuristic Tools; utilizing big data and the Internet of Things; using and developing virtual and augmented reality applications; mastering advance data management applications, emphasizing on Cyber Security; proficiency in using graphic design software (e.g., Adobe Photoshop) and video editing tools (e.g., Adobe Premiere).

Professional digital instructors use technology to design and deliver online courses leveraging the available infrastructure and devices. They design mobile-friendly courses and use virtual and augmented reality to create immersive experiences. Artificial Intelligence (AI) can also aid digital instructors with tools for personalization, adaptive learning, intelligent feedback, automation, and natural language processing, freeing them to focus on teaching and supporting learners instead of administrative tasks. As far as quality assurance, digital instructors can ensure that their courses are designed and delivered in a way that promotes effective learning outcomes for their students by using evaluation metrics.

5.2.4. Human Resources Management

The goal of human resource management (HRM) operations is to help organizations achieve their objectives by putting out initiatives and providing assistance and direction on matters pertaining to employees who work for the organization. The efficient use of technology in teaching and learning by educational institutions is largely dependent on HRM practices. Since e-learning is a requirement for 4th generation education, which is demanded by 4th generation industries, educational institutions were forced to relocate and fully utilize advanced technology in teaching practices. Not all actors have been adequately prepared to adapt to this change: instructors' capacity to handle online and virtual learning is crucial to promising its successful deployment. (Alainati S. , 2015). However, the importance of instructors in adopting online and virtual learning cannot be overstated (Alainati, Al-Hammad, & Alhajri, 2023). HRM plays various roles in corporate structures, but in education, especially universities and colleges, these roles must align with sector requirements (Menon, 2015). The shift to digital teaching has raised concerns about the preparedness of instructors and students for this new mode of learning and how it affects the quality of education (Sahu, 2020; Nutsubidze & Schmidt, 2021; Al-Doub, Goodwin, & Al-Hunaiyyan, 2008). HRM's importance has increased in assisting with the digital transformation of education. The use of technology in education relies heavily on HRM

practices. Educational institutions have been compelled to utilize advanced technology to improve teaching and learning. Human Performance Technology (HPT) aims to improve the performance and productivity of individuals and organizations, analyzing instructors' performance. Its goal is to close performance gaps, optimize human performance, and achieve better outcomes. Digital instructors can be utilized to deliver targeted learning solutions, enhancing the effectiveness and efficiency of learning initiatives.

Recruitment and selection are crucial HRM elements to ensure sufficient staffing levels for every position, with a focus on hiring high-quality instructors who are digitally oriented. Once hired, organizations must provide training and development opportunities to improve employee skills (Alhouti, 2020). Performance appraisal is effective in directing behavior and monitoring goal achievement. In-house appraisal systems should be developed to assess individual performance as opposed to relying solely on compulsory forms of appraisal (Menon, 2015). Compensation for active instructors is a central HRM function, but some countries do not tie promotions or bonuses to performance. Relationships between instructors, administrators, and management are essential in educational institutions, and instructors should be encouraged to speak out about concerns regarding their work. Administrators have the responsibility of keeping instructors informed about ongoing technological and pedagogical trends to ensure competency in digital migration in teaching and learning. Data analytics is crucial for HR managers and administrators to make informed decisions about instructors' recruitment, engagement, performance, compensation, training, and more. Educational institutions cannot afford to ignore this key tool if they want to achieve greater success. It's time to embrace data analytics as a necessary aspect of effective HR management.

Ensuring instructors' competency in digital migration in teaching and learning adds another complexity to the evaluation process and forces educational institutions to consider technical features, social norms, and pedagogical issues, including learning strategies, learners' access, informality, engagement, and ubiquity.

5.2.5. Digital and Technological Readiness

To support digital instruction, a reliable technology infrastructure is needed, including high-speed internet, devices, Cloud Computing, Connectivity, Smart Schools/campus, LMS, educational portal, LXP, e-Library, AI & Futuristic tools, e-content development tools, Video Conferencing, data security, and Technical Support. The main objective of this component is to integrate smart technologies into traditional classrooms, creating a modern and effective learning space for both instructors and students. This component also forms the core of a private distance learning cloud to serve schools at a national level. The LMS serves as the core system for creating Technology Enhanced Learning (TEL). It is responsible for administering online courses, tracking student activities, delivering electronic learning material, and reporting the learning process and students' performance. Additionally, it includes a complete hierarchy of public websites for different stakeholders in the distance learning initiative. The e-library, or digital library, provides access to huge scientific and international research databases, eBooks, and other online resources required during the learning process. The e-library is accessible 24/7 through computing and mobile devices. Lastly, data security is crucial for educational institutions to protect sensitive information, uphold privacy, and maintain the trust of students,

parents, staff, and the broader community. Implementing robust data security measures is an essential responsibility for institutions operating in the digital age.

5.2.6. Evaluation and Quality Assurance

Ensuring instructors are competent in digital teaching adds complexity to evaluation. Institutions must consider technical features, social norms, and pedagogical issues such as learning strategies, access, informality, engagement, and ubiquity. Quality assurance is a challenge; clear QA of online content and teaching is required (Al-Sharhan and Al-Hunaiyyan). Educational institutions should foster a culture of continuous improvement by regularly refining the e-learning strategy based on feedback, data analysis, and changing needs. Key performance indicators (KPI) should measure the success of the e-learning strategy transformation, and instructors' performance in the digital learning strategy should be evaluated. Comprehensive training and professional development programs for instructors are essential to ensure they are comfortable using digital tools and technology effectively in their teaching practices.

6. Conclusion

In this new digital age, citizens' access to knowledge is greatly improved. Digital citizens are individuals who use digital technology to interact with others, participate in online communities, and consume and share digital content. They have a responsibility to be aware of their online behavior, protect their privacy and personal information, and engage in respectful and responsible online communication. Digital skills constitute foundational pillars of the digital economy and are defined as the ability to find, evaluate, use, share, and create content using digital devices. A digitally competent workforce can assist in reinforcing the foundational pillars required to mobilize digital innovations to revolutionize economies, societies, and governments, including e-government services, commercial products, and news, as well as engage with the larger educational community. This paper addressed issues related to instructors' competency models and other models and framework covering areas of education so that instructors can benefit from. The authors' developed a new instructor competency model "Digital Instructor Model" to effectively adapt the efficient use of technologies in the context of teaching and learning. The framework was developed in light of identified critical factors, international practices, and instructors' feedback and comments. The framework emphasizes on instructors' competency in the digital world, and hence independent tiers were provided within the implementation framework to ensure efficient design and successful development and delivery of e-learning systems.

Acknowledgment

This research was supported and funded by the Public Authority for Applied Education and Training, project number: BS-22-06.

References

1. Adeoye, B. (2020). The Era of Digital Technology in Teaching and Learning in Nigeria Educational Institutions. In B. F. Adeoye, *The Roles of Technology and Globalization in*

Educational Transformation. Hershey, PA: IGI Global, 2020. http://doi:10.4018/978-1-5225-9746-9.

2. Alainati, S. (2015). Factors affecting individuals' competency in organisations using knowledge creation model and HRM practices. *Doctoral dissertation*. London, UK: Brunel University.
3. Alainati, S. (2021 A). Instructors' Competency Model During COVID-19 Crisis: Human Resource Management Perspective. *IOSR Journal of Business and Management (IOSR-JBM). Volume 23, Issue 10. er. II*, 29-39.
4. Alainati, S. (2021 B). Towards an Effective Competency-based Education and Training Model. *IOSR Journal of Business and Management (IOSR-JBM). Volume 23, Issue 11. Ser. I (November. 2021)*, 31-40.
5. Alainati, S. A.-K. (2010). The effect of education and training on competency. *European and Mediterranean Conference on Information System.* Abu Dhabi, UAE.
6. Alainati, S., Al-Hammad, F., & Alhajri, R. (2023). Instructors' Perceptions, Motivations, and Competences in e-Learning: The Case of College of Business Studies – Kuwait. *Journal of Business and Management (IOSR-JBM)*.
7. Alainati, S., Alshawi, S., & Al-Karaghouli, W. (2009). Competency in the context of knowledge management. *In European and Mediterranean Conference on Information Systems*, (pp. 1-8).
8. Alainati, S., AlShawi, S., & Al-Karaghouli, W. (2011). The Effect of Knowledge Management and Organisational Learning on Individual competencies. In. *European, Mediterranean and Middle Eastern Conference on Information Systems . May 30-31, 2011*, (pp. 30-39). Athens, Greece.
9. Al-Doub, E., Goodwin, R., & Al-Hunaiyyan, A. (2008). Students' Attitudes Toward E-learning in Kuwait's Higher Education Institutions. *The 16th International Conference on Computers in Education (ICCE 2008) October*, (pp. 27-31). Taipei, Taiwan.
10. Alhajri, R., & Al-Hunaiyyan, A. (2016). Integrating Learning Style in the Design of Educational Interfaces. *ACSIJ Advances in Computer Science: an International Journal, Vol. 5, Issue 1, No.19 , January 2016. ISSN : 2322-5157*.
11. Alhajri, R., Al-Hunaiyyan, A., & Almousa, E. (2017). Understanding the Impact of Individual Differences on Learner Performance Using Hypermedia Systems. *International Journal of Web-Based Learning and Teaching Technologies. Volume 12. Issue 1. January-March*.
12. Alhajri, R., Al-Sharhan, S., Al-Hunaiyyan, A., & Alothman, T. (2011). Design of educational multimedia interfaces: individual differences of learners. *Proceedings of the Second Kuwait Conference on e-Services and e-Systems*, (pp. 1-5). Kuwait.
13. Alhouti, I. (2020). Education during the pandemic: the case of Kuwait. *Journal of Professional Capital and Community, Vol. 5 No. 3/4*, 213-225.
14. Al-Hunaiyyan, A. (2000). *Design of Multimedia Software in Relation to Users' Culture. Ph.D thesis.* University of Hertfordshire, UK.
15. Al-Hunaiyyan, A., Alhajri, R., Alzayed, A., & Alraqqas, B. (2016). Towards an Effective Distance Learning Model: Implementation Framework for Arab Universities.

International Journal of Computer Application. Volume 6, Issue 5, September-October 2016.

16. Al-Hunaiyyan, A., & Al-Sharhan, S. (2009). The Design of Multimedia e-learning Systems: Cultural Considerations. *Proceeding of the 3rd International Conference on Singals, Circuits and Systems, November 6-8, 2009.* Djerba, Tunisia.
17. Al-Hunaiyyan, A., Alhajri, R., & Al-Sharhan, S. (2018). Perceptions and challenges of mobile learning in Kuwait. *Journal of King Saud University – Computer and Information Sciences Volume 30, Issue 2*, 279-289.
18. Al-Hunaiyyan, A., Alhajri, R., & Bimba, A. (2021 B). Towards an Efficient Integrated Distance and Blended learning Model: How to Minimise the Impact of COVID-19 on Education. *International International Journal of Interactive Mobile Technologies (iJIM). Vol.15, No. 10*.
19. Al-Hunaiyyan, A., Alhajri, R., Al-Ghannam, B., & Al-Shaher, A. (2021 A). Student Information System: Investigating User Experience (UX). *International Journal of Advanced Computer Science and Applications, Vol. 12, No. 2*, 80-87.
20. Al-Hunaiyyan, A., Al-Sharhan, S., & Al-Hajri, R. (2020). Prospects and Challenges of Learning Management Systems in Higher Education. *International Journal of Advanced Computer Science and Applications (IJACSA), Vol. 11, No. 12*, 73-79.
21. Al-hunaiyyan, A., Al-sharhan, S., & Al-sharah, H. (2012). A New Instructional Competency Model: Towards an Effective E-Learning System and Environment. *International Journal of Information Technology & Computer Science (IJITCS) - ISSN : 2091-1610. Volume 5. Issue : September / October 2012.*, 94-103.
22. Al-Hunaiyyan, A., Al-Sharhan, S., & Al-Sharrah, H. (2012). A New Instructional Competency Model: Towards an Effective E-Learning System and Environment. *International Journal of Information Technology & Computer Science (IJITCS), 5*, 94-103.
23. Al-Hunaiyyan, A., Al-Sharhan, S., Al-Hajri, R., & Bimba, A. (2021 C). An Integrated Implementation Framework for an Efficient Transformation to Online Education. *International Journal of Advanced Computer Science and Applications (IJACSA). Volume 12, No. 4*, 52-61.
24. Al-Hunaiyyan, A., Hewitt, J., Jones, S., & Messer, D. (1999). Multimedia interface design in relation to a learner's culture. *Proceeding of The 11th World Conference On Educational Multimedia and Hypermedia & Educational Telecommunications (ED-MEDIA &ED-TELECOM)* (pp. 1187-1192). Seattle, USA: AACE.
25. Ally, M. (2019). Competency Profile of the Digital and Online Teacher in Future Education. *The International Review of Research in Open and Distributed Learning, vol. 20, no. 2*.
26. Almonawer, N., Althonayan, A., Alainati, S., Al-Hammad, F., Rasheedul Haque, & Senathirajah, A. (2023). Transformational Leadership Style and School Transformation: The Case of Secondary Schools in Kuwait. *International Journal of Operations and Quantitative Management, , 2023, 29(1)*, 51–67.
27. Al-Sharhan, A., & Al-Hunaiyyan, A. (2012). Towards an Effective Integrated E-Learning System: Implementation, Quality Assurance and Competency Models. *Proceedings of The*

Seventh International Conference on Digital Information Management (ICDIM 2012). 22-24 August. Macau.

28. Al-Sharhan, S., & Al-Hunaiyyan, A. (2012). Towards an effective integrated e-learning system: Implementation, quality assurance and competency models. In Digital information management (icdim). *Seventh International Conference*, (pp. 274–279). Macau.
29. AL-Sharhan, S., Al-Hunaiyyan, A., & Gueaieb, W. (2006). Success Factors for an Efficient Blended e-learning. *Internet and Multimedia Systems and Applications (IMSA).* Honolulu, Hawaii, USA: The International Association of Science and Technology for Development (IASTED), ACTA Press.
30. Bashir, S., & Miyamoto, K. (2020). *Digital Skills: Frameworks and Program.* World Bank. April 2020.
31. Bigatel, P., Ragan, L., Kennan, S., May, J., & Redmond, B. (2012). The identification of competencies for online teaching success. *Journal of Asynchronous Learning Networks, 16(1)*, 59-77.
32. Bodsworth, H., & Goodyear, V. (2017). Barriers and facilitators to using digital technologies in the Cooperative Learning model in physical education. *Physical Education and Sport Pedagogy, 22(6)*, 563–579.
33. Brown, S., Bird, J., Musgrove, A., & Powres, J. (2017). The Digital Journey: Integrating Technology into Teaching and Learning. In *Encyclopedia of Strategic Leadership and Management.* IGI Global.
34. CAST. (2011). *Universal design for learning guidelines version 2.0.* Wakefield: MA: Author.
35. Dooley, K., & Lindner, J. (2002). Competencies for the distance education professional: A self-assessment to document professional growth. *Journal of Agricultural Education, 43(1)*, 24-35.
36. Dooley, K., Lindner, J., & Richards, L. (2003). Dooley, K. E., Lindner, J. R., & Richards, L. J. (2003). A comparison of distance education competencies delivered synchronously and asynchronously. *Journal of Agricultural Education, 44(1)*, 84-94.
37. Elias, A., & Cavana, R. (2011). *Stakeholder Analysis for Systems Thinking and Modelling.* Retrieved from Reserach Gate. New Zealand: School of Business and Public Management, Victoria University of Wellington: https://www.researchgate.net/publication/253711729
38. Eufimia, S., & Tafa, E. (2019). Pedagogical approaches to digital literacy in early years education. In *The Routledge Handbook of Digital Literacy in Early Childhood.* Routledge.
39. Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development, 68(5)*, 2449–2472.
40. Farmer, H., & Ramsdale, J. (2016). Teaching competencies for the online environment. *Canadian Journal of Learning and Technology, 42(3) doi:10.21432/T2V32J*.
41. From, J. (2017). Pedagogical Digital Competence—Between Values, Knowledge and Skills. *Higher Education Studies, 7(2)*, 43–50.

42. Gudmundsdottir, G., & Hatlevik, O. (2018). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education, 41(2)*, 214–231.
43. Hadollu, K. (2021). Online Competency Based Education Framework using Moodle LMS: A Case of HEIs in Kenya. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2021, Vol. 17, Issue 1*, 193-206.
44. Hennessy, S., D'Angelo, S., McIntyre, N., Koomar, S., Kreimeia, A., Cao, L., . . . Zubairi, A. (2022). Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A Systematic Review. *Computers and Education Open*.
45. İşman's, A., & Canan Gungoren, O. (2014). Digital citizenship. *The Turkish Online Journal of Educational Technology – January 2014, volume 13 issue 1*.
46. ITU. (2018 B). *Digital Skills Toolkit.* International Telecommunication Union.
47. Jackson, B. L. (2019). Where the Rubber Meets the Road: Exploring the Perceptions of In-service Teachers in a Virtual Field Experience. *Journal of Research on Technology in Education 51/1*, 7-26.
48. Koh, J., Chai, C., & Lim, W. (2017). Teacher professional development for TPACK-21CL: Effects on teacher ICT integration and student outcomes. *Journal of Educational Computing Research, 55(2), https://doi.org/10.1177/0735633116656848*, 172–196.
49. Liu, Y., Zhao, L., & Su, Y. (2022). The Impact of Teacher Competence in Online Teaching on Perceived Online Learning Outcomes during the COVID-19 Outbreak: A Moderated-Mediation Model of Teacher Resilience and Age. *Int. J. Environ. Res. Public Health 2022, 19, 6282. https://doi.org/10.3390/ijerph19106282*.
50. McGarr, O., & Mcdonagh, A. (2021). *Digital Competence in Teacher Education.* Retrieved from Developing ICT in Teacher Education: https://dicte.oslomet.no/
51. Menon, S. (2015). HRM in higher education: the need of the hour. *IOSR Journal of Research & Method in Education, 5(6)*, 12-14.
52. Nutsubidze, N., & Schmidt, D. (2021). Rethinking the role of HRM during COVID-19 pandemic era: Case of Kuwait. *Review of Socio-Economic Perspectives, 6(1)*, 1-12.
53. Pearson. (2015). *Competency Based Education (CBE) Playbook. Retrieved on 23 March 2023.* Retrieved from https://www.pearson.com/content/dam/one-dot-com/one-dot-com/ped-blogs/wp-content/pdfs/584G245_CBE-Playbook_WP_lr_f.pdf
54. Pérez-Sanagustin, M., Kotorov, L., Teixe, A., Mansilla, F., & Broisin, J. (2022). Mar Pérez-Sanagustin, Iouri Kotorov, António Teixeira, Fernanda Mansilla, Julien Broisin, et al.. A Competency Framework for Teaching and Learning Innovation Centers for the 21st Century: Anticipating the Post-COVID-19 Age. *Electronics, MDPI, 2022, 11 (3)*.
55. Philbeck, T., & Davis, N. (2018). The Fourth Industrial Revolution: Shaping A New Era. *Journal of International Affairs, 72(1)*, 17-22.
56. QM. (2018). *QM Higher Education Rubric, Sixth Edition. Quality Matters.*
57. Raza, S., Siddiqui, A., & Standing, C. (2018). Exploring Systemic Problems in IS Adoption Using Critical Systems Heuristics. *Systemic Practice and Action Research, 32. https://doi.org/10.1007/s11213-018-9467-6*, 125–153.

58. Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu.* Seville, Spain: Publications Office of the European Union.
59. Rudestam, K. E., & Schoeholtz, J. (2010). Globalization in Online Learning. In A. D.-C. Asset, *Handbook of Online Learning* (2nd ed., p. 187). SAGE Publications, Inc.
60. Sahu, P. (2020). Closure of Universities Due to Coronavirus Disease 2019 (COVID-19): Impact on Education and Mental Health of Students and Academic Staff. *Cureus, Vol. 12(4): e7541*.
61. Tohara, A., & Al, E. (2021). Exploring Digital Literacy Strategies for Students with Special Educational Needs in the Digital Age. *Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(9), Article 9*.
62. Van Laar, E., Van Deursen, A., Van Dijk, J., & De Haan, J. (2020). Determinants of 21st-Century Skills and 21st-Century Digital Skills for Workers: A Systematic Literature Review. *SAGE Open, 10 (1)*.
63. Yengin, I., Karahoca, D., Karahoca, A., & Yucel, A. (2010). Yengin, Ilker & Karahoca, Dilek & Karahoca, Adem & Yücel, Ahmet. (2010). Roles of teachers in e-learning: How to engage students & how to get free e-learning and the future. *Procedia - Social and Behavioral Sciences. 2 (2)*, 5775-5787.
64. Zareie, B., & Navimipour, N. (2016). The effect of electronic learning systems on the employee's commitment. *The International Journal of Management Education, Volume 14, Issue 2*, 167-175